VISUAL CATEGORIES

SHAPE:
Line: Straight, Bezier, etcetera.
2D: Polygon, Circle, Semi-circle, Blob.
3D: Polyhedra, Cylinder, Cone, Sphere, Hemi-sphere.

COLOR:
Hue, saturation, brightness.

SCALE:
Size of shapes relative to the picture plane and each other.

TRANSPARENCY:
Degree of opacity of a shape on the picture plane and relative to other shapes.

TEXTURE:
Noise. Pattern, if small enough, also becomes texture.

POSITION:
Where objects appear on the picture plane and relative to each other. Includes the z-index.

CYCLE / PHASE:
the interval of time during which a characteristic, often regularly repeated event or sequence of events occurs.

PERSPECTIVE:
The relationship / proportion of the parts of a whole, regarded from a particular standpoint or point in time (POV / focal point).

BLUR:
Enhances perspective. Could also refer to a “blooming” effect.

REPETITION:
Regularity and frequency of shapes and colors.

BALANCE:
Symmetry / asymmetry; distribution of visual weight.

HARMONY:
Unity of all the visual elements of the composition.

MOTION / VELOCITY:
Speed and direction at which an object moves, colors and transparencies change, etcetera Changes in volume over time. Attack decay sustain release.

AUDIO CATEGORIES

AMPLITUDE:
The volume or magnitude of a signal.

PITCH:
The fundamental frequency of a signal.

RANGE:
The distance between the lowest and highest pitch in a composition of sequence.

TEMPO:
The rate of speed at which a musical composition is performed.

HARMONICITY:
The relationship between a signal's fundamental frequency and its series of overtones.

REVERB:
Prolongation of a sound caused by its repeated reflection off various surfaces in a space.

TIMBRE:
The quality of a musical tone that distinguishes voices and instruments.

RHYTHM:
The variation of durations of sounds over time. Beat, meter, etc.

ENVELOPE:
Changes in volume over time. Attack decay sustain release.

HISTORICAL SOUND TO VISION

Overtone to Hue

Kandinsky, who took chromatic audition to be entirely self-evident, made a historic contribution to the subject. A curious fact emerges...namely that two parameters produce the most compelling correspondences where they are least expected. Namely color tone and overtones (see page 7).

Overtone / Pitch to Line Quality

Most musical instruments have a linear character. The pitch of the different instruments corresponds to the breadth of a line: violin, flute, and piccolo produce a very thin line, viola and clarinet a somewhat thicker one; and by way of the lower instruments, one arrives at broader and broader lines, right down to the lowest notes of double bass or tuba.

Wassily Kandinsky, *Point and Line to Plane,* 1926, 617-18

Volume to Saturation / Brightness

As a rule, pure florescent colors are loud. Muted, that is, broken colors, with a high proportion of black and white, are soft. In other words we have a correspondence between...amplitude and...purity.

Karl Gerstner, *The Forms of Color,* 1986, 173

Pitch to Shape Scale

Most of us will feel that a high pitch and exaggerated length, perhaps also the vowel i (English ee) indicate smallness, while low pitch and length and the vowels a, o, u (English oo) indicate large size...Large or small size, or intensity may be expressed by variations of sound.

Franz Boas, *General Anthropology*, 1938

Pitch to Hue

Of all of the possible correspondences between the elements of color (hue, saturation and value) and those of sound (pitch, amplitude, and tone color), the most often proposed mapping is of pitch to hue. Many such mappings have been proposed and some were built into light instruments (see Three Centuries of Color Scales, page 8).

Tempo to Color Saturation

Alexander Scriabin held that each mode corresponded to a particular shade of color, and each modulation to a nuance of this shade. Changes from the major into the minor could therefore be underlined by strong contrasts, on a visual as well as a chromatic level.

Frank Popper, *Origins and Development of Kinetic Art*, 1968

Tempo to Shape Quality

We find that when synaesthetes listen to music, their visual responses--color, form, movement--may shift, surge, and ebb according to musical key, to musical pattern, to musical progression... Karwoski and Odbert (1938) discovered a systematic relation between the shapes of synesthetic visual forms and the tempos of the music. The faster the music, the sharper and more angular the visual image.

Lawrence E. Marks, *The Unity of the Senses*, 1978, 93

HISTORICAL SOUND TO VISION

Intervals to Hue

Rather than focus on notes, it is possible to think in terms of the distances between notes. An idea conceived by Wilhelm Ostwald is less sensational but more soundly based. He does not start with the scale but with the intervals. To each of them he assigns a shade made up of two color tones. The minor second is made up of the color tones 1 + 23; two closely juxtaposed yellows, one rather reddish and the other rather greenish (in Ostwald's 24-part color circuit 24 to yellow, 6 to red, 12 to blue, 18 to green, 1 to yellow with 1/6 part red, and so forth).

Karl Gerstner, *The Forms of Color 1986*, 170

Scale to Hue

In music there are big changes (such as a change in key) and small changes (such as where in a phrase an emphasis is placed). Changes in hue appear to the eye as large, relative to changes in tint or tone.

Scriabin held that each mode corresponded to a particular shade of colour, and each modulation to a nuance of this shade. Changes from the major into the minor could therefore be underliend by strong contrasts, on a visual as well as a chromatic level. This was one of the most important aspects of Scriabin's research into new areas of expression. His imagination had been stimulated by theosophical reading, and he dreamed of lighting up the whole of the concert hall to fit the music which was being played at the time.

Frank Popper, Origins and Development of Kinetic Art 1968, 157-

Melody to Linear Composition

Gyorgy Kepes gave consideration to the problem of orchestrating the movement of the eye of the viewer across a two-dimensional structure. The function of the kinetic linear path in plastic organization may be compared with the function of melody in musical composition, and the following observations of musicians should be helpful in bringing about further clarification. “Music, theoretically considered, consists altogether of lines of tone. It more nearly resembles a picture or an architectural drawing, than any other art creation; the difference being that in a drawing the lines are visible and constant, while in music they are audible and in motion. The separate tones are the points through which the lines are drawn; and the impression which is intended, and which is apprehended by the intelligent listener, is not that of single tones, but of continuous lines of tones, describing movements, curves and angles, rising, faling, poising—directly analogous to the linear impressions conveyed by a picture or drawing.”

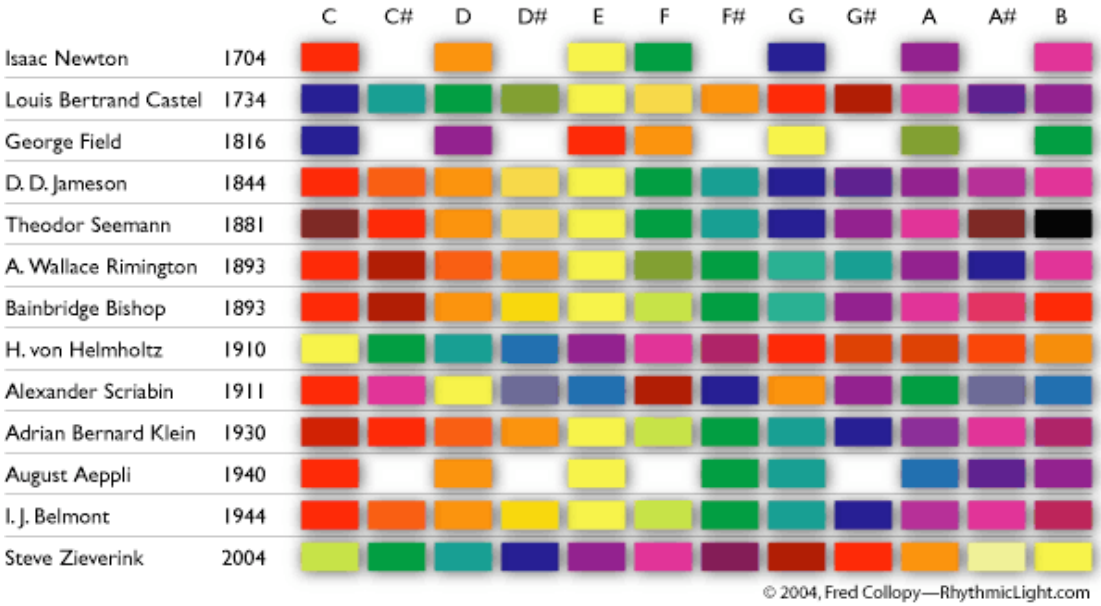
Gyorgy Kepes, *Language of Vision,* 1944, 59.

COLOR / CHARACTERISTIC / TONE

YELLOW	“warm,” “cheeky and exciting,” “disturbing for people,” “typical earthly color,” “compared with the mood of a person it could have the effect of representing madness in color [...] an attack of rage, blind madness, maniacal rage.	loud, sharp trumpets, high fanfares
BLUE	deep, inner, supernatural, peaceful “Sinking towards black, it has the overtone of a mourning that is not human.” “typical heavenly color”	light blue: flute darker blue: cello darkest blue of all: organ
GREEN	mixture of yellow and blue. stillness, peace, but with hidden strength, passive “Green is like a fat, very healthy cow lying still and unmoving, only capable of chewing the cud, regarding the world with stupid dull eyes.”	quiet, drawn-out, middle position violin
WHITE	"It is not a dead silence, but one pregnant with possibilities." "Harmony of silence",	"Harmony of silence", "pause that breaks temporarily the melody"
BLACK	“Not without possibilities [...] like an eternal silence, without future and hope.” Extinguished, immovable.	"final pause, after which any continuation of the melody seems the dawn of another world"
GREY	mixture of white and black	soundlessness.
RED	alive, restless, confidently striving towards a goal, glowing, “manly maturity” Light warm red: strength, energy, joy; Vermilion: glowing passion, sure strength Light cold red: youthful, pure joy, young	"sound of a trumpet, strong, harsh" Fanfare, Tuba deep notes on the cello high, clear violin
BROWN	mixture of red + black dull, hard, inhibited	
ORANGE	mixture of red + yellow radiant, healthy, serious	middle range church bell, alto voice, “an alto violin, singing tone, largo”
VIOLET	mixture of red + blue “morbid, extinguished [...] sad"	english horn, shawm, bassoon

From Wassily Kandinksy, *Concerning the Spiritual in Art,* 1912

THREE CENTURIES OF COLOR SCALES



Newton • red • orange • yellow • green • blue • indigo • violet (Gerstner, p.167)

Castel • blue • blue-green • green • olive green • yellow • yellow-orange • orange • red • crimson • violet • agate • indigo (Peacock, p.400)

Field • blue • purple • red • orange • yellow • yellow green • green (Klein, p.69)

Jameson • red • red-orange • orange • orange-yellow • yellow • green • green-blue • blue • blue-purple • purple • purple-violet • violet (Jameson, p.12)

Seemann • carmine • scarlet • orange • yellow-orange • yellow • green • green blue • blue • indigo • violet • brown • black (Klein, p.86)

Rimington • deep red • crimson • orange-crimson • orange • yellow • yellow-green • green • blueish green • blue-green • indigo • deep blue • violet (Peacock, p.402)

Bishop • red • orange-red or scarlet • orange • gold or yellow-orange • yellow or green-gold • yellow-green • green • greenish-blue or aquamarine • blue • indigo or violet-blue • violet • violet-red • red (Bishop, p.11)

Helmholtz • yellow • green • greenish blue • cayan-blue • indigo blue • violet • end of red • red • red • red • red orange • orange (Helmholtz, p.22)

Scriabin • red • violet • yellow • steely with the glint of metal • pearly blue the shimmer of moonshine • dark red • bright blue • rosy orange • purple • green • steely with a glint of metal • pearly blue the shimmer of moonshine (Jones, p.104)

Klein • dark red • red • red orange • orange • yellow • yellow green • green • blue-green • blue • blue violet • violet • dark violet (Klein, p.209)

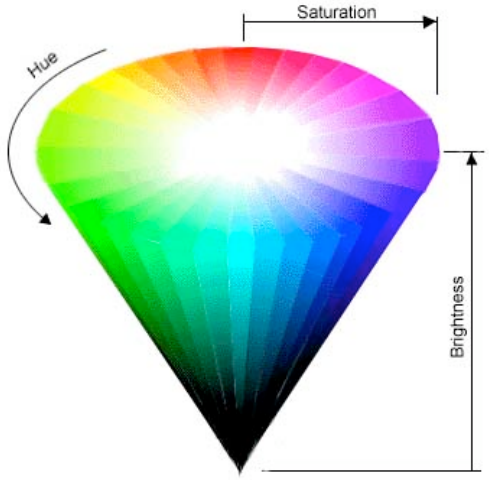
Aeppli • red • orange • yellow • green • blue-green • ultramarine blue • violet • purple (Gerstner, p.169)

Belmont • red • red-orange • orange • yellow-orange • yellow • yellow-green • green • blue-green • blue • blue-violet • violet • red-violet (Belmont, p.226)

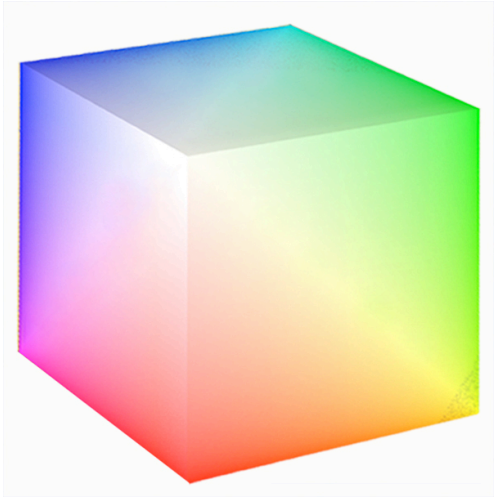
Zieverink • yellow/green • green • blue/green • blue • indigo • violet • ultra violet • infra red • red • orange • yellow/white • yellow (Cincinnati Contemporary Art Center)

COLOR PROCESS: RYB, HSB, RGB

RYB



HSB



RGB