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# EUDOLF ARNHEIM

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## BIOGRAPHY

Arnheim (Charlottenburg 1904 - Ann Arbor 2007) graduated (in 1923) and earned his Doctorate (in 1928) at the Psychological Institute of the University of Berlin. Engaged in the lively cultural debate of the Weimer Republic, he wrote for newspapers and magazines, mainly for *Die Weltbühne* as art and film editor. The anti-Jewish laws forced him to flee and move to Rome in 1933. He contributed to the journal *Cinema* and other journals associated to the International Educational Cinematographic Institute and the Centro Sperimentale di Cinematografia. The Italian Racial Laws made him move to London in 1938, and the war to the U.S. in 1940.

He settled in New York, where he worked as a lecturer. In 1968 Harvard University appointed him professor of Psychology of Arts. He served as president of the American Society for Aesthetics and the Division of Psychology and the Arts of the American Psychological Association. After his retirement in 1974, he lectured at the University of Michigan. In 2000 he was awarded the FilmCritica Umberto Barbaro prize.

## SUMMARY OF ARNHEIM'S AESTHETICS PERSPECTIVE

Arnheim holds that art is valuable, because the production and the enjoyment of its objects require a kind of reasoning in which perception and thinking are intertwined. This view is grounded in his interpretation of Gestalt psychology. Findings from the Gestaltist research on perception showed that it carves the stimulation into organized units, whose parts depend on one another and all together on the whole. The Gestaltist research on problem-solving suggested that animal and human subjects rearrange the terms of a problem until new relations pop out, on whose grounds the solution is grasped. In contrast with trial and error procedures, this strategy was dubbed "productive thinking" (Köhler 1917, Wertheimer 1959).

Arnheim (1969) construes these findings as implying that:

1. perception acts through operations usually ascribed to thought (abstracting attributes from a sample pattern and generalizing over many similar instances, extracting constancy through changes, taking the context into account to isolate, integrate and interpolate elements);

2. thought embeds perceptual abilities (shaping images and models to understand facts and concepts, translating observational and theoretical data into visual patterns).

By definition, the connection between perception and thinking can be found in every innovative and creative achievement, from experience to science. Therefore, Arnheim claims that artworks are the most representative case of its implementation.

Artists solve the problem of discovering the organization of perceivable properties for which the correspondence holds between them the intended meanings of their work, under the constraints of the chosen techniques, tools and medium. Beholders need to scrutinize the relations that bind the perceptual parts of an artwork together to understand the meanings, which are specified just at the levels (and within the limits) of its organization (Arnheim 1962).

Since art relies on functions involved in daily experience, its objects consist of adverbial properties and can be used in training to acquire interdisciplinary problem-solving skills (Arnheim 1989).

#### ANALYSIS OF THE MAIN WORKS

In Arnheim's works, theories and experimental evidence of Gestalt psychology provide the foundations of a comprehensive theory of mind, which could account for the capacities involved in understanding the environment and their applications in various fields such as the fine and applied arts, architecture, design, and science. Upon his arrival at the Institute of Psychology in Berlin, where all founders of Gestalt psychology but Wertheimer got their degree, the direction had already been handed over from Carl Stumpf to Wolfgang Köhler. Moreover, in the 20s Gestalt psychology was becoming a fully-fledged school, taking part in German culture and getting international prominence (Ash 1995).

Arnheim's dissertation was supervised by Wertheimer, and in his first work, *Film as Art* (1932), he combined the implications of the research on form constancy, motion perception, and problem-solving with his views as an engaged film critic. Given the characteristics of the medium, films present subjects with patterns that do not meet standard properties of ordinary perception. Forms are foreshortened, and appear in a field limited by the screen, objects at rest appear to move for camera motions, and deformations defy constancy, like when objects are seen to expand instead of preserving size. Yet observers do not fail to understand what they see, rather they appreciate the divergence from the perception of daily experience as conveying meaning.

Accordingly, Arnheim makes a point that will remain throughout his work. The medium imposes specific constraints on employing perceptual properties. This leaves artists free to explore at will the potentialities of the techniques and tools of their art, while compelling them to find the perceivable organization that "transposes reality" to the patterns enabled by the medium, so that beholders can recognize what they

see, and grasp its meaning. For these reasons, Arnheim praised the creative use of montage, while rejecting the introduction of colors and partially admitting sound.

In *Art and Visual Perception* (1974), *Visual Thinking* (1969), and *The Power of the Center* (1988) Arnheim expounds the lexicon, the semantics and the syntax, so to speak, of his theory applied to visual arts.

The lexical units are the perceptual properties of objects and the environment, like shapes and their projective forms, color, light, shadows, motion, along with the grouping rules and the figure/ground structure, and properties of their arrangement like balance. To account for the production and enjoyment of paintings and sculptures, Arnheim brings in the constructs of visual and representational concepts.

1. A visual concept is a feature abstracted from a single instance of something in common experience (such as roundness from a head), that is transferred to the perception of every other sample of the same type. A visual concept stands for a constant, three-dimensional and view-independent quality of objects, and can be even instanced by objects belonging to different classes, as roundness can be for heads, apples or balls (1974: 45, 106-107).

2. A representational concept is the "equivalent" appearance of a visual concept produced through a particular medium, like a circle drawn on paper, a disc-shaped patch painted on a canvas, or a spherical ball made of clay for roundness (1974: 140). Visual arts rely on the abilities required to craft equivalents of perceptual properties under the constraints of medium, techniques and tools, or in general to discover how to transpose perceptual qualities to their equivalents and arrange them given the representational aims of the artist, which encompass the intended meaning and the choices on how to employ the means of the art.

The semantics is given by the capacity to give something a shape through images and to recognize images by functions (1969: 116-151).

Images function as signs if they merely denote something without presenting its features.
Denotation may approach stipulation, but the visual features of signs are not necessarily arbitrary, since they can act as the innate mechanisms releasers (Lorenz 1951).

2. Images function as pictures if they present the relevant features of shape, color and motion of something. Pictures are not replicas, in that their difference from what they represent is not due to imperfections of the process of reproduction. Instead, there are various levels of "abstractness" at which they fulfill their function. A photograph, a 17th-Century Dutch painting or a Mondrian painting each represents a scene at different scales of perceivable details. The choice of the level is due to the interpretation that one intends to give of the scene, hence to the meaning of the picture.

3. Images function as symbols if they stand for something that has higher abstractness than the features images present. The murals made by Lorenzetti in the town hall of Siena represent good and bad governments. Arrows drawn on paper represent vectors. Images may fulfill more than one function at once. This is particularly the case of works of art. Holbein's portrait of Henry VIII is a picture and a symbol of kingship, along with the qualities associated with that role. However, even a picture of a dog may act as a symbol of the concept "dog", but in Holbein's painting the particular organization of forms and colors is

connected strictly to what is symbolized, whereas in taking the picture of a dog as a symbol the beholder's share is of greater importance.

The syntax is given by two frames of reference that rule the organization of perceptual units in the environment and in visual artifacts (1988: IX-9).

1. A concentric system that refers back to the center. The center can be defined in terms of location, but most importantly as the point to which physical forces or perceivable "tensions" are directed: the centre of gravity that makes the space anisotropic, the centre of a shape that makes the color patches over it balanced or not, the centre of interest in the visual field on which visual directions converge as subjects move in it.

2. A Cartesian system that can be developed into a grid by repeating its orthogonal axes. This system hosts forces and tensions too, such as those induced by a patterned floor on the visual field of a subject who walks on it.

Reference frames can be combined together, and there can be more than one center at a time. This multiplies by a huge factor the magnitude and interaction of the forces and tensions that centers exert on perceptual qualities and objects as a function of their position and distance with respect to them. In ordinary experience and art, these forces and tensions point to the relations that subjects need to grasp to understand what they see. Artists take into account the effects ensuing from the choice of a reference frame, when they select the forms, colors, and motions for their work and their arrangement. Beholders are guided by those effects when they appreciate the properties of the work and grasp its meanings.

As far as art is concerned, Arnheim calls "composition" the whole made by the tensions and the perceivable properties that realizes a particular frame of reference in a work of art. The composition includes also boundary conditions specific to a kind of art, such as the edges of the support of paintings, the relation between the volume of a mass and the surrounding space for sculpture, the relation between the facade and the depth of buildings, the spatial relation between the layout plan and the elevation in architecture.

Arnheim's claims derive from the research of Gestalt psychologists on the perception of the so-called "tertiary qualities", which were indeed the subject matter of his dissertation supervised by Wertheimer. Contrary to long-standing traditions in philosophy and psychology, Köhler (1929, 1938), and Koffka (1935) had submitted that the expressive qualities of perceptual objects, events, and manifest behavior (such as the menacing character of a thunder or the irritable disposition of a subject) are located in the strict sense in the perceptual field, rather than merely projected or inferred by the subject. Such qualities are perceived as belonging to the objective side of the field, just as pitch, shape and movements are. All else being equal, subjects agree in perceiving these qualities, because they consist of a concomitant variation of properties that belong to the same perceptual unity. For instance, appearing menacing is a quality of the crescendo of loudness of sounds at a low pitch range with particular timbre features. Likewise, appearing irritated is the quality of a series of discontinuous motions of the parts of the body. Then, the environment in which

objects and behaviors are perceived is the source of the expressive qualities that convey information as important as that conveyed by shape or color.

On this account, Lewin (1935) had worked out a theory of the affordances (*Aufforderungscharakter*) of objects that display properties that meet the "quasi-needs" (purposes, intentions) of subjects in particular contexts. When an object enters the context where a quasi-need occurs, if it displays the required properties, then it exerts a perceivable force on the subject or, equivalently, the subject experiences a directed tension toward it.

According to Gestalt psychology, the effects of the expressive qualities on the environment can be described in the same terms used for the forces in a field. Just as forces are real causes in the physical world, expressive qualities are proper parts of the environment, and they play a role in directing behaviors. The Gestaltists speculated that the description of forces and expressive qualities in terms of vectors would allow to study the structural similarity (isomorphism) between the perceptual organization of objects, the expressive qualities and the distribution of electro-chemical potentials in the cortex, which was deemed to be the neurological foundation of perception and behavior.

Arnheim (1966: 60-70) extended this suggestion to account for the "direct expressiveness of all perceptual qualities that allows the artist to convey the effects of the most universal and abstract psycho-physical forces" through objects and happenings. As a tentative test, he reported a table in which the correspondence was recorded between the varying properties of the movement of dancers (speed, range, shape, tension, direction, center) and two expressive qualities (sadness, strength) with "night" as control. He suggested that the result supported the claim that the motion patterns of the dancers and the expressive qualities shared the same dynamics of forces. That would justify the fact that subjects agreed in their judgments about the meaning of the observed movements.

This correspondence, which obeys a sort of visual dynamics, underlies the forces and tensions that arise in the composition of works of art. Accordingly, Arnheim (1974) admits on the perceptual side of this correspondence forces and tensions that are perceivable in the real sense and calls them "dynamic qualities" (Verstegen 2005). They lead artists in constructing a definite organization of forms, colors, and motions and guide beholders to grasp intended meanings through the expressive qualities they support.

## SPECIALIZED CRITICISM AND THE COMMUNITY OF INTERPRETERS

The anti-intentionalist conception sparked off a debate on the centrality of the interpreters, i.e. thematising whether the primacy of interpretation belongs to a community of experts or whether all interpretations, including non-specialist ones, are on an equal footing. This is a touchstone of an internal distinction within pragmatism: namely, the distinction between Rorty's reading, who advocated the figure of the "strong poet" as an ideal figure who is capable to make things anew and always creates himself/herself (Rorty 1982, 157 ff.) and the anti-elitist outcomes proposed by Shusterman.

Fish has contributed to this debate with his concept of "interpretive community" (Fish 1980). He supported a sort of intentionalist reading that was not limited to the author, but included the interpreters too, who, in building their interpretation, bring about a "new" work, here in line with Rorty. Unlike the latter, however, Fish tried to tie this view in with a social construct, going beyond the "private interpreter" of Rorty's conception. Besides the authors' and readers' intentions, there are institutional intentions which prestructure every interpretation. So, the identity of the work is made possible not by the text but by the common nature of the community of interpreters who refer to the same work.

Shusterman criticized Fish's reading for falling back on a professionalization, whereby the community of interpreters coincides with the community of experts. The same critique is raised by Shusterman to Rorty, who, for him, had ended up creating a distance based on personal interpretations that only focuses on specialist readers. According to Shusterman, all pragmatist theories failed to recognize the value of non-professional responses. In this respect, Shusterman goes back to Dewey's anti-dualism and anti-elitism by emphasizing the relationship of interaction between the author and the audience, that is, between the author and the community of interpreters, placed on an equal footing.

#### COMPARISON WITH CONTEMPORARY SCHOLARS

Like Arnheim, Gombrich (1960) assumes an unbroken connection between perceiving the external world, perceiving pictures, and perceiving art. However, he construes it as a gradual reduction of information, with a corresponding increase in the beholder's share. The stimulation recorded in the ordinary experience consists of variable sensations of color and shapes. Therefore, it is under-determined, and perception needs to project hypotheses about the constant properties of those objects that might have caused it. In front of pictures, the under-determination becomes ambiguity, in that the surface with color and light patches is seen either as such or as the depicted scene, if the patches display the same relationships in the stimulation as those that the scene would bring about for the observer. In both cases, perception proceeds by trials and errors in inferring the aspects of objects or scenes from variable stimulation. Pictures differ just in two respects. They act as a "false" stimulus that however has the right feature to trigger the response that a "true" stimulus would trigger in the same circumstances. In visual arts,, pictures render the scene by representational systems that rule out any sense of similarity and require the knowledge of the beholder.

This continuous connection is disputed by Gibson (1971). According to him, perception consists of picking up the invariants from the array of solid angles projected onto the perceiver's standpoint, which emerge across the variations brought about by the transformations induced by locomotion and objects displacement. The invariants specify surfaces and their being anchored to the ground, nested in one another and connected with the horizon. Pictures do not support such transformations, hence no invariant emerges through an ongoing perceptual pick up. They are constructed by altering a surface so that it presents a "frozen" array, a selection of invariants. Gibson therefore questions Arnheim's emphasis on the organization of patterns in perception and the composition in pictures and art. According to him, as there are no shapes or color patches to be organized, so there are no forms to be arranged on the support of the

medium to act as abstract symbols. Invariants are formless, because they derive from transformations of the array. The meaning of art stems from the complex rendering given to the selected invariants.

Arnheim (1974) may agree with Gombrich that the content of pictures and visual arts "seems true", yet he disagrees that it amounts to a reduction of information or a "false" stimulation. Forms are "invented", but as equivalents of visual concepts under the constraints of the medium. Cubist paintings may well happen to appear "realistic", because there are many levels of adaptation to the representations of objects and events, and each level at a given time is scaled to the equivalents and the styles of the previous levels, rather than to the perception of the environment.

Against Gibson, Arnheim (1979) claims that changes are as informative as what is kept constant. As far as perception is concerned, variation and invariance seem opposite only if one does not recognize that it carves the world into parts and wholes. As far as pictures and works of art are concerned, the variability brought about by the choice of colors and shapes as well as of the projective deformations to represent something is indeed the means by which artists convey meaning.

## CRITICAL DEBATE

Arnheim (1971) traces his theory back to the Gestaltist view that physical systems, the brain and perception act as fields of interacting forces. The part-whole organization results from the law that systems move towards states in which maximum stability and minimum expenditure of energy provide the best equilibrium that prevailing conditions allow. Köhler (1920) argued that minimal surfaces, solutions subject to osmotic pressure, and charged particles reach stability at the state with "the simplest and most regular grouping" of forces, when no displacement of a part can occur without affecting the whole. As in Maxwell's field theory, one can predict "from a purely structural point of view" the behavior of the parts which depends on the whole. Köhler claimed that this law was the physical correlate of Wertheimer's law of Prägnanz(1923). Wertheimer found that a percept reaches the stage of a "good Gestalt" when its organization is so clear-cut that it counts as a reference point. (Wertheimer found that grouping, if realized by varying a feature of elements continuously, reaches the stage of a "good Gestalt", whose organization is so clear-cut that it counts as a reference point. (Wertheimer found that maximum and minimum simplicity, as the most uniform and most articulated distribution of interacting forces or perceptual elements, contribute to Prägnanz. Both build a stable whole, whose relations with and among parts are manifest.

Arnheim extended this view to art. Artists experience two antagonistic forces. A tendency to reduce tension, by simplifying and leveling patterns to avoid confounding, superfluous elements, and a tendency to increase it by giving patterns a rich structure. If these forces obtain equilibrium, an artwork is a good Gestalt with the most ordered and complex pattern that the constraints of medium, techniques and tools allow. Arnheim contrasts this account with the application of the concepts of entropy and information to the macroscopic world and its artifacts. As a measure of disorder and degradation, entropy does not capture the structures of ordered interacting parts. As its inverse measure, information gives rise to the

paradox that since the occurrence of regularity is expected, it is as redundant and meaningless as any random sequence of discrete elements.

However, the conjecture that the brain works as colloidal system, where electrochemical currents are distributed under the same law of perceptual and expressive qualities, was refuted. Simplicity was replaced by order parametric models (Stadler 1991, Kelso 1995). Kanizsa and Gerbino (1976) proved that regularity is not decisive for grouping. Kanizsa and Luccio (1986) argued that *Prägnanz* fails to be predictive, since it refers equivocally to the process and results of perception. Loyd Jones (1973) and Marcolli (2020) have remarked the fallacy of Arnheim's arguments. Entropy predicts the functioning of closed systems over time by measuring energy. It does not exclude that systems attain equilibrium at disordered states or that, with a small number of elements, they build structures. Information measures communication efficiency. Regularity has a statistical sense; redundancy is not on par with organized patterns. It is not excluded that high information content and order arise for superimposed regularities.

Eventually, however, Arnheim (1999) tried to reformulate some of his claims according to the theory of chaotic systems, showing again his attempt at embedding aesthetics into a unified theory of knowledge.

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