

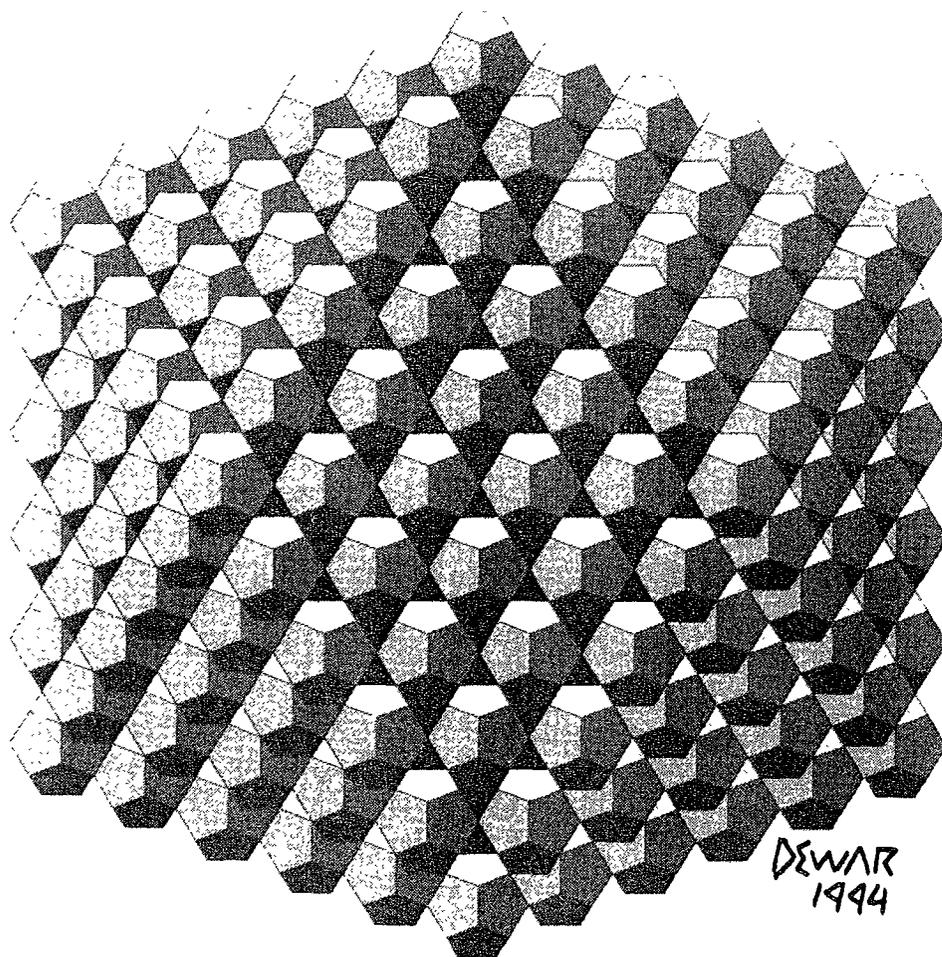
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AMBIGRAMS: GRAPHIC SYMMETRY IN LANGUAGE AND ART, SCIENCE AND NATURE

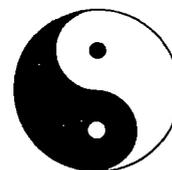
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It may have begun with an emotional need for balance or a belief in an ordered universe, but it became a love of symmetry. When I was a child, that love was expressed through my interest in mineral crystals. But in college, it began to take shape graphically. From the moment I first saw the yin/yang symbol I was hooked on its simple, graceful expression of all the complementary opposites that drive the workings of the physical world. At the time there was a TV show that began with the words "Man, woman, birth, death, infinity." The yin/yang symbol clearly expressed those words. It must, I reasoned, contain much, much, more.



Soon, I discovered the work of M.C. Escher. It seemed to me that Escher had taken the spirit of yin and yang, both graphically — the birds and fish fitting together as neatly as yin and yang do — and conceptually as well, depicting symmetries and polarities like night and day, devils and angels, and more. Escher explored reflection, inversion, and tried to capture infinity. He portrayed the same object from different points of view simultaneously. In a different way, the cubists had tried to do the same thing.

I was developing as a young artist but English was my major course of study, and I was simultaneously nurturing my fascination with words. Eventually, I would try to do with words what Escher had done with birds and fish. But first, I needed to find synthesis for my graphic and verbal directions.

In the late sixties psychedelic poster art appeared. The message and the medium were swirled together. The words didn't accompany the picture; they had become the picture. The factors that made psychedelic lettering hard to read are obvious: undulating baselines, varying sizes, vibrant colors and most challenging of all

(like many of Escher's subjects),
makes psychedelic lettering easy
voluntary adoption of a different
perceive positive as negative and vice-versa — a willingness to go with the flow.



a figure/ground reversal. What
to read, however, is simply the
point of view. A willingness to

In retrospect, it is easy to see that a pattern was emerging. If there was ambiguity in it, I liked it and I began to deal with ambiguity in my own work. I tried to be a cubist. I also loved surrealism and Dalí's ambiguous images, and I tried to create some similar pictorial ambiguities. I addressed all my letters to my fiancée with psychedelic lettering. But the final influence was yet to come.

My career in advertising design began in the typesetting business. I worked in photo-lettering and learned a great deal about typefaces and optical letterspacing. Careful attention to the negative spaces between letters was critical in setting headlines. Good setting resulted from an even, consistent relationship between positive and negative shapes, the figure and the ground, the yin and yang of typography.

While working at the type shop, I discovered the work of Herb Lubalin. Lubalin was an advertising art director, known internationally for his ability to make type communicate on a visual as well as a verbal level. He is best known for his typeface, AVANT GARDE, in which letters were designed to perform in previously unheard-of ways. Inspired by all these artists, I experimented constantly.

**AVANT
GARDE**

As time passed, these influences blended and became aspects of my own expression. I took the philosophical and scientific symbolism of the yin/yang symbol, the tendency toward visual ambiguity from Dalí, Escher, and the psychedelic poster artists, and Lubalin's idea that verbal ideas could be expressed visually.

The result, twenty years later,
Douglas Hofstadter has termed
term implies, are words that,

Wordplay

is wordplay, my book of what
"ambigrams." Ambigrams, as the
because of their perfect symmetry,

can be read from more than one point of view. The ambigrams accompanying this paper demonstrate rotational symmetry. They look and read the same when inverted, or rotated 180°. There are other kinds of ambigrams reflecting other types of symmetry.

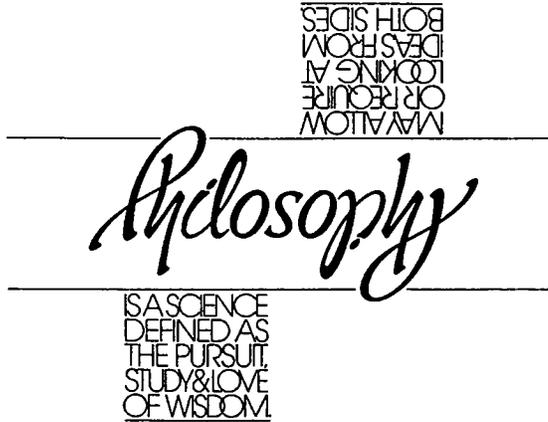
When I began creating ambigrams, I thought that I had discovered something unique — something new under the sun — but that was far from true. A brief perusal of the history of the alphabet and the development of typography shows that letters and words have been turning cartwheels throughout the millenia, and that artists have always explored the forces that ebb and flow in the workings of the cosmos, the earth, and in the lives of human beings.

At first, ambigrams seemed to depend heavily on coincidental positioning of inherently symmetrical letters. I discovered two logos in the early seventies that had perfect rotational symmetry. The symmetry of the VISTA logo was achieved by eliminating a stroke from the A and adding an extra stroke to the I. The NEW MAN logo was created simply by the judicious mixing of capital and lower case letter forms. My first ambigrams, HEAVEN, HELL, and GOD were based on similar fairly simple manipulations.

In my enthusiasm for this newfound ability, I tried to create an ambigram from every word I could think of. Naturally, most of them did not cooperate. But in the attempts, I discovered that some could be made to work with a bit more encouragement and manipulation. Psychedelic posters had convinced me that the letters of our alphabet could sustain a great deal of reshaping, as long as certain basic principles were followed.

My time spent working in the type shop had acquainted me with these principles: where the variations in weight should fall in each letter to make it recognizable; what detailed aspects of each letter were critical to its readability, and which could be eliminated; how many differing forms of each letter could be recognized and how to mix them together to achieve a harmonious whole. It was critical that I master these factors, for established typefaces would not do what I needed letters to do.

Soon, I was juxtaposing two letters to form another one when inverted, but as I got better at drawing letters and words, the less I was content to design peoples names and random nouns. Given their ultimate inspiration, the yin/yang symbol, it seemed that there was more value to ambigrams than light personal amusement. The words themselves needed more symmetry. I went back to Taoist philosophy.



Ambigrams reached an organic maturity when I began choosing words that had some inherent symmetry or ambiguity in their meaning. The words I found to meet those criteria describe the major forces at work in the universe — the principles of western science. Taoism, it seems to me, must have developed in much the same way as western science did: through the observation of nature. A number of the principles common to both have become familiar in everyday conversation: “For every action, there is an equal and opposite reaction,” “Opposites attract,” “What goes up, must come down,” and of course, “What goes around, comes around.” If any of these were a corporate slogan, the company logo could certainly be the yin/yang symbol.



Western science uses other graphic representations of these ideas: the normal bell curve, the sine curve, the helix and the infinity symbol. Each of these represents, as yin/yang does, a symmetrical relationship between parts, factors or forces. It was the graphic yin/yang symbol and the ambiguities of a number 20th century artists that provided me with the bridge to the symmetries in nature; the symmetries in nature inspired me to create my own art — ambigrams — to communicate with others. With the symmetries of ambigrams, I hope to create more bridges between philosophy, science, art and nature.