

Shape Concept: Color Percept . . . Graphics, Geometry, and Gestalt

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Abstract—Traditionally, rhetoricians encoded language; designers recognized the significant syntactic and semantic constructs in the rhetorical elements and added typographic codes. In so doing, designers extracted from language a meaning structure and arranged it spatially as an ideogram—a word construct—within which there were reticulations or networks. Use of these traditional procedures is even more relevant in the new media as codification of language is an integral part of the design of electronically published documents and electronic interfaces. This paper addresses the relation of shape and color, which are two of the parts of a composition, and also their relation to the comprehension of written language.

A composition is seen as a gestalt which has shape and color within a geometric construct: this affects comprehension and meaning. Therefore, what is seen can be modified by changes in shape and color within a geometric construct: this modifies comprehension and meaning.

One may appropriately distinguish between an active attitude to visual stimuli, which is prevalent in the conception of shape, but applies also to color, and a receptive attitude, which is encouraged by the perception of color, but applies also to shape. It is probably the expressive qualities, primarily of shape but also of color, that engage the actively organizing mind; the allusive qualities, primarily of color but also of shape, that spontaneously affect the passively receiving mind. Generally, it seems that composition is less comprehensible if its geometric construct is not based on both conceptual and perceptual values.

. . . in all the visual arts [typography and graphic representation] . . . design is essential, for design serves as the foundation of taste only by the pleasures deriving from shape, not by the entertainment of sensation.

The colors, which illuminate the pattern of outlines, belong to the stimulation. They may animate the sensation of the object but cannot make it worthy of contemplation [comprehension] . . .
Kant, Critique of Judgment

INTRODUCTION

RHETORIC, in its written form, does not completely communicate because it is not a direct avenue for sensory contact with reality; it serves only to code what is seen, heard, or thought. Consequently, in order to achieve total comprehension, readers concentrate upon the constituent material elements of a document, nonlinguistic elements, that relate to the semantics of words. An understanding of these reading processes is of prime importance in modern document design, particularly in view of the recent and dynamic changes in composition procedures, rhetoric and design interdependence, and computerized imagesetting devices. The recent changes have been brought about, predominantly, through the use of new electronic publishing techniques, and

further change will be caused by the increasing use of interactive and broadcast media.

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CONCEPT OR PERCEPT?

Gestalt refers to a body of scientific principles that were derived mainly from experiments in sensory perception [1]. These principles have been adopted as a basis for most modern typographic and graphic design. Gestalt studies make it clear that a composition has its own characteristics that demand comprehension by a mind able to grasp complex constructs as a whole [6]. These characteristics emphasize that sensory data entering the eye are irretrievably transformed in the mind by their contextual relation to memory [4].

The term "source" (see Chart 2 below) defines two types of word organization: expressive, a concept—a verbal construct; and allusive, a percept—a visual construct. Fig. 2 shows the transformation of an expressive letterform (concept) into an allusive icon (percept). It also shows the constant and variable factors of form and the interrelationship between syntactics and semantics. The third graphic shows literal/metaphoric incongruity, although it is phonetically correct, in that the design is not multilingual and is based only upon a single language—German.

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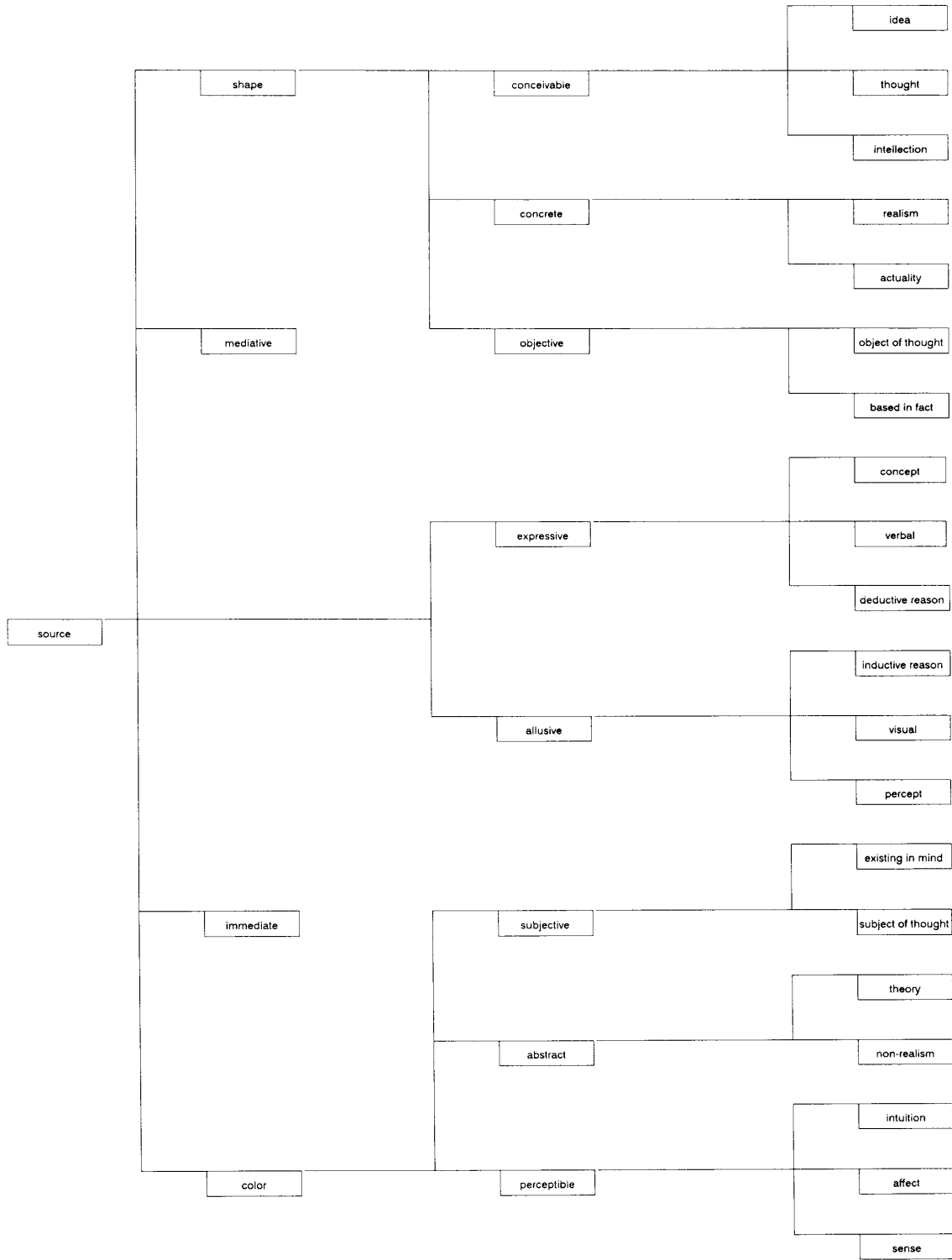
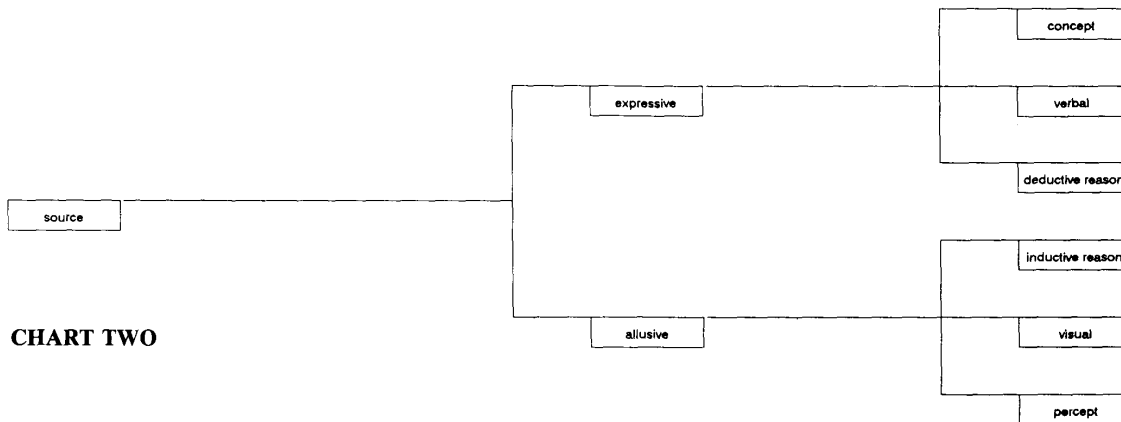


CHART ONE



Unfortunately, the terms concept and percept are often interchanged; thus, the following definitions may be more explicit. Concept relates to ideas, thought, and intellection: the activities of reason. It is objective and concrete. Percept relates to sensation, feeling, and intuition: the activities of the senses. It is subjective and abstract. Therefore, it is self-evident that there are two different perceptual inferences being derived from a single stimulus: a concept and a percept. Both of these inferences occur within the visual sector of the nervous system, and, paradoxically, because the same mechanisms apparently operate on both the conceptual and perceptual levels, there seems to be a resemblance between the elementary activities of reasoning and sensation. Wittgenstein describes a similar phenomenon as not being two different interpretations applying to one percept, but two percepts; although, since Hegel, the terms concept and percept have been synonymically and respectively interpreted as what is mediative (thought through) and what is immediate (directly intuited).

GEOMETRIC CONSTRUCTS

A geometric construct is a complex image or idea formed from a number of simpler images or ideas—a gestalt. The principal thought in the designer's mind is not that of a composition, but rather of a geometric construct—a configuration of visual forces that determines the character and meaning of the composition. Vision deals with the raw material of experience by creating a corresponding pattern of

general forms, which are applicable to an indeterminate number of images—it does not record with the impartiality of a camera.

A few outstanding features determine the identity of a composition and make it appear as a complete, integrated construct. These features apply not only to the composition as a whole, but also to a focus on any particular part. There is good evidence that conception starts with a grasping of structural features. The conceptual system creates explicit configurations of components, and these predispose the mind to interpret images in a particular way. If these configurations are not explicitly created, then they may be less comprehensible. Stimulus patterns are a later part of the process, alerting the brain to a specific sensory pattern.

Visual experience is dynamic. What a person sees is not only an arrangement of shapes and colors, it is also an interplay of directed tensions. These tensions are not something the observer adds to static images; rather, they are inherent in the construct and can be described as psychological forces because they have magnitude and direction. Phenomena of this kind find their explanation in what gestalt psychologists describe as the basic law of visual perception: any stimulus pattern tends to be seen in such a way that the resulting structure is as simple as the given conditions permit [1].

SHAPE CONCEPT

Shape concept issues from an organizing mind that comprehends the object (see Chart 3 below). It requires intellection: the mind scans the object, establishes its constituent parts, and relates them to the geometric construct. Shape is also the result of an interplay between the composition, the medium of light acting as the transmitter of information, and the conditions prevailing in the nervous system of the viewer—an eminently active function. However, the shape of the composition does not depend only on its retinal projection at a given moment. The image is also determined by the totality of previous visual experiences with similar shapes, as in graphic representations known as rebuses.

Rebuses are visual, phonemic representations of words or

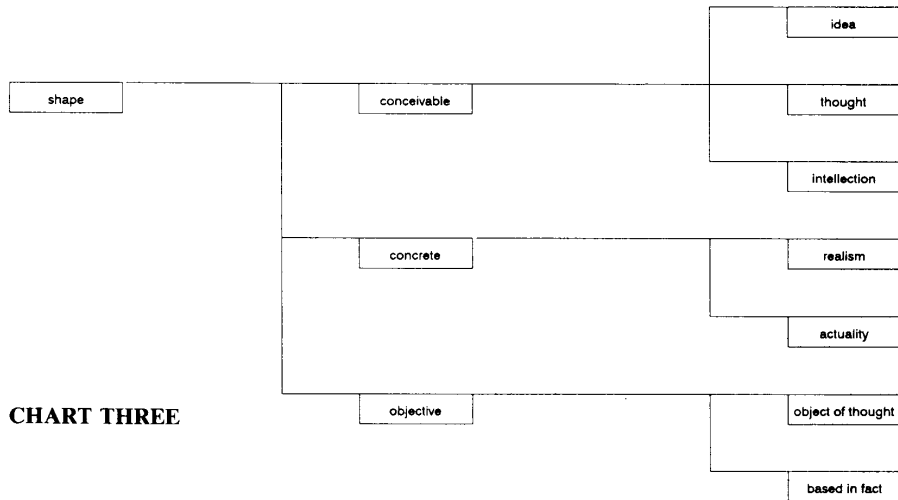


CHART THREE

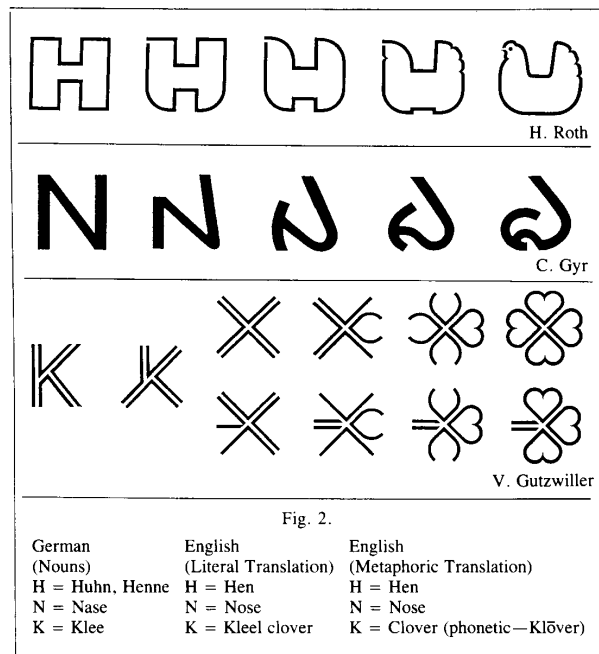


Fig. 2.
 German (Nouns) English (Literal Translation) English (Metaphoric Translation)
 H = Huhn, Henne H = Hen H = Hen
 N = Nase N = Nose N = Nose
 K = Klee K = Kleel clover K = Clover (phonetic—Klöver)

phrases in symbolic, graphic form. The three graphics shown in Fig. 3 are rebuses representing compound nouns—verbal communication illustrated visually. Verbal concepts interpreted in symbolic form produce a semantic and phonemic relationship between the thing denoted and the graphic. Symbolic forms discovered through rebus associations are frequently used in logotype design; however, in an increasingly multilingual society, it is precarious to design rebuses within the parameters of a single language. In such cases the meaning symbolized may be incomprehensible to those who only understand other languages.

Shape cannot be inferred from actual shape. Different

shapes have distinctly different visual characteristics derived from the construct axes their shape creates. The construct axes of each shape obtain from its contours through the law of simplicity: the resulting construct is the simplest structure obtainable with the given shape. The spatial features that represent shape are largely determined by outlines. These outlines cannot be said to be the actual shape. A pair of construct axes, although not coincident with the actual physical outlines, determines the actual character and identity of the shape. It is therefore imperative that designers simultaneously consider both outline and construct axes in order to achieve balance (see Fig. 4) [1].

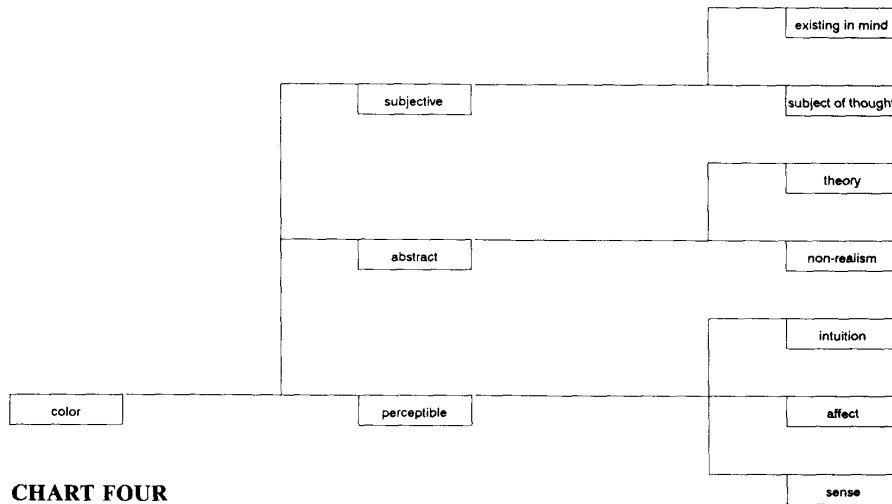


CHART FOUR

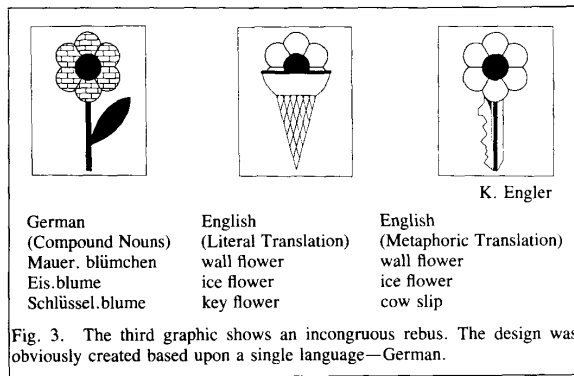


Fig. 3. The third graphic shows an incongruous rebus. The design was obviously created based upon a single language—German.

COLOR PERCEPT

Color percept issues from the object and affects the person. It is an emotion which requires intuition on the part of the viewer, and it is not the product of an actively organizing mind (see Chart 4 above). Although psychological studies of color are inconclusive, empirical studies do show that color influences mood and feeling, which arise in the process of vision and also in that less tangible entity, the mind. Conventional psychology dismisses any supposed ability of color to influence comprehension directly, on the basis that color is associated with affect (the psychoanalytical term for desires and impulses) an emotional, as opposed to an intellectual, aspect of the psyche [4].

The identity of a color does not reside in the color itself but in contrast established by relation. This contrast makes every color dependent on the support of all its contiguous colors and is subjectively created by the eye. A configuration of colors will strive either toward contrast, or toward assimilation, depending on which is closer to the stimulus. Consideration of the assimilation countereffect is imperative because of the inherent antagonism of the two perceptual mechanisms [1].

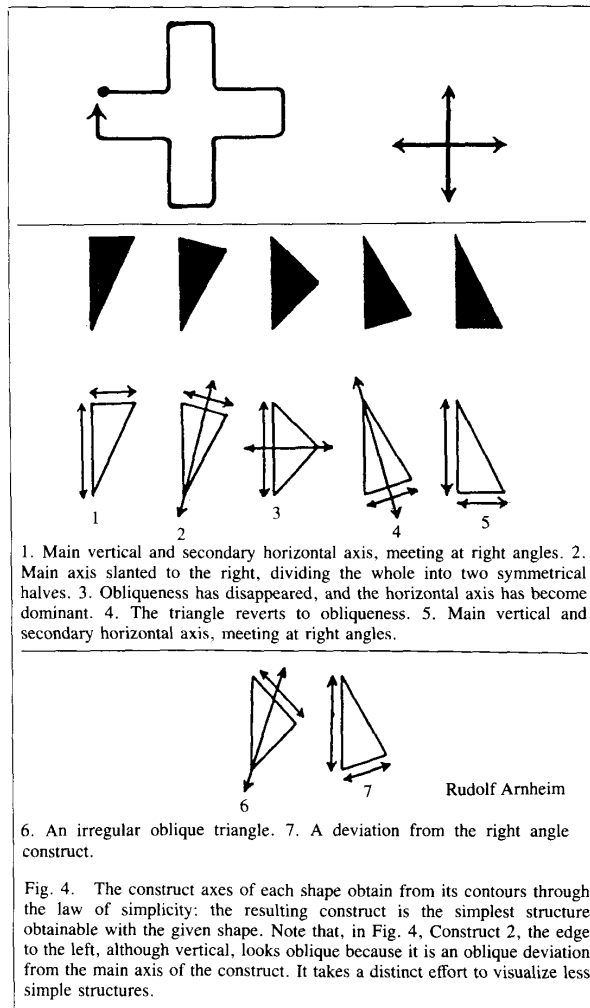


Fig. 4. The construct axes of each shape obtain from its contours through the law of simplicity: the resulting construct is the simplest structure obtainable with the given shape. Note that, in Fig. 4, Construct 2, the edge to the left, although vertical, looks oblique because it is an oblique deviation from the main axis of the construct. It takes a distinct effort to visualize less simple structures.

CONCLUSION

A composition is seen as a gestalt which has shape and color within a geometric construct, which affects comprehension and meaning. Therefore, what is seen can be modified by changes in shape and color within a geometric construct: this modifies comprehension and meaning.

Compositions make rhetorical statements that designers must comprehend as a whole before they can identify any single element. Designers look for a theme, a key to which everything relates—a thesis. Safely guided by the structure of the whole, they then try to recognize the principal features and explore their control of dependent details. Two of these dependent details are represented by shape and color. Shape concept issues from an organizing mind that comprehends the object. It requires intellection: the mind scans the object, establishes its constituent parts, and relates them to the geometric construct. Color percept issues from the object and affects the person. It is an emotion and requires intuition. The mind, searching for an orderly concept of reality, proceeds logically to trace from simple through complex geometric constructs. It acts upon impulses, applies principles, coordinates a variety of experiences, and decides on a course of action.

One may appropriately distinguish between an active attitude to visual stimuli, which is prevalent in the conception of shape, but applies also to color, and a receptive attitude, which is encouraged by the perception of color, but applies also to shape. It is probably the expressive qualities, primarily of shape but also of color, that engage the actively organizing mind, while the allusive qualities, primarily of color but also of shape, spontaneously affect the passively receiving mind. Generally, it seems that composition is less comprehensible if its geometric construct is not based on both conceptual and perceptual values.

The ability of the visual system to correctly conceive shape

and perceive color pinpoints the fundamental difference between psychologists of different schools of thought. Structural psychologists hold that a given excitatory event leads to an invariant sensory response, regardless of the surrounding conditions. Gestalt psychologists emphasize that sensory data entering the eye are irretrievably transformed by their context and their relation to memory [4]. If physiologists and biochemists describe the eye and the visual cortex as the tools and instruments for the process of vision, and psychologists describe the interpretation of what is seen, then there may be an intermediate stage between physiology and psychology where the composition is reconstructed by the mind. Is this intermediate stage comprehension, the mind's apprehension of the outside world?

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