

## Evolution of Form in an optometrist Elmer Ebeck, OD

I have been playing with art as an extension of optometric procedures I have been using for the last 35 years. Early in my development I was at Greg's home and asked to borrow a book by David Marr entitled Vision. David Marr's vision was to get a computer to mimic human thought and movement. David Marr wanted to understand how the brain could start with two-dimensional arrays of light on the retina and then produce a rich three-dimensional visual experience. He tried to get a computer to see and create. The algorithms he used were basic skills of direction and repetition. He had the computer produce edges, object groupings and depth information. He presented the idea that the brain's central function is pattern recognition and association. He died in 1980 at the age of 35 before he accomplished his goal.

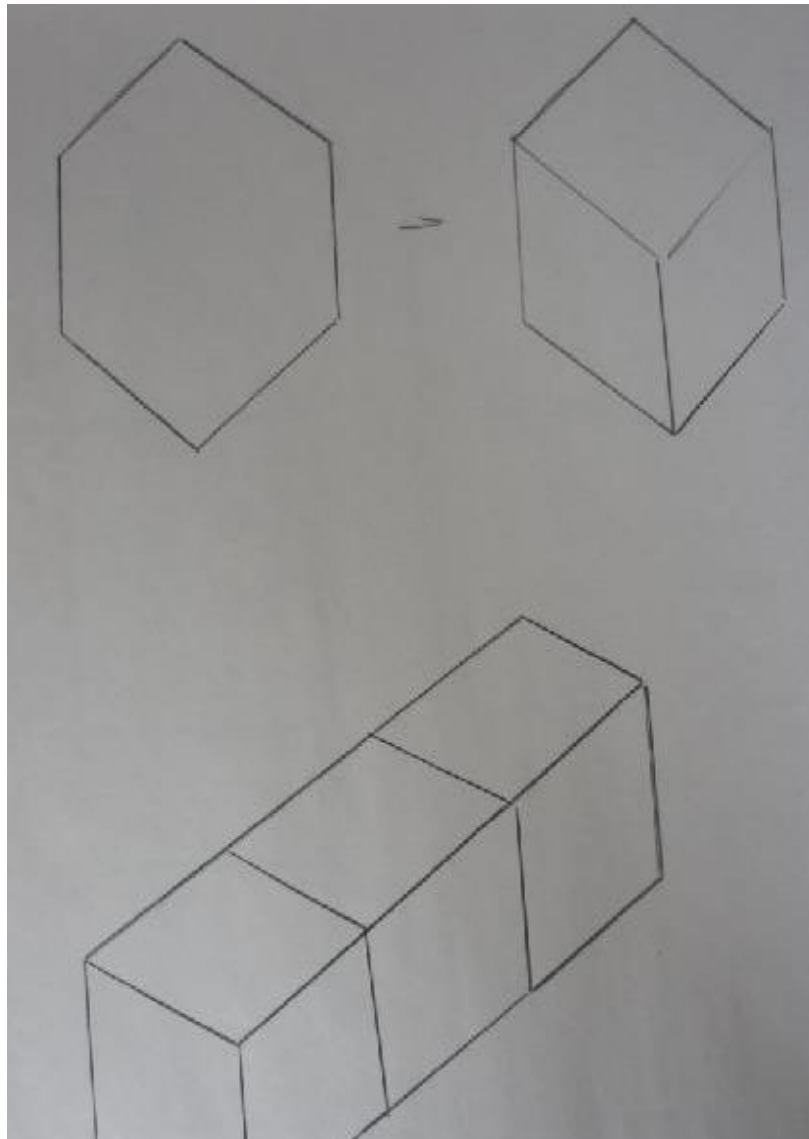
In artwork we progress from being good imitators as a stepping stone to becoming creative.

Seeing and playing with lines and color give us insight into creating what we see. We look and make choices as to what is beautiful. Learning comes from moving and reflection on our actions. In the act of looking at something; a drawing or a budget, the patterns start to talk to you. It is hard to cut out the steps in a routine because the routine becomes an algorithm for our thinking.

Robotist Hans Moravec wrote, “It is comparatively easy to make computers exhibit adult level performance on intelligence tests or playing checkers, and difficult or impossible to give them the skills of a one-year old when it comes to perception and mobility.”

When we learn to see, we do not merely see things to identify them but we learn to see objects as they actually appear. One of the problems we learn to overcome is too quick a closure and premature, preprogramed conclusions. Our world evolves when we see the proportions, the angles, the values, and the real play of light and color. That is a much harder kind of seeing.

It requires looking analytically and abstractly. Trying to see is learning to look and knowing what to look for. Here is the paradox: to see things in proportion and with the real play of light we must learn to see abstractly. Abstract means to draw away; to see in intrinsic form the essential nature of an object.

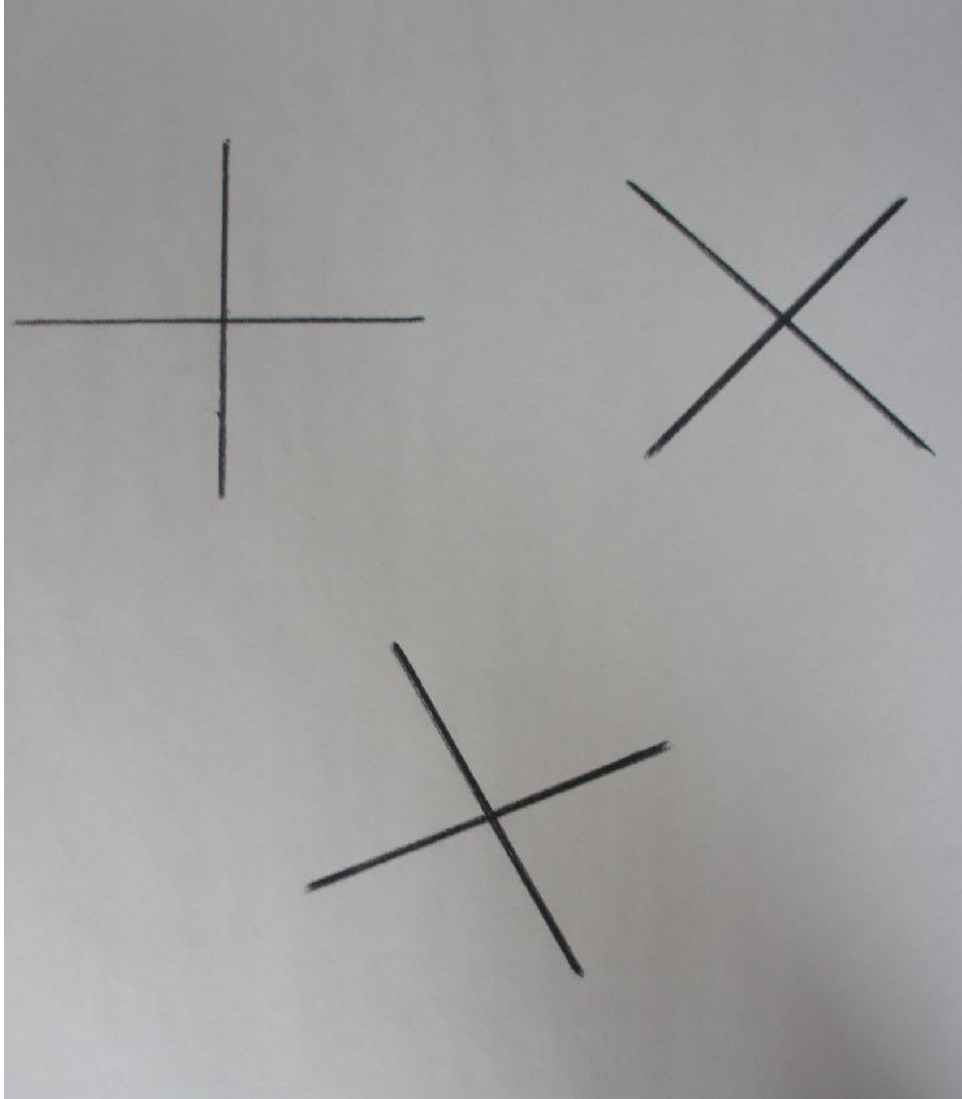


In vision therapy my favorite procedure is the tachistoscopic activity to teach form by having patients reproduce shapes projected onto a chalkboard. Simple lines create shape, and shape creates pattern. Shapes can be arranged

to create the illusion of three-dimensional volume.

A form such as a hexagon is a flat shape. It can be transformed into a solid by introducing three interior lines. We have started with a form or contour, added lines that can be seen as something in front and something seen as behind. This creates a three-dimensional cube.

When we teach form we teach direction. Instructions are given to “start here; and look to where you are going.” Not all directions attract the same attention. All else being equal, horizontal lines are sleepy; vertical lines are a bit more energetic and diagonal lines rock.



Diagonals are dynamic. I stress this when I do eye movement activities such as rotations and fixations. Consider what diagonals can do. Movement is a given. With the mastery of diagonal orientation our patients acquire the main device for distinguishing action from rest.

Consider a landscape of windmills. Windmills stand still if their arms are painted in a horizontal-vertical position. The arms show a little more dynamic when they are symmetrically oriented diagonals. When windmills are in an asymmetrical unbalanced position there is a stronger movement. Tension created by diagonals is a principal impulse toward depth. Doctor

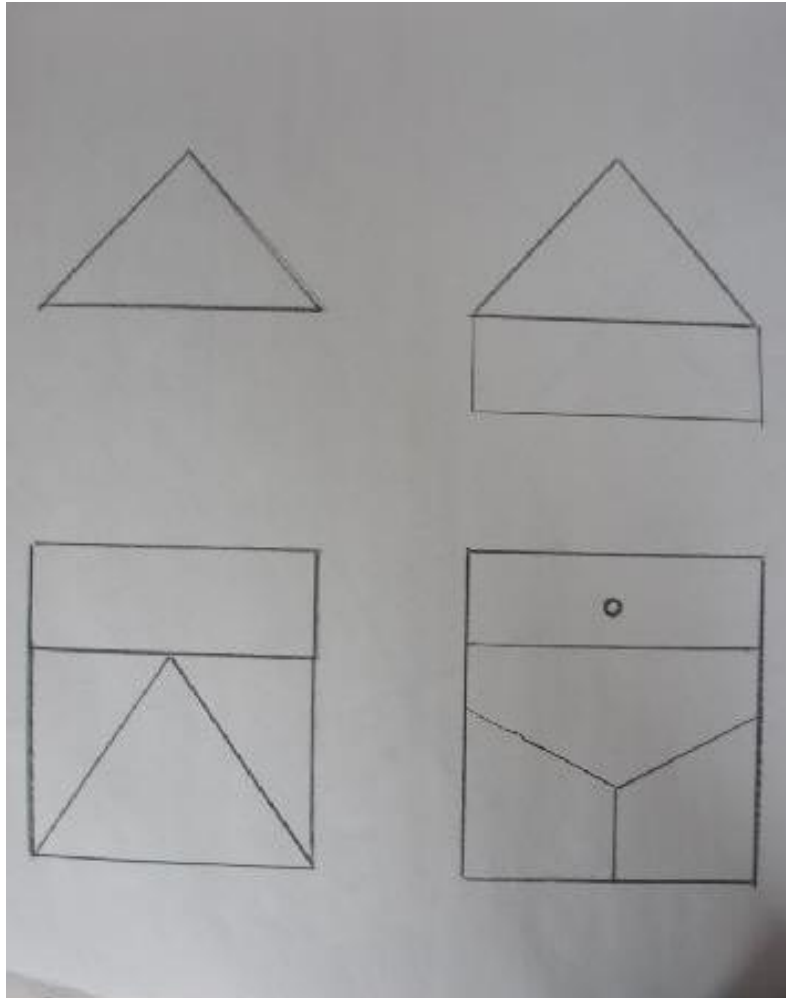
Kitchener adds that “Diagonals represent a balance or resolution of the tension between two basic directional field forces — gravity and the horizon.”



We stress this in vision therapy through form and pursuit movement activities. The dowel procedure that utilizes dissociation prisms reinforces the idea by letting the patient play with dowels and manipulate the images they see. The way the procedure develops some diagonals define the edge of the stick and simultaneously create an awareness of a progression into space. Manipulating the

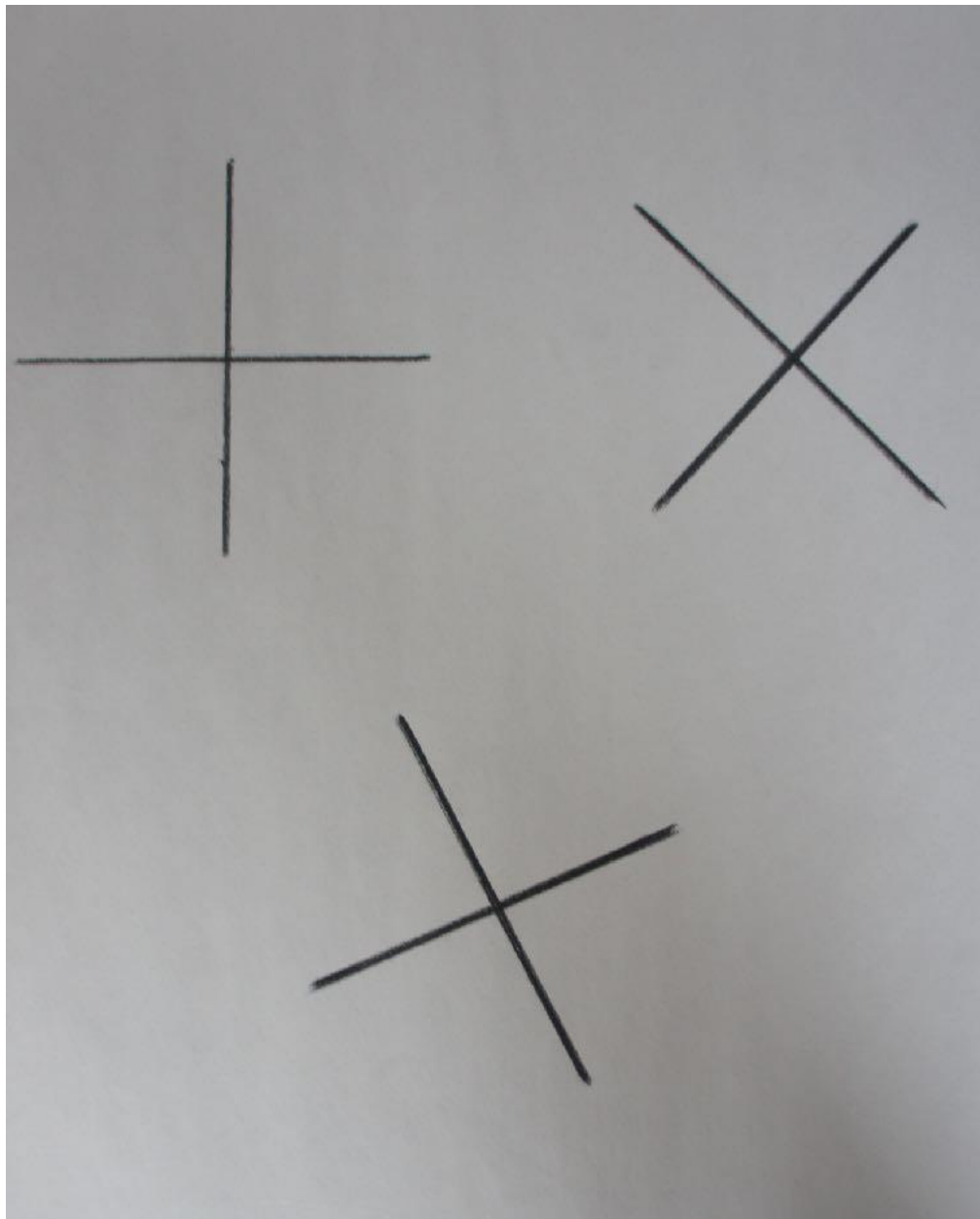


dowels encourages balance in the visual system.



In the progression of teaching form, we see a triangle can be a simple triangle, or the same triangle can be seen as the top plane of a prism receding in space, or how about a road receding back to the horizon. Let's add

those diagonals in a different orientation and create a closeup of a swimmer in a bathing suit. Or is it an olive being dropped into a martini glass?



A last example can be seen in the drawing of a flame. Here you get expansion and contraction. The motion is a curving and a twisting. The change of direction gives a form that is exciting and hypnotic at the same time.

There is a principle of threes to create depth in a drawing. Chiaroscuro means light to dark.

When a light area of a drawing progresses to a grey and then a dark area, depth is created.



Rudolf Arnheim in his work, *Art and Visual Perception*, states that the expression conveyed by any visual form is only as clear-cut as the perceptual features that carry it.







A clearly curved line expresses its swing or gentleness with corresponding clarity ... An artist may paint a



picture in which a ferocious tiger is easily recognizable; but unless there is ferocity in the colors and lines, the tiger will look taxidermic, and there can be ferocity in the colors and lines only if the pertinent perceptual qualities are brought out with precision.

Precision of form is needed to communicate the visual characteristics of an object.

Creativity,

curiosity, beauty and joy make us truly human.







