

cohesiveness usually attained only by a single author or, as in this case, by close collaborators who obviously devoted considerable effort to its planning and execution.

The morphology of cardiac muscle, its specialized conduction system and innervation are described in depth worthy of a reference text, yet without being boringly encyclopaedic. In addition to the more classical aspects of light and electron microscopy of cardiac muscle, the volume is particularly strong in its discussion of the development of the myocardium and, as befits a field in which the authors have considerable expertise, the properties of cultured cardiac muscle cells. In a book containing 101 illustrations and over 500 references, those interested in the fashionable can learn about the atrial spe-

cific granules storing the atrial natriuretic peptides, while the discussion of corbular sarcoplasmic reticulum and of the avian cardiac conduction system will please the bird lovers.

Reminded of a comment attributed to one of the Marx Brothers — "Whom are you going to believe, me or your eyes?" — most of us will be inclined to trust the visual evidence. Books such as this one will strongly reinforce our faith in our eyes, and in the importance of learning about structure to understand function. It is highly recommended, whether for reading or reference, and should remain useful for years to come. □

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The dimensions of art

J.D. Mollon

The Forms of Color: The Interaction of Visual Elements. By Karl Gerstner. MIT Press: 1986. Pp. 179. \$29.95, £29.95.

THIS is a flirt of a book. Lured along by many handsome illustrations, the reader is led down instructive by-ways in the history of geometry and ornament; but the intellectual thread grows ever more slender, the book turns into a vehicle for displaying the author's own paintings, and there is no final consummation to be had.

The questions that Gerstner sets himself are interesting ones. Can we have a system of form, derived from primitives, in the way we can have a well-ordered space that represents all possible colours? How does colour affect the perceptual organization of form? And are there systematic correspondences — intra-modal synaesthesias — between particular colours and particular forms?

After taking Wyszecki's rhombohedral lattice as an example of a modern colour-order system, Gerstner passes on to Diquat's "Méthode pour faire une infinité de desseins différens" of 1722, and thence, via the history of group theory and fractal geometry, to the geometric art of Islam. A mosaic from the Hall of the Ambassadors in the Alhambra is used to show how a simple algorithm will generate a pattern rich in rhythms and alternative percepts (see the accompanying illustration).

The same theme is continued in a discussion of Wilhelm Ostwald's "Harmonie der Formen". Although Ostwald is well known for his colour system, his system of form is largely forgotten, and Gerstner gives a detailed summary. Ostwald starts

with those regular polygons that can fill a plane so as to leave no space over when juxtaposed: the equilateral triangle, the square and the hexagon. Suppose that we conceptually subdivide one of these basic forms into equal parts and we connect with real lines a chosen subset of the intersections that have been generated by the subdivision. If we now duplicate this unit form many times by translation or mirror reversal, there will emerge a complex superordinate pattern that it is difficult to imagine in advance. Ostwald's algorithms are extended in the paintings of the Swiss artist Hans Hinterreiter: here the unit forms are duplicated on to topologically distorted grids and so the range of emergent patterns is multiplied.

When Gerstner finally comes to ask

whether there are primitives of form, he abandons geometry and selects forms that he judges to be elementary in their emotional expression. An eight-pointed star, like the colour yellow, is active, warm and out-radiating; a circle, like the colour blue, is passive, cold and in-radiating; a square standing on its corner, like the colour red, is tense and loud.

Although Karl Gerstner is an unusually learned artist and although his book, if it is about anything, is about human perception, very little is actually said about the experimental psychology of form, about empirical studies of synaesthesias or about the physiological properties of our visual system. There is nothing about modern studies of perceptual organization; or about the degree to which form and colour are independently analysed within the visual system; or about texture, although texture as a surface property of objects is closely analogous to colour, and all textures could probably be represented in a space of dimensionality not vastly greater than that of colour space.

But perhaps it is as well that Gerstner does not add to his intellectual baggage the primal sketch of David Marr and the textons of Bela Julesz. From the pointillists to Hockney there is a tradition of artists giving theoretical commentaries on their work. But almost always the rationalizations are opaque or mistaken. The art must stand or fall by itself. And Gerstner's agreeable compositions are best judged for their own sake. □

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Pattern of a mosaic in the Alhambra. By colouring the interleaved strips of the original, Gerstner draws attention to some of the many competing organizations that the eye can impose upon the pattern. (Reproduced from The Forms of Color.)

