

Unilateral Colour Vision Defects and the Dimensions of Dichromat Experience

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One of the main pillars of support for the common view, that protanopes and deuteranopes see yellow and blue and not red and green, has been the reports of unilateral cases. Judd 1948 might seem almost definitive evidence -- examining the 10 most promising reports from a ~90 year period. Reexamination of the reports reveals a very different picture. Starting with the 3 putative cases of unilateral dichromacy: in one of them, perceptions of red and green are clearly reported; in another, perceptions of green; and in the third, the experimental methods are such that they might almost have been designed -- if there had been any residual red-green perception -- to fail to reveal it. von Kries's (1918) case of unilateral deuteranomaly seems to have a reduced perception of green and yellow, not of green and red. Most interesting is Nagel (1905) -- reporting a case of supposedly deuteranopic fovea with near-normal periphery; but it is doubtful that, with the fovea, the man saw only yellow and blue; and Nagel himself gives reason (1905, 1908) for thinking that deuteranopes in general (and himself in particular) actually have sensations of red and some 'remnant' of green. As for the acquired cases: the defects are so fundamentally different from the loss of one cone type that it is completely obscure whether they can be a guide to the latter. The later reports (Graham et al. 1961, etc.; MacLeod & Lennie 1976; and the tritanopia in Alpern, Kitahara & Krantz 1983) prove no help to the yellow-and-blue view either. But the problems are not merely of detail: in view of the larger evidence, especially about residual red-green discrimination in dichromats, there are more general morals to draw about the experimental techniques and general theoretical stance that have guided studies of dichromacy.