the color harmony manual

and how to use it

by Egbert Jacobson

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The organization of the colors presented here is based on the researches and charts of Dr. Wilhelm Ostwald, great German chemist, psychologist and philosopher, and on some of the books he wrote between 1916 and 1931.

The main purpose of this text is to indicate how the colors in the Manual may be used to find the simplest harmonies. Though it follows faithfully the principles laid down by Dr. Ostwald, it merely outlines the fundamentals of his theory and does not attempt to represent his remarkable and comprehensive work on color science which he recorded in a great many volumes. In fact, it purposely omits many technical distinctions for the sake of brevity and simplicity. An extensive study of the subject would require further reference to the originals, a few of which are listed in the Appendix.

So far as we are concerned in this study of surface colors, color is a sensation. It reaches our brains through our eyes as they are stimulated by the light reflected from any object in the field of vision. Surface colors reflect light of various wave lengths in various intensities. As different wave lengths are scanned by an optical instrument and the relative intensity of each measured, the stimuli that induce the sensation of color are measured.

**importance of color organization** We try to avoid the sensation of color disharmony in clothing, in furnishings, and wherever we have a choice, just as we
avoid disharmony of sounds, which we call discord or noise. Because both sound and color are sensations, we may compare methods of arranging the stimuli that produce these sensations.

Listening to music by no means presents the questions of harmony that writing it does. If you don't like a tune, you turn it off or walk out on it; but when you are writing notes in some kind of orderly sequence, you have much the same problem that the artist has who is painting one color next to another — you are searching for ways to create harmony. If all the tones that can be made on a piano could be suspended in mid-air, you would be constrained to arrange them in some order again, such as a series of octaves, before you could readily find those which would produce harmony. This kind of arrangement was first completely adopted by Bach so long ago that we hardly stop to think what an important step forward in music it was. Anyone who will take the trouble to learn the position of the tones on the piano can learn to produce harmonious chords. But if these tones were continuously rescrambled, without any known and permanent relationship (in terms of sound frequencies), not even a musical genius could find his way among them.

Now the analogy between sound and color is accidental; indeed, it cannot be carried any further than the comparison between any other two sensations such as the taste of a lemon and the feel of sandpaper. You hear music and you see color; the ears and the eyes are entirely different receiving instruments — the ears are stimulated by sound waves and the eyes by light waves. But we may reason that a color "keyboard" will be as useful as a musical keyboard if we can make one in which the colors, like the tones of a piano, are definitely established and are always in the same position with respect to each other. The 680 surface colors in the Ostwald arrangement do not include, of course, all the possible color modifications. His arrangement, however, provides an adequate range of colors whose relationships are known in terms of light measurement. It is in this respect that these color standards may be compared to the tuned piano keyboard. The piano keyboard does not contain all the possible tone sensations, but those it includes have a measured relationship to each other in terms of sound frequencies.

**harmony equals order** Furthermore, such a color keyboard should enable us to discover color harmonies, because harmony is a matter of measured and easily perceived relationships whether in music (sound relationships), architecture (struc-
tural relationships), poetry (metrical relationships), dancing (rhythmical relationships), or color (light reflectance relationships). When these are pleasing experiences, it is largely because of their measured character. A brief and wonderful definition of harmony was set forth in three words by Dr. Ostwald: "Harmony Equals Order." Perhaps this is due to the rhythmic behavior of the human heart and pulse, but that is another story.

We present the Ostwald color order in this new form of movable chips with the hope of promoting the knowledge and study of color harmony. Of equal importance to artists and industry is the fact that these chips constitute scientific color standards. The colors in the Manual were developed by Carl E. Foss from colorimetric specifications in accordance with standard procedures through the use of spectrophotometric measurements. The specifications can be duplicated in commercial practice. The color notation provides a universal symbolism which can be easily communicated verbally, by letter, by wire, or by radio.

The project of measuring the colors and producing the Manual was encouraged from the first by Mr. Walter P. Paepcke without whose vision and confidence it could not have been undertaken. Acknowledgement is also due Miss Katherine Chandler whose enthusiasm and effort have been contributed without stint. And to Dr. Hermann Zeishold, once a student of Dr. Ostwald, go my thanks for helpful criticism of the text.

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