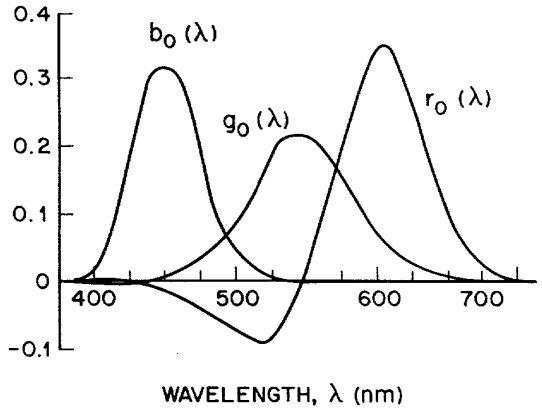
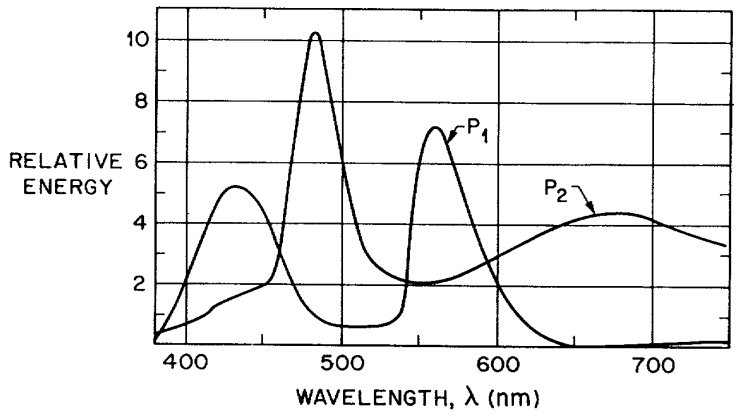


The color-matching functions for the 2° Standard Observer, using primaries of wavelengths 700 (red), 546.1 (green), and 435.8 nm (blue), with units such that equal quantities of the three primaries are needed to match the equal energy white, E.



Example of two spectral energy distributions P_1 and P_2 that are metameric with respect to each other, i.e., they look the same.

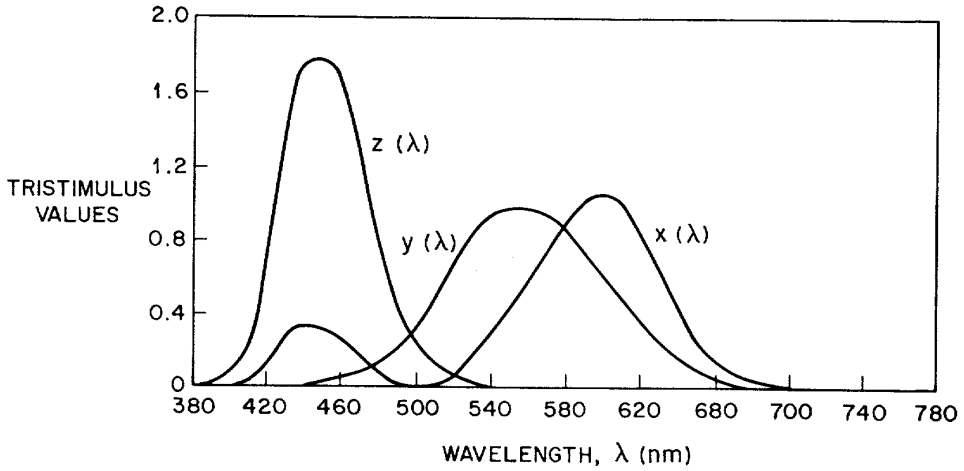


Fig. 1.8.7 Color matching functions $x(\lambda)$, $y(\lambda)$, $z(\lambda)$ for the 2° Standard Observer (from Wintringham [1.8.5]). Note that $y(\lambda)$ is the same as the 2° relative luminous efficiency curve of Fig. 1.8.6.

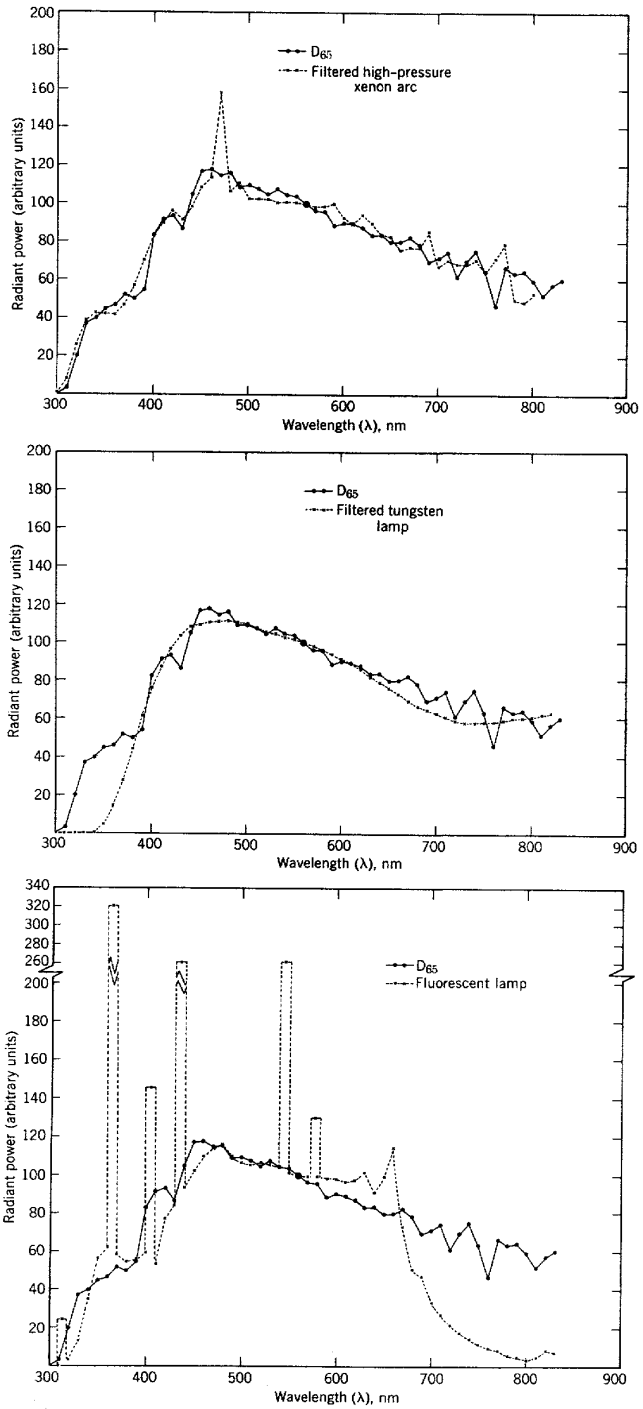
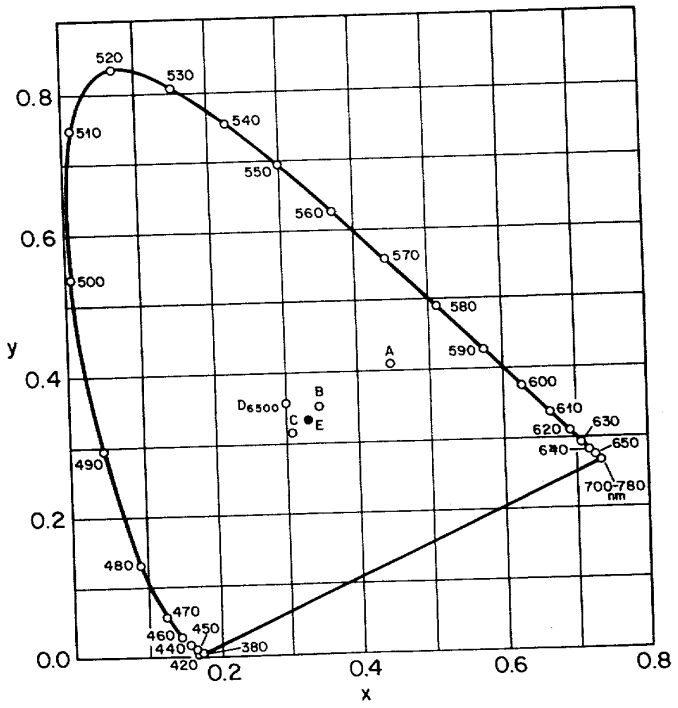


Fig. 5(3.3.5). Three examples of relative spectral power distributions of D_{65}-daylight simulators.



(b)

Fig. 1.8.8 (a) The (r_o,g_o) chromaticity diagram for the Standard Observer (from Wintringham [1.8.5]). The wavelengths (in nm) of the spectral colors appear on the horseshoe shaped locus. Point E represents equal-energy white, illuminant C is a standard bluish-white source, P represents a specific color sample irradiated by illuminant C and (X,Y,Z) are the standard CIE primaries. (b) 1931 CIE-xy

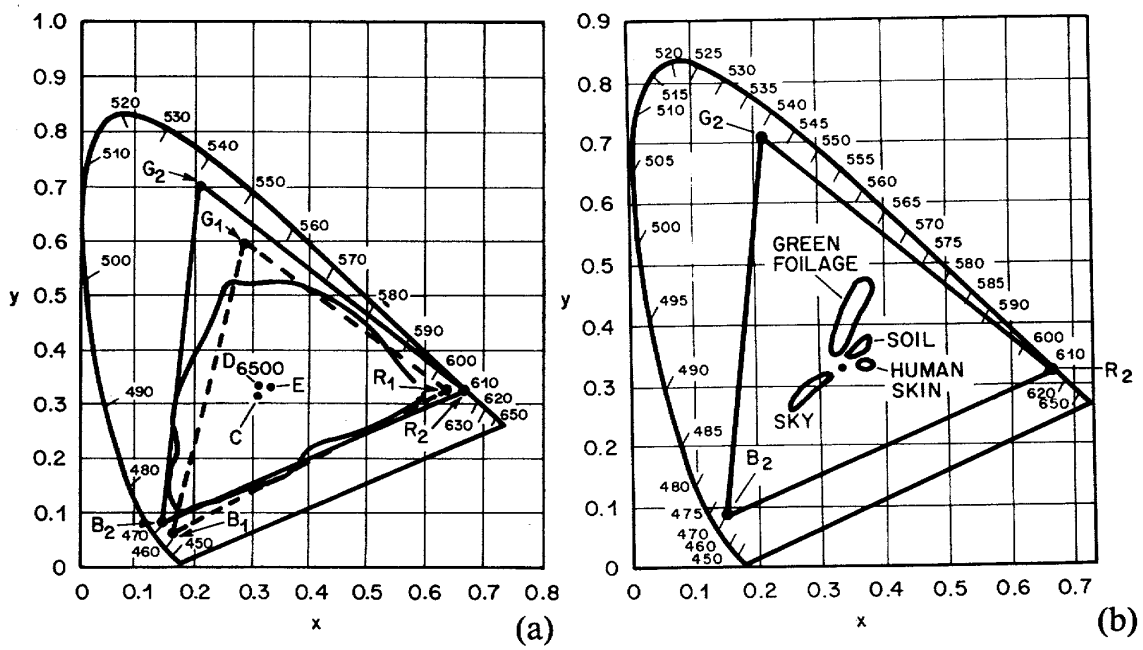
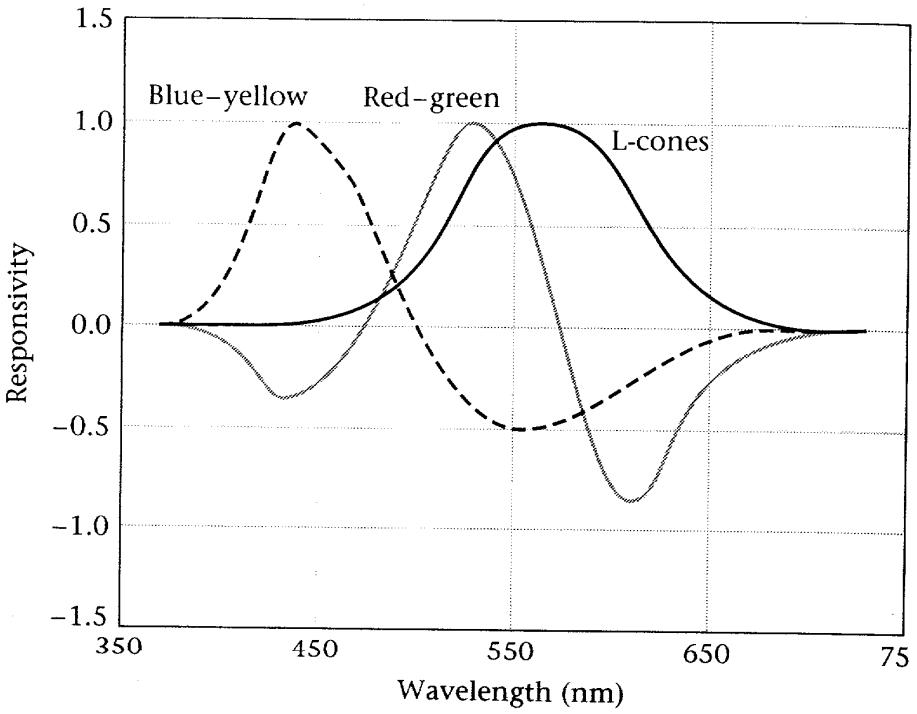
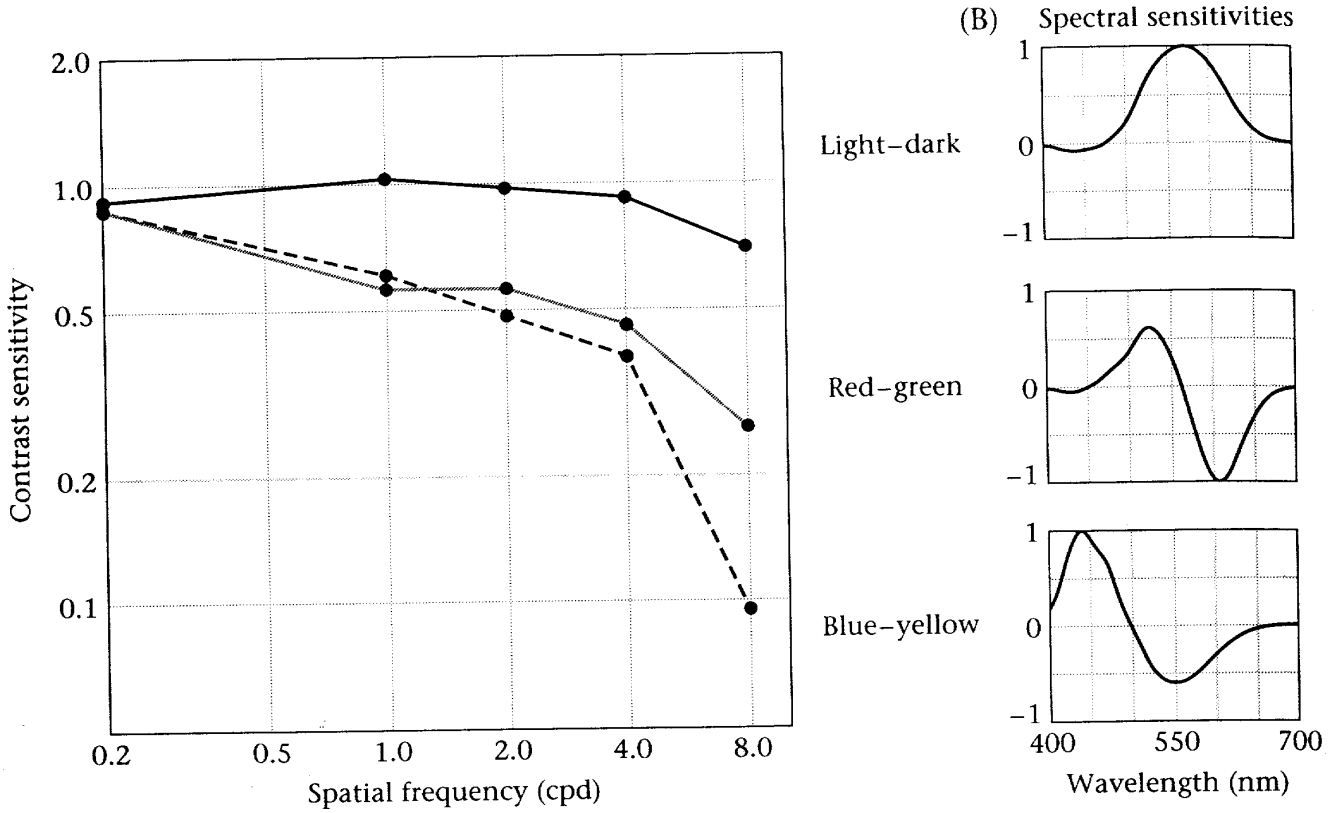


Fig. 2.2.2 Primaries used for the PAL (R_1,G_1,B_1) and the NTSC (R_2,G_2,B_2) systems of color television. (a) The range of achievable colors is the interior of the triangle defined by the primaries. The irregular curve outlines the gamut of inks, pigments and dyes. (b) Most natural colors are pastel and occur near the center of the triangles.

$$\begin{pmatrix} O_1(\lambda) \\ O_2(\lambda) \\ O_3(\lambda) \end{pmatrix} = \begin{pmatrix} 1.00 & 0.00 & 0.00 \\ -0.59 & 0.80 & -0.12 \\ -0.34 & -0.11 & 0.93 \end{pmatrix} \begin{pmatrix} \mathrm{L}(\lambda) \\ \mathrm{M}(\lambda) \\ \mathrm{S}(\lambda) \end{pmatrix}$$



9.18 THE SPECTRAL RESPONSIVITY OF A SET OF COLOR SENSORS whose responses to the Macbeth ColorChecker under mean daylight are decorrelated. The spectral sensitivities of these sensors resemble the spectral sensitivities of LGN neurons and the color-appearance judgments measured in the hue-cancellation experiment.



9.19 ESTIMATES OF PATTERN–COLOR SEPARABLE SENSITIVITY of pathways mediating color appearance. By measuring spatially asymmetric color matches, it is possible to deduce the pattern and color sensitivity of three visual mechanisms that mediate color appearance judgments. (A) The pattern sensitivities and (B) the wavelength sensitivities derived from experimental measurements are shown for light–dark, red–green, and blue–yellow mechanisms. Source: Poirson and Wandell, 1993.

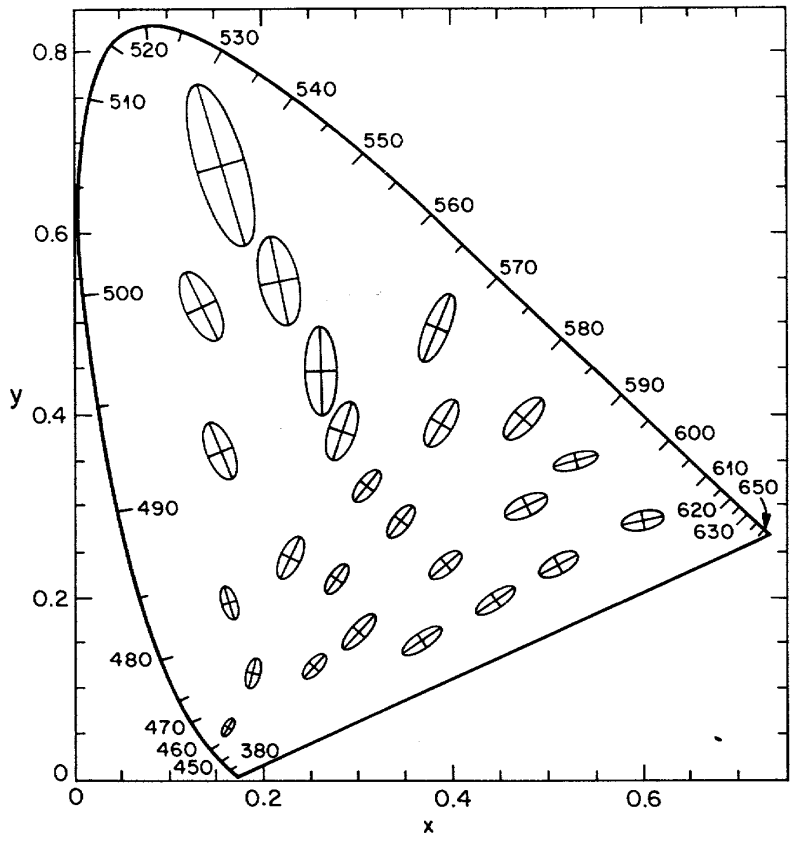


Fig. 4.4.5a 1931 CIE-*xy* chromaticity diagram showing MacAdam's ellipses (ten times enlarged) (from Wyszecki *et al.* [4.37]).