The Representation in the EEG of Chromatic Information in Visual Stimuli

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Qualities of colour and brightness vision are represented in electro-encephalographic responses at visual stimuli. The stimulus was a homogenous 2° field of photopic brightness of a colour television monitor, modulated by a 1 cps square wave. The responses were analysed by factor analysis, assigning 2 numbers to each response. The pairs of numbers constituted a 2-dimensional diagram of a series of responses that were systematically coded with respect to their colour or their brightness.

In the colour-coded series, 2 colours of different (10–20 nm) dominant wavelengths or different degrees of saturation alternated, the subjective chromatic contrast being the same in each case.

The 2-dimensional diagrams are closely related to the well-known colour triangles, like diagrams, composed on the basis of results of micro-electrode measurements. In the brightness-coded series, 2 basic colours of the television tube alternated, the brightness difference between the 2 colours being systematically varied. The diagrams exhibit an extremum at the point of equal brightness of the 2 colours.

Apparently it is possible to find directions in the diagrams that represent different qualities of the corresponding series of stimuli or the action of an independent nervous system. These qualities may be: the brightness

the red-green aspect

or the blue-yellow aspect. Testing visual functions by means of the EEG turns out to be principally possible

although a lot of work has to be done to simplify the measurements and the methods of interpretation.