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Gestalt and Art

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THERE are styles in science just as in art. The gestalt theory is such a new style of science. It came about, negatively, as a protest against what is now called the atomistic approach: the method of explaining things by adding up local effects, qualities, and functions of isolated elements. It came about, positively, as the scientific expression of a new wave of *naturphilosophie* and romanticism in Germany, which revived in a strongly emotional way the feeling of the wonderful secrets of the organism, the creative powers of natural forces as opposed to the detrimental effects of a rationalism which praised the emancipation of the brain from vitality and from the elementary tasks of life as the highest achievement of culture. Gestalt theory has a kinship to certain poets and thinkers of the past, the nearest in time being Goethe.

Gestalt theory, created mainly by three men, Max Wertheimer, Wolfgang Köhler, and Kurt Koffka, uses as its method in psychology, physics, biology, sociology, etc., the description of the structural features, the whole-qualities of "systems", i.e., of those natural things or happenings in which the character and function of any part is determined by the total situation. The method, however, must be understood as deriving from a more basic attitude which respects the simple, strong, and spontaneous reactions of children, primitive people, and animals, as something which, on any level of mental and cultural development, the human being should preserve; an attitude which refuses to reserve the capacity of synthesis to the higher faculties of the human mind, but emphasizes the formative powers and, if I may say so, the "intelligence" of the peripheral sensory processes, vision, hearing, touch, etc., which had been reduced by traditional theory to the task of carrying the bricks of experience to the architect in the inner sanctuary of mind. From this attitude results a strong sympathy with, and an intimate understanding of, the artist. For through his eyes and ears, the artist directly grasps the full meaning of nature's creations, and, by organizing sensory facts according to the laws of "prägnanz", unity, segregation, and balance, he reveals harmony and order, or stigmatizes discord and disorder. It is not accidental that a product of art, a melody, was used as

the first example of a whole, whose structure can be explained neither by the qualities of its single elements, nor by the relations between these elements. Moreover, whoever has made experiments with the gestalt method knows that, in order to create conditions which will bring about certain crucial effects, a sensitivity akin to the artist's must operate with respect to the conditions under which the structural features of, say, visual figures come out clearly, are maintained or changed. One has to "see" the phenomenon long before one can formulate it scientifically. Whether it is true of science in general or not, the productive gestalt scientist has to be something of an artist. And "blindness" (as opposed to such insight) is one of the favorite terms of the gestalt vocabulary.

Let me now discuss an example of the application of gestalt theory to the psychology of art. It seems that, with a more adequate approach to the psychology of perception, it is possible to deal more successfully with an intricate, but basic problem of artistic representation. If we assume, as it used to be, that perception is based on a sum of sensations produced by the millions of punctiform receptors in the retinae of the eyes, a puzzling paradox arises. It would then be logical to expect that, the more elementary the psychological level of a human being, the more closely his drawings ought to stick to what would correspond psychologically to the image projected on the retinae by the eye-lenses; and, on the other hand, only from people more developed mentally would one expect elaboration and transformation. On the contrary, we find in fact that children and primitives tend to draw in simple patterns; realism appears only as the late product of a long cultural evolution. The fact cannot be explained by manual inability, because even though a child is unable to trace a perfect circle, we can show that he meant to draw a circle. The child's drawing is essentially different from what we would get, if we asked a skilled draftsman to draw a realistic picture of a nude not with his hand, but with his foot. The current theory is that a child "draws what he knows rather than what he sees". This theory implies the paradox that the more undeveloped creatures elaborate their sensations through higher mental processes. Furthermore, any attempt to explain the origin of such "knowledge" faces again the problems which the theory was meant to solve: how can the simple shapes of children's drawings be derived from the complex and everchanging pattern of a human head or body as projected on the retinae? By abstraction? If we remember that in logic abstraction is defined as the setting aside of some elements of particular phenomena, and retaining others, we realize that no elimination of parts can ever lead from the "projective picture" to those simple shapes.

A more adequate approach is possible if we understand that the content of perception is not identical with the sum of qualities corresponding to the projective picture. Rather it seems that productive perception—in the sense of an activity which allows to understand, identify, remember, and recognize things—is a grasping of basic structural features, which characterize things and distinguish them from others. There is a tendency in the organism to produce simple shapes wherever circumstances allow it to do so. Optical experiments have shown that when the influence of external stimuli is subdued, for instance by reducing the size of the stimulus, the intensity of lighting, or the time of exposure, the subjects report that they see things of a more simple, more regular, sometimes more symmetrical shape than those really exposed to them. But even when the precision of the stimulus does not permit such manifest modification perception consists in organizing the sensory material under the patterns of simple, "good" gestalten.

The artist may think here of the saying attributed to Cézanne, that nature can be seen as cubes, spheres, cones, etc. The philosopher may be reminded of Kant's epistemological "categories". With respect to Kant there is, however, one important difference. Gestalt theory does not hold that the senses carry amorphous material on which order is imposed by a receiving mind. It emphasizes instead that "good shape" is a quality of nature in general, inorganic as well as organic, and that the processes of organization active in perception somehow do justice to the organization outside in the physical world. Wolfgang Köhler, in his early book on the physical gestalten—which he calls "eine naturphilosophische untersuchung"—has shown that a tendency toward the production of simple forms can be observed in many physical systems or fields, because the interacting forces do their best to create a state of balance. A case in which balance leads to complete symmetry is observed when a drop of oil falls into a glass of water. Mechanical forces become active, pushing and pulling, until the oil is collected in a circular shape in the middle of the water surface. They will do so not because of a longing for beauty, but because only under these conditions will all the forces involved balance each other in such a way that a state of rest is obtained. Similar processes are likely to occur in the physiological field of vision when stimuli interfere with its balance. Areas stimulated by light of different amplitude and wave length are adjusted, as to their shape, contours, color, etc., to the most stable organization possible under the given circumstances.

The discovery of this elementary relationship between perception and balance should be welcome to the theory of art. Balance was generally consid-

ered as something added by the artist to the image of the objects. Why he does so was not quite clear. Balance arouses pleasure, but justifying balance only as a source of pleasure seemed somewhat distasteful and humiliating to many. By describing the tendency towards balance as a basic effort of the organism to assimilate stimuli to its own organization and by showing that balance is, quite in general, a state sought for by physical forces wherever they interact in a field, the artist's striving for balance is revealed as just one aspect of a universal tendency in nature. From this point of view, pleasure appears as a psychological correlate of balance, not as its cause.

The extreme case of the oil drop should not induce us to think of balance only in connection with closed systems at rest. One would have a hard time to find in art corresponding cases of total symmetry, which would express a state of complete inactivity. Without activity there is no life and therefore no art. What I mean by balance based on activity will become clearer if I use as an example the human body which is at balance with its surroundings as to temperature when the amount of heat constantly drained off from the body by the colder environment just equals the constant surplus of heat production in the body. More than simply an analogy is intended when we assert that something similar happens, for instance, in a painting where the eccentric position and irregular shape of masses express the dynamical situation of the subject represented as well as of the artist's soul, but are distributed in such a way that the active masses balance each other.

This leads me to a second topic, which seems to promise a particularly fruitful application of gestalt principles. The theory of expression, in its traditional form, does not seem to do justice to what happens when we look at or listen to a work of art. If expression were nothing but an empirical connection between what we see, say, in a person's face and what we know about our own state of mind at the time when our own face displays a similar pattern, then no inner kinship would exist between the two correlated features; i.e., physical pattern and psychological state. The relationship between a doleful face and a sad mood is then at best explained as a causal relationship. Wertheimer has drawn attention to the fact that neither past experience nor logical conclusions are necessary for an understanding of the elementary features of expression. Their meaning is perceived as least as directly and spontaneously as the shape and color of an object, by means of what has been termed the "tertiary qualities" of sensory phenomena. Kindliness or aggression, straightshooting determination or hesitation, are expressed in the curves of the physical movements (or traces of movements) which accompany such

mental attitudes. A geometry of expressive features is anticipated which would describe their characteristics with as much scientific precision as our present geometry is able to describe the difference between a straight line and a circular curve. The underlying idea is that the dynamical characteristics of, say, timidity are identical whether we trace, e.g., as to time and direction, the walking curve of the timid man who approaches the private office of his boss or whether we translate into a graph the succession of his psychological impulses, inhibitive and propulsive, with respect to his aim. This theory of isomorphism (identity of form) between psychological and physical processes scientifically corroborates the common observation that we call the movements of a dancer mournful not because we have often seen sad persons behave in a similar manner but because the dynamical features of mourning are physically present in these movements and can be directly perceived. Therefore the theory of expression in art must not necessarily start from the attitudes of the human body and explain the flaming excitement of Van Gough's trees or El Greco's clouds through some sort of anthropomorphic projection, but should rather proceed from the expressive qualities of curves and shapes and show how by representing any subject-matter through such curves and shapes expression is conveyed to human bodies, trees, clouds, buildings, vessels, or whatever other things. What science is trying here to assert and to prove against the opposition of well-established traditional theories may sound familiar to many a good painter or sculptor who does his job with some consciousness. This, however, as far as I see, does not tell against gestalt theory, but in favor of it.