

Color and Color Perception: A Study in Anthropocentric Realism, by David R. Hilbert, Stanford, Ca.: Center for the Study of Language and Information, CSLI Lecture Notes, #9, 1987, x, 146 pages, \$11.95 CDN, ISBN 0-937073-16-4 (paper), ISBN 0-937073-15-6 (Distributed by the University of Chicago Press).

A quick glance through the titles in the Lecture Notes Series shows that eight deal broadly with linguistics; the remaining five, including the above title, do not. This makes Color and Color Perception a difficult book to review because it concerns only marginally language and linguistics. Despite its title, it does not deal with anthropology either, but with philosophy, physics and psychology.

What will readers of JAPLA find in the book? Both a great deal and not very much. It is not until page 114 that Hilbert mentions semantics. The 19 page long sixth and next to last chapter entitled 'Indeterminacy and Colors' is the most relevant one for our purposes. The book itself is a review of philosophical theories about color and color perception. Hilbert does not support the subjectivists' interpretation of color, putting him in the opposite camp from Hume, Locke, Berkeley, Newton and many contemporary writers. He argues in favor of the objective existence of color, and his seven chapters go about disproving the views of others and proving his own.

His discussion of the theories of the great philosophers through the ages is a humbling experience in itself. The conclusion which I drew, reflecting upon Hilbert's discussion, is, what a remarkable creature the human being is to have arrived at color vocabularies generally consistent among speakers of a language, when the referents of these terms have such little correspondence with the real world as studied by physicists. That we as speakers of English even remotely agree with one another as to what the color red refers to, must be one of the greatest acts of deception that culture, convention and expectation has ever played upon us. Undoubtedly, the same applies to the codification and naming of all sensory experience, although color may have been more exhaustively studied than any other area of vocabulary.

A cornerstone of Hilbert's argument is the recognition of metamers. Metamers are differences of surface spectral reflectances of objects which are identified as colored. Hilbert writes (103):

Metamers do not differ just slightly in their reflectance profiles....The situation with respect to colors seems analogous to supposing that a four-inch stick could look the same as one that was either two or six inches but not the same as one that is three inches in length. An even better analogy is with shape perception. It seems bizarre to imagine that a rectangle might be indistinguishable from a hexagon but not from a pentagon. Yet this seems to be exactly the situation with respect to the perception of colors.

In other words, red can sometimes appear green. Is our agreement that red is red the consequence of an intolerant culture that demands acceptance of convention? No, in large part it is a consequence of the human visual apparatus. Biologically, we are not equipped to note perceptually the tricks which nature would otherwise play on us. Most stimuli associated with the color red fall within a reasonably narrow scope of possibilities. Most four-inch sticks, indeed, appear to be about four inches long.

As crude as human perceptive facilities for color are, our color terms are even cruder; both are anthropocentric. Color terms, too, are language relative. Hilbert argues, moreover, that color language is no more subjective than our perception of color. For example, 'scarlet is a shade of red' only if the kind of reflectance associated with red is included in the kind of reflectance associated with scarlet. Each color term is associated with a specific color space, which encompasses the range of spectral reflectances associated with that color term. Relations between colors are relations between locations in color space. Since color space is specified objectively, the various color relations, too, have an objective, though anthropocentric basis. By taking this anthropocentrism into account, Hilbert concludes (134) '... it is possible to provide a realist analysis of color that preserves most of our ordinary knowledge about color.'

Only one of Hilbert's bibliographic references, Berlin and Kay's Basic Color Terms: Their Universality and Evolution, is an anthropological publication. As excellent as Berlin and Kay's work is, it does not represent the full range of thought on this subject. Color terms the world over probably reflect cultural differences to a greater extent and in a more varied way than Hilbert shows in his few examples coming exclusively from European languages. What conclusions would Hilbert have drawn from Verne Ray's (1953) pioneering studies of color terminology of American Indian languages spoken in Washington State? Ray found color

terms discontinuous vis-à-vis adjacent areas of the spectrum. What status does that give the concept of color space? Is it only a case of Ray not recognizing that one color term (for example scarlet), is wholly subsumable within another term (red) which has the larger color space? Thirty years ago I concluded that such was the case. Now I am not so certain. The possibility exists that humans make use of a far wider range of information in classifying colors than spectral reflectances perceived by the visual apparatus. The degree of freshness or desiccation associated with a color stimulus in Hanunóo, as identified by Conklin (1955), appears to be relevant in classifying colors in that Philippine language. Very likely Japanese takes freshness into account, too, in contrasting 'blue' and 'green,' which at a higher level are seen by the Japanese as variants of a common color. Warmth and coolness appear to be defining features used to contrast colors among the Dugum Dani, a New Guinea group (E. Heider 1972).

Opposing and mutually exclusive criteria are employed by speakers in most languages in the selection of relevant stimuli in encoding information. In English we do this all the time, but not necessarily in color naming. Whether we call a mature human an adult, a man, or a woman depends upon whether we choose to take into account sex as well as maturity. Despite the unpredictability of choice of term in any given instance, we are able to shift our perceptions and references accordingly in conversation, depending upon the choices speakers make in encoding concepts, and we as hearers make in decoding them.

I agree with Hilbert that this does not make any kind of classification less objective than another. Hilbert, however, has not gone far enough in his discussion of color terminology. His carefully presented book, nevertheless, does relate the obstacles which have had to be overcome in the area of understanding color perception and color naming.

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