

FRITZ TRAUTMANN: TEACHING AND COLOR THEORY

Excerpts from Fritz Trautmann's writings on art, Memorial Art Gallery Archives

"In works of art, the 'spirit of the age' is always subordinate to the spirit of the ages."

PRIMARY COLORS:

"The three primary colors are red, yellow, and blue." This is a truism that is not true. It is not only false, it is impossible. The physical structure of the eye disproves it.

But, first, consider the practical business of mixing paint. I mix the red with the yellow. I am supposed to get orange; but what I get is not a clear pure orange, it is dull, degraded orange. I mix the blue with the yellow. A similar unsatisfactory result; the green is dirty instead of brilliant and clear. What caused the partial neutralization in both cases. Yellow was the common factor involved; therefore there must have been some element in both the red and the blue that was the exact opposite or complement of yellow. It could not have been a mixture of the red and the blue, because the degrading occurred when they were used separately. What, then, is the opposite of yellow? For the moment, let's call it X. Then, as the separate operations produced some neutralization, it follows that some X must have been present in both the red and the blue. But if this is true, the red was not a primary red, but red plus X; and the blue was not a primary blue, but blue plus X.

According to the rule, I am supposed to mix the red with the blue in order to get violet or purple or something that will be opposite or complementary to yellow. On the face of it, this does not seem very logical, for if yellow is "primary", one would not expect its exact opposite to be a mixture, that is, a secondary. And that is exactly the case; it is neither red nor blue, nor a mixture of the two, but some other element, called X that acts as the complement to yellow. What name shall we give to X?

If X is violet, then violet will have to be subtracted from the given red, and also the given blue, in order to make them pure enough to produce clean orange and green when mixed with yellow. The purified red and blue will then stand opposite to one another as true complements, and also entirely free of both violet and yellow which will then stand opposite one another. Primary effects will be complemented by primary opposites, and secondaries will be complemented by secondaries. This is more logical, and it is true, for it conforms to the physical mechanism of the eye. But the triad has disappeared!

COLOR WHEEL:

The idea that violet, the hue at the extreme top of the color scale, can be produced by the mixture of any two notes below it, is to me the most fantastic and inconsistent notion that could possibly be conceived. Yet the idea that violet results from a mixture of red and blue has persisted so long in the minds of artists

and physicists that it is almost universally accepted as a truism. It is perhaps not surprising that artists should fall into this error for they are concerned primarily with the visual effects of mixing pigments and scarcely conscious of the laws of physics; but why physicists should be so careless as to overlook such an error for centuries is not so easy to understand. Artists may never give the matter a thought, but physicists know full well that color is pitch, the same as sound, and that no two notes well down in the scale can be struck together to produce the highest pitch known. Pitch is determined by frequency; the larger the number of vibrations per second, the higher the pitch. Red lies at the bottom of the visual scale – low frequency, low pitch, – and is the beginning of vision. Violet has a frequency so high that it is almost inconceivable. Someone figured out that to count its oscillations per second you would have to count rapidly for 2 ½ million years. It is the point in the universal span of octaves where vision ends, where solar daylight passes into interstellar night. Blue occurs in the visual scale between red and violet, and yellow appears just about midway between red and blue. When hues combine they average their frequencies. Therefore it would appear that a mixture of red and blue, far from producing anything high in the scale, should result in something more nearly approaching yellow; and so it would save for the fact that something other than frequency enters the picture where yellow is concerned. Yellow happens to be the precise spot where the eye tunes in the sequence or, in other words, it is the particular vibration that stimulates the retinal nerve-ends and causes the phenomenon we call light. It is the eye's standard for measuring the energy of the sun, that is to say, daylight.

Every phenomenon in this universe that makes an impression on the mind of man results from the opposing action of complementary forces – what Emerson referred to when he spoke of the “inevitable duality that bisects nature.” The phenomenon always takes place “between” an effector and a receptor. When red meets yellow and new colors are born between them, it is because redness is different and opposed to yellowness and in the combination some of the unmodified quality of each still persists. If the result is vermilion, or red-orange, red is the receptor and yellow is the effector; if a warm butter-cup yellow results, yellow is the receptor and red the effector. When effector and receptor are of equal force and the result is just as red as it is yellow, it is no longer to classify it as either reddish or yellowish, and so we give it a new name, orange, and call it a “secondary color” although its components are just as primary as they ever were.

But what happens at yellow? What happens at this crucial point where we tune in on the whole span of vibrations available to us and experience the phenomenon we call light? It is doubtful that we ever see any light that is not color, and yet when we think of light, or use the word “light”, it is not color that we have in mind but rather some mysterious luminating energy that makes things visible by shining on them. Or so it seems. The mere fact that this energy strikes against things, is not what makes them visible. Before we have vision, in fact before we have light, this energy, as effector, must cooperate with the receptors at the nerve-ends of some sort of eye. Naturally we are concerned most with the particular structure of the human eye, for that is what gives us our spectrum, but other eyes are extremely interesting and informative. The eye of the owl, for instance, is adapted to function best in the absence of sunlight, that is, its retina is composed mainly of rods which are the receptors of short waves. The human eye is equipped with two kinds of receptors: rods for “night-light” or darkness and cones for daylight or energy that comes from the sun; and these two kinds, rods and cones, are the only differentiating, or selective, receptors in the retina of the human eye. By this simple complementary opposition of “high” and “low” (in terms of frequency) or “short” and “long” (in terms of wave-length) the human eye is able

to fashion the chiaroscuro which gives form to seen things... Another simple way to express the opposition is in terms of temperature – cold and hot.

RED ADVANCES, BLUE RECEDES:

This is a “truism” that is not at all true. There is no doubt that red is, for most people, the most exciting color; for that reason it may seem to dominate a situation. That is natural, for, as wonderful as its adaptive mechanism is, the eye has not delved far into the short waves, so red remains the slowest, longest, most comfortable vibration it receives.

Blue on the other hand is a fairly recent and comparatively unfamiliar experience; for that reason, for some eyes, it may seem retiring or less dominant than red. There is also the misleading experience, on misty days, of “blue” mountains in the distance. But it is not the mountains that are blue; it is the mist, and the mist is not in the distance but near at hand, directly under the zenith where the sky is bluest. If blue were really a receding color, we should expect to see the blue of the sky most intense at the horizon, but exactly the opposite is the case.

The truth of the matter is that all colors recede or advance according circumstances. Red and blue alike may be presented to the view in a great variety of aspects which are stimulating or attractive in the degree that they irritate the nerve-ends of the eye. The greater the vibration the more immediate the response; hence strongly vibrating (or pure) red will advance, while weak (or neutralized) red will recede; and the same is true for blue, or any other color.

BLACK IN PAINTING:

Black is the absence of vibration, a fact which few painters – especially the “modernists” – seem to have discovered. Kandinsky, for instance, claimed that the dark colors, like blue, can be made more active by the admixture of black. This would seem to indicate color-blindness in the short-wave range.

COLOR AND FORM:

Of the great range of vibrations that impinge upon the body, and of which the brain becomes conscious in a variety of ways, the rods and cones of the eye are able to detect but an extremely minute span, and only a small section of that range is interpreted by the brain as visible light or vision. Scientifically speaking, the activity sensed in this region is not defined as light until it is visible. Much of this activity – in fact, the greater part of it – is sensed or felt by the eye without producing vision. The effect is luminosity without form, the consciousness of space between things. This space is felt but not seen...

According to the nature of their reflecting surfaces, objects also exhibit their own peculiar colorations, and though these may vary according to the quality of the light, there is always one uniform procedure on the part of the interpreting eye in this matter of perceiving tactile form: wherever form is perceived in space, the eye utilizes all of the available light. What does this mean? It means that regardless of its specific coloration – whether it is red, blue, yellow or any other color, – the form of an object is built up

for the eye by the combined activity of all possible hues of the solar spectrum. Without this complete participation of all hues, there can be no tactile form.

CHROMOLOGY:

Chromology – that ‘exact science’ which treats of the laws and attributes of color and their relation to the characters and destinies of men.

Theory – In color, it is the nature of the vibration that determines the aspect of the hue; so, in this theory, it is the quality of human vibrations that determines the attributes of character. Hence, when human vibrations are in harmony with color vibrations, there will be corresponding agreements between traits and hues. All things vibrate specifically people and colors. Each hue has its definite wave-length or frequency, and varying amplitudes or intensities. When waves are of the proper frequency to combine without interference, the result is pure color. If your vibrations are of that sort, you will feel good in the presence of such color; you will like it because you can tune in on it without static. When the waves are incompatible there is the effect of damping – they partly nullify one another – and the result is reduced or degraded color, like brown or olive. In order to thoroughly enjoy that sort of thing, your own vibrations must be correspondingly muddled; then the pure effects will seem violent and unendurable. If your vibrations are harmonious but weak – just a matter of amplitude – then you will prefer the pale, clear but diluted tints. But if they are discordant and rebellious, you will be so insusceptible to color that you can respond only to the dull, dingy, destructive effects approaching black, which is the nullification of all color.

Human vibrations may be purely physical, like the beating of the heart or the drawing of the breath, or they may be nervous, mental, emotional, psychic, or spiritual – the supposition being that those of low frequency are of the earth earthly, while the finer ones aspire to angelic beatitude.

Significant Generalities – Active, athletic people were invariably fond of the bright reds. Intellectuals chose some kind of blue. Those of the introspective, philosophical type leaned towards violet. The extrovert-egotists liked bright yellow. Good mixers picked orange. Creative artists, writers, musicians, painters, hovered around blue-green with complementary crimson as runner-up. Young students took to green. Those of affectionate nature preferred crimson. Childhood and old age differed on the basis of bright and somber. Male and female divided on a cool-warm basis, cool colors being masculine, warm feminine. Health responded to strong vibrant color; ill health rejected it.

Technique – A circular arrangement of the colors suggested a sort of aura that might well be a picture of the complete man.

Violet – the highest in vibration and the choice of the philosophers – would logically be the spiritual man, the inner self; while yellow – its complement, and favorite of the extroverts – would then become the opposite pole of consciousness, the outer self. A line drawn from violet to yellow – a personal axis, as it were – would divide the aura on a masculine-feminine or cold-warm basis.

The colors stepping away from both violet and yellow grow steadily colder on one side of the line and hotter on the other, reaching maximum cold at blue and maximum hot at red. A line drawing from blue to red suggested another axis, an axis of animating [power, mental on the one hand and physical on

the other. Red, being the color of the lowest vibration, seemed quite appropriate at the physical pole, while blue 'the cold light of reason' seemed equally fitting as the mental pole. This left the circular aura arranged in four sections, with orange, green, indigo and purple occupying central positions in the quadrants.

Then followed the process of interpolation. The various greens, lying between the emerging ego (yellow) and the will power (blue) should represent various phases of the developing mind. Students liked green, so this seemed to check. The different grades of orange, between ego and bodily activity, should indicate work and play indulged for personal gratification, and this agreed very well with the observations. The indigo, or blue-violet, phases between will power and mature knowledge should, and did, satisfy the judicious and the wise. And surely the crimsons and warm purples, making the full leap from body to soul, could stand for nothing other than the emotional responses to art, love and religion.

Gradually – by comparison of cases, by trial and error, and with a great deal of juggling for position by the process of interpolation – a comprehensive trait table or key was, at least tentatively, established. It leaves much to be desired as an instrument of precision; yet, on the record of many 'readings' over a considerable period of time, it has registered an astonishing percentage of true hits.

Some 'Chromology' subjects – [include] Walter Hampden, Claude Bragdon, Charles Burchfield, Emile Gruppe, Van Deering Perrine, Elmer Schofield, Nina Balaban, Gifford Beal, Gelette Burgess, Norman Kent

PALET TECHNIQUE:

No one will deny that feeling in art takes precedence over scientific accuracy, yet the best emotion is the emotion that is under control. A painter or musician is good to the extent that he puts understanding as well as feeling into his effort... The instrument upon which the painter plays is his palet, but, except in rare instances, it has not become a responsive vehicle comparable to a piano or a violin... I hope to help the young painter out of this dilemma by providing him with a responsive palet which he can manipulate, like a well-tuned instrument, with the freest play of feeling and the least conscious concern.

PRINCIPLE OF THE ORBIT:

There is something about the knowing essence of which I am made that has an all-important attribute of its own. It has continuity, flow. And it knows how to know itself; that means it rotates... there persists the feeling of aliveness as I contemplate myself... When I open the flood-gates of feeling and allow the living waters to swirl in, I become conscious of their circulation within me, imparting to me a self-sustaining rotation, and I am borne spinning along in the great whirlpool of evolution, obeying its law, in tune with the twining and spiraling rhythms that impel me.

...It is because I am a child of nature that I am able to conceive only spinning and spiraling things – whirling worlds, universes of nebulae, stars, planets, satellites; universes of molecules, atoms, electrons, protons; universes of embryos, nuclei, chromosomes, genes – all palpitating with the passion of that electric breath...

In order to conceive, I must turn about in consciousness, revolve in thought – receive, exert, recall – endlessly reflect idea upon idea, image upon image, that I may weave the mesh of existence. Reflection is the mechanism employed – turn, return and turn about. By reflection I rotate; my universe turns because I myself turn. I am not inert; I am not a fixture in the center of a whirling sphere; my sphere of activity assumes an orbital motion because I am the spinning center of it...

To sum up, my thought is orbital... I endure and proceed by thinking – turning over and back, turning round and about, turning inward and outward – turns within turns. My ideas are rounded and turned into form by reflection, concentration, insight and outlook... I infer that back of me and my universe there is one, single, inexorable, primordial law, the principle of which is the orbit.

[Without the principle of the orbit] there is neither a process of creation, nor any existence. Hence, I must infer that creation is the action of the law, and existence is the manifestation of its action. And as consciousness is the direct and initial result of its action in me, while conception and perception grow out of my consciousness and enable me to gain a universe, I must further infer that consciousness and existence are one and the same – that existence is never anything but consciousness in some form.

EMERGENCE OF CONSCIOUSNESS:

“Consciousness is more than a sense of being, within the self; it is also the awareness of a relationship between the self and something outside the self; thus it acts toward and away from a center; its action is both centripetal and centrifugal. Both of these actions relate the self to a preconscious ‘something’ which is summed up in the abstraction known as ‘the unconscious,’ When the action is inward, the relationship is between the self and an intuitively felt spiritual presence, – ‘the Word,’ ‘the Breath,’ ‘The Will,’ of a parent power whose attributes are summed up in the abstraction ‘God.’ When the action is outward, the self comes into relation with the staying power of the physical universe, creation – summed up in the abstraction – ‘Nature.’

ABSTRACTION:

The literal meaning of ABSTRACTION is to ‘draw out or separate.’ The mind is abstracted – or concerned with an abstract idea-when it is withdrawn from all subjects but one. It separates or abstracts this one idea from all that does not necessarily belong to it. By eliminating the non-essential and concentrating on the essential, it forms an epitome or archetype which is always the simplest and often the clearest and strongest form the idea can take.

The purpose of abstraction in art is directness and clarity of expression. Every good work of art employs it to some extent; in fact, it is abstraction that marks the difference between art and nature, for it is only when nature is subjected to the selectivity of man’s mind that the art process begins.

The first requirement of true abstraction is an idea – a single, simple, primary, elemental, undifferentiated, direct and positive, idea, – that is to say, an abstract idea.