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Signs and *Gestalten*. From Visual Thinking to Pictorial Concepts

In a book entitled “Pictorial concepts”, which I published 25 years ago (Sonesson 1989), I made many references to the work of Rudolf Arnheim, and in particular to his book bearing the title “Visual thinking” (Arnheim 1969). In hindsight, I regret not having commented there on the continuity, and the discontinuity, between Arnheim’s notion of visual thinking, and my own idea concerning pictorial conceptuality. In this respect, the present article may be seen as a late addendum to that book. The main subject of my book could well be said to be the continuity and discontinuity between visuality in general and pictoriality: thus, as far as continuity is concerned, I argued against Nelson Goodman, Umberto Eco, and others, that iconicity was a fundamental factor for the understanding of pictures; on the discontinuity side, however, I sided with James Gibson, against both Gestalt psychology (and thus Arnheim) and constructionism, in pointing out the numerous differences between natural perception and the perception of pictures. I regard this aspect of the distinction between visual thinking and pictorial concepts to have been fully treated in that book, as well as in numerous articles I have published since then. It still remains, however, to measure the distance between thinking, in Arnheim’s sense, and concepts, as I envisaged this notion at the time, and as I would like to understand it nowadays.

1. The Organization of Perception

At the beginning of his book, Arnheim (1969, 13) starts out by claiming that “the cognitive operations called thinking are not the privilege of mental processes above and beyond”, listing such things as active exploration, selection, grasping of essentials, simplification, abstraction, combining, separating, and so on. Indeed, like cognitive science, and cognitive linguistics (cf. in particular Talmy’s notion of “ception”), today, he broadens the notion of cognition to include “all mental operations involved in the receiving, storing and processing of information”. He goes on, curiously for a Gestalt psychologist, to quote Piaget talking about the exchange between the individual and the environment in terms of assimilation and accommodation (Arnheim 1969, 17). Yet this did not impede Piaget from making a clear distinction between that which is figurative and that which is

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cognitive (cf. Sonesson 2013). It is true that the investigation of insight, initiated in his ape studies by one of Arnheim's direct predecessors, Wolfgang Köhler, could be seen to bridge this distinction. Arnheim (1969, 101) himself, however, only mentions this term once in his book.

1.1. Structure and Configuration

Like Heinz Werner and many other Germans whose fame was made in the United States, Rudolf Arnheim is most of the time understood outside the context which formed him, in early 20th century Germany (Cf. Sonesson 2012; 2013). Arnheim studied with Max Wertheimer, one of the main representatives of the Berlin school of Gestalt psychology; but it is too easily forgotten that the Berlin school was only one of several competing schools of *Ganzheitspsychologie* (holistic psychology) which flourished at the time, and it is difficult to imagine that the theories and findings of the contemporary schools heading in the same direction did not leave their mark also on the exponents of the Berlin school. Unlike Werner, Arnheim may not have been explicit about this influence, not even in a footnote (Cf. Sonesson 2012), but I think it is very clear from his writings. Both in the case of Werner, and that of Arnheim, I believe the surreptitious influence of the Leipzig school of *Ganzheitspsychologie* cannot be doubted, nor that of Husserlean phenomenology.

The main representatives of the Leipzig school, Felix Krüger, Friedrich Sander, and Hans Volkelt, had the good fortune, at the time, of not being Jewish, and later had the very bad taste of forming an allegiance to Hitler, which explains why they did not have to go into exile, unlike the members of the Berlin school (Cf. Ash & Geuter, ed., 1985). There is every reason to censure them for the latter; still, it is unfortunate that this led to their work being neglected. The main contribution of Krüger was to broaden the concept of whole so as to include phenomena with limited articulation and fuzzy borders such as emotions. This may have been what inspired his students Sander and Volkelt to come up with criteria separating different kinds of wholes, as we shall see below. We do not have to broaden the intellectual context of the time very much, however, to include phenomenology and Neo-Kantianism: the founder of phenomenology, Edmund Husserl, both influenced and was influenced by the different schools of *Ganzheitspsychologie*, as was, more profoundly, Husserl's student Aron Gurwitsch. This is also true of the Neo-Kantians, such as Bruno Natorp and Ernst Cassirer, who, rather like us at present, as descendants of cognitive science, tried to integrate philosophy with the natural sciences. A notable case is that of Kurt Goldstein (cousin of Cassirer), a precursor of neuroscience, whose interpretational scheme is certainly open for challenge, but not more than that of Terrence Deacon, and other of our contemporaries. It is, I think, wrong to think of the ideas that were voiced

at the time as simply an antiquated episode in the history of ideas. Many issues presented at the time, more than a century later, still remain to be clarified.

In this section, however, I will only attend to two notions of wholeness, viz. structure and configuration, as conceived by structural linguistics and Gestalt psychology, respectively, which are often confused, so for instance by Merleau-Ponty (1960; 1969). As early as 1947, Jan Mukařovský (1974, 7ff; cf. 20ff) insisted on the importance of distinguishing “structure” from the kind of wholes conceived by “holism”, observing that while a structural whole results from the mutual relations between its components, including negative ones, a holistic whole is primarily a delimitation made in the field, a setting up of borders, from which an inner differentiation may later ensue. Generalizing the first term, Piaget (1972a, 137f; 1972b, 47) tells us there are two types of structures, or rather two extreme cases with many intermediary variants: the perceptual *Gestalts*, which are non-additive and non-reversible, and the operative structures of intelligence, elsewhere termed schemes, which are additive and based on two kinds of reversibility, i.e. negation and reciprocity. Though all psychological structures define laws for the whole not present in the parts, not all are non-additive, Piaget assures us, contradicting the presumption of Wertheimer and Köhler. If three elements are presented in a row, the middle element will be perceived to be larger than the first but smaller than the third, and this clearly excludes additivity and the conservation of quantities. On the other hand, classification, seriation, and natural numbers are additive, as the child comes to learn as he goes through the different stages discovered in Piaget’s experimental tasks. Piaget does not tell us so, but it might be supposed that language, and thus structure in the Saussurean sense, occupies a somewhat intermediary position. But so does the melody, which, although not exactly reversible, is certainly transposable.

Elsewhere, I have opposed structure to configuration in a way that would seem to bring the former closer to the Piagetian scheme (Sonesson 1989, 81ff; 2012). In both cases, the whole is really something more than its parts, as the *Gestaltist* saying goes, but in the structure it is the network of relations which is central, and the elements connected by the relations will thus appear to be more distinct from (though sometimes identical to) each other; in the configuration, however, the general idea of wholeness and of all the elements belonging together predominates, and the elements themselves are only secondarily apprehended as separate parts. Thus, in the configuration, the parts tend to disappear in favour of the whole; in the structure, it is the whole that impresses its properties on the parts.

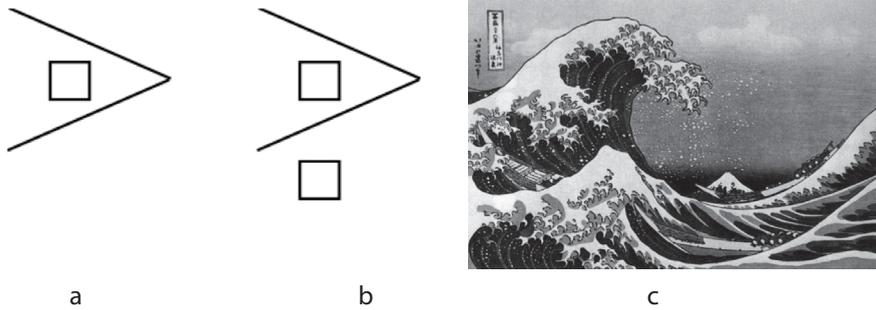


Fig. 1 Structure and configuration: a) configuration without structure; b) configuration with structure; c) Hokusai's 'The Wave'.

Arnheim (1969, 60ff) who, like many followers of the Gestalt school, sometimes uses “structure” in the sense given here to “configuration”, tells us the square in Fig. 1a will seem somewhat less straight because of the influence from the reclining V in which it has been inscribed; this, I submit, is a typical configurational effect. But when a second square is added, as in Fig. 1b, the relationship between the two squares will stand out, creating a structural effect. Another way of obtaining a structure that more decisively destroys the configuration would be to apply a ruler to the borders of the square, thus introducing a continuous series of relations between points on the ruler and points on the contours of the square. In a process like that, geometry emerged out of land surveying, as Husserl (1969[1954], 365-386) has described it.

Indeed, from the interaction of the configuration and the structure, complex meanings may be derived. Groupe μ (1980, 267f) tells us that the waves and Mount Fuji in Hokusai's “The Wave” are seen as different when they are interpreted as such, but on another “isotopy” they are identified because of the similarity of their triangular shape, both having the point turned upwards, and because of their colour, which is blue stained with white spots. From our point of view, it might be added that the waves as well as the mountain immediately form configurations in perception, while the organization of the picture makes the structural relation between one of the waves and the mountain stand out. This serves to clarify the distinction between structure and configuration.

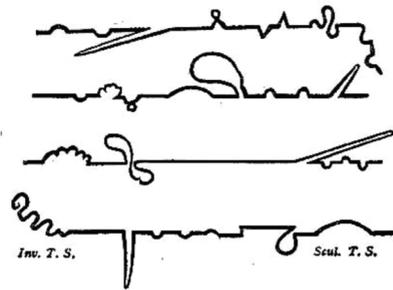
1.2 Non-Configurational Wholes

In the Leipzig branch of holistic psychology, many characteristics were supposed to define the prototypical *Gestalt* or configuration, and some of these properties could also give rise to some intermediary kinds of whole. According to Volkelt (in Sander & Volkelt 1962, 43ff), the configuration ideally stands out from a background and is internally articulated (“gegliedert”), but other holistic properties

may well be externally and internally diffuse (“ausßen und binnendiffuss”; p 41f). In his studies of children’s drawings, Volkelt came upon holistic properties, more obviously so than emotions (singled out by Krüger), which are not configurational, for instance the closure and angularity of the cube. It has been observed by later psychologists, e.g. Hugh Coffman (1980) and Howard Gardner (1982), that not only small children, but brain damaged subjects, may represent a cube by drawing, first, a rounded space to signify angularity, and then a number of lines to convey the idea of angularity (Cf. Sonesson 1989, 99ff; and Fig. 2a). In this and similar drawings, non-configurational, holistic properties like angularity and closure have been transposed, whereas the more specific, inner and outer, organization is not transposed. The newly learned melody is, in that respect, a less extreme example. Volkelt and Sander recognize many degrees of demarcation (“Absetzlichkeit”) and articulation (“Gegliedertheit”). The typical configuration occupies a middle position between diffuseness (“Diffusität”) and dismemberment (“Zerstücktheit”), Volkelt (p 45) observes. Later, however, he claims there really are two different scales, Chaos being both diffuse and dismembered. If so, becoming more diffuse, a percept does not have to become less dismembered, and vice-versa. Extreme diffuseness, Sander says (p 77), produces a non-configurational whole, the extreme case of dismemberment being the breaking up of a whole into many separate objects. But the multiplication of parts in a configuration will never lead to its dismemberment, because the multiplicity and the unity will grow simultaneously (p 45). If so, there clearly must be two scales, and a configuration requires a relatively low degree of dismemberment as well as diffuseness.



Fig. 2a The essential cube;



2b. The example from Sterne quoted by Arnheim

Many of those “visual concepts” given as examples by Arnheim (1969, 116ff), in particular those involving visual art, are no doubt susceptible to the kind of study bearing on the intricate interplay between configurations and near-configurations that I suggested in the case of Rothko’s “Without title” (Cf. Sonesson 1994; 2014a). Most of his examples of “visual concepts”, nevertheless, should be counted among non-configurational wholes, which are fairly diffuse, but not so much dismembered,

and which are capable of transposition (Arnheim 1969, 116-134). Also the different wavy lines in Sterne's *Tristram Shandy*, which, according to Arnheim (1969, 139; cf. Fig. 2b), "symbolize a state of mind by translating some of its dynamic properties into visible patterns" would seem to be of this kind, at least if we take them to be spontaneous expressions of Tristram's mind, and not as being constructions on the part of the author. It is true that Arnheim claims them to be "symbolic", in the sense of portraying "things which are at a higher level of abstraction" than the lines themselves, and while such a description may apply, in the classical European sense of the term symbol, to the example of the Sieneese murals depicting good and bad government, it is contradicted, in the case of the lines, by the reference to the dynamic properties shared by the state of Tristram's mind. Numerous examples of this kind are found in the work of Werner & Kaplan (1963, 205ff, 337ff): their "linear names", notably, are non-configurational holistic properties that can be transposed in some limited sense of the term.

However, the most famous study of non-configurational holistic properties being transposed, without using these terms, is due to Wolfgang Köhler (1947), whose analyses of the distinction between "maluma" and "takete" and the corresponding drawings has recently been replicated by Ramachandran (2011) under better controlled circumstances, using the examples "bouba" and "kiki", which were then submitted to systematic variations by Ahlner & Zlatev (2010). That which makes these properties transposable is no doubt synaesthesia, which is a rather diffuse kind of iconicity. Such properties could be said to be physiognomic in the wide sense of Werner & Kaplan (though probably not in the strict sense; cf. Sonesson 2013). However, these latter examples are complicated by opposing two kinds of sounds, and then opposing this pair to a pair of shapes. Once oppositions (and oppositions to oppositions) are introduced, we may be on the way to a further level of "abstraction". Tristram's wavy lines, and Werner & Kaplan's linear names, are, in this sense, better examples of non-configurational properties.

2. On the Way to "Abstraction"

Kurt Goldstein may have been the first neuroscientist to gain the position of a public intellectual, comparable in that to Terrence Deacon, Antonio Damasio and Gerald Edelman in our day. Goldstein notably opposed two attitudes which normally go together in human beings, the concrete one, and the abstract (originally categorical) one, of which one or the other may, however, come to dominate to the detriment of the other, because of specific damages to the brain, giving rise, for instance, to aphasia. Among contemporaries, his basic ideas were prolixly commented upon, and used to derive strong theories, by the likes of the phenomenologists Aron Gurwitsch (1962), Alfred Schütz (1966), and Maurice Merleau-Ponty (1945), as well as by the Neo-Kantian Ernst Cassirer

(1923-1931). Arnheim (1969, 189-201) also touches on Goldstein's ideas, directly following with his own two chapters on abstraction (Arnheim 1969, 153-188). Unfortunately, if you look at the examples given by Goldstein, the abstract attitude emerges as a kind of a catchall. It certainly involves taking a stand somewhat aloof from the world of perception, while the concrete attitude is due to the failure to detach oneself from the perceptual world (somewhat similar to what in later psychology has been called context-independence and context-dependence, respectively). This explains that the use of signs is thought to require an abstract attitude, as can be concluded from the examples given, although sign use is not specifically singled out.

Elaborating on Goldstein's conception via Gurwitsch's remarks, Shaun Gallagher (2004) suggests it would be more convenient, also for neurological purposes, to distinguish three attitudes, the abstract one, the pragmatic one, and the social one, where the second refers to the world of things, and the third to the intersubjective world of human beings. Even so, the notion of abstraction remains too "abstract", in one of the many senses of the word. Peirce, it will be remembered, claimed that two very different operations were confused in this term, viz. the act of leaving out some properties so as to generalize others, putting all dogs, of whatever race, into the same category, which he called *prescission*; and the act by means of which a property is conceived as an entity, exemplified by Peirce (via Molière) by the scholastic description of opium as having a dormative capacity, which is a case of *hypostatic abstraction* (Zeman 1982; Stjernfelt 2014). It is of course possible that different mental operations may depend on some more general property of the mind, and perhaps even the brain, but the characterization of such a property remains rather elusive at present. In the following, I will consider the relevance to the visual world of two phenomena that would seem to involve abstraction in this very general sense: the sign function and the statement.

2.1. Abstraction to Signs

Arnheim (1969, 135ff) distinguishes three kinds of "images" which he terms "pictures", "symbols", and "signs", or, as he rightly goes on to observe, more exactly three functions which may be found to different degrees in "images". It soon becomes clear however, that, more properly speaking, what Arnheim is distinguishing is three kinds of signs, which are pictorial, otherwise iconic, and conventional, signs¹, respectively, and that he fails to explain that which they have in common, which is, I submit, the property of being signs.

¹ This is the Peircean acception of the term "symbol", now fairly established in semiotics, but we should not forget that, in the European 19th century, including the work of Saussure, the same term meant just the opposite. My impression, from considering the examples given by Arnheim (1969, 135ff) is that he has not clearly distinguished the two meanings.

Elsewhere, I have suggested a definition of the sign, inspired both by the phenomenology of Husserl and the genetic psychology of Piaget, which, for the present purpose, can be summarized as follows (Cf. Sonesson 1989; 1992; 2012): a) it contains (a least) two parts (expression and content) and is as a whole relatively independent of that for which it stands (the referent); b) these parts are differentiated, from the point of view of the subjects involved in the semiotic process, even though they may not be so objectively, i.e. in the common sense Lifeworld (except as signs forming part of that Lifeworld); c) there is a double asymmetry between the two parts, because one part, expression, is more directly experienced than the other; d) and because the other part, content, is more in focus than the other; and e) the sign itself is subjectively differentiated from the referent, and the referent is more indirectly known than any part of the sign. According to this definition, as I have argued elsewhere (Sonesson 1989; 2003; 2007), words are signs, and so are pictures, in spite of being very different in other respects, the most obvious one of which is that iconicity predominates in pictures, but is fairly marginal in language (or at least in contemporary Indo-European languages; cf. Dingemanse 2012).

In a late text, Goldstein (& Scheerer 1941, 4) gives several clues to what he means by abstraction, of which only those being clearly relevant to our present concern will be quoted here. First, the ability “to detach our ego from the outerworld and from inner experiences”: this would seem to be the meaning of the term differentiation, which I took over from Piaget, and which also occurs in the work of Werner & Kaplan (1963), although Piaget seems to be alone in applying this distinction also to the sign and its referent. In earlier articles, I have tried to clarify this notion of differentiation, as applied to the relation between expression and content (and the referent, which is not distinguished from the latter in this literature), in two complementary ways: first, expression and content are not conceived as being members of the same category, which means that an adult human being, unlike a cat, will not suppose that what he sees in the mirror (or some other kind of picture) is another cat; and, unlike what happens in perception, what is now perceived (and thus momentarily is the “expression”) does not change place and time with what is currently remembered or anticipated (and thus momentarily is the “content”), which implies that an adult human being, unlike a cat, will not seek for what he sees in the mirror, or any other picture, behind the picture, at its sides, and so on, although this is precisely what he will do in a perceptual context. This capacity should suppose, apart from the capacity quoted above, the ability “to shift reflectively from one aspect of the situation to another”, and also, perhaps, in addition, the ability “to abstract common properties reflectively; to form hierarchic concepts” and “to grasp the essential of a given whole: to break up a given whole into parts, to

isolate and to synthesize them”. In any case, both these latter abilities (if they are separate) are certainly required for the understanding of the double asymmetry between expression and content specified in the sign definition above.

It would take us too far afield to discuss, in the present context, some experimental studies, which I have realised recently, with several collaborators, which are connected to the notion of sign suggested above. Suffice-it to say that, although one of these studies could be taken to demonstrate that some apes are capable of (iconic) understanding signs in this sense (Hribar et al. 2014), another of these studies seemed to indicate that indexicality was comprehended by children well before they grasped the meaning of iconicity (Zlatev et al. 2013), perhaps because indexicality, because of being based on contiguity, which is the most obvious property of the common sense world, can be understood without having the ability to conceive the sign function – without the help of abstraction, in the sense of Goldstein.

Arnheim (1969, 150f) makes an important point, however, when he observes, “in a picture, the abstraction level of the image is higher than that of the experience; in a symbol the opposite is the case” (where he clearly uses the term symbol in the European sense exemplified by the scale signifying justice). Perhaps we should nevertheless better retain the general idea behind this quotation: that the level of abstraction of the expression of the picture sign may vary independently of the level of abstraction of the content. And this is part of the explanation of the “exhibitive import” of pictures, to which we now turn.

2.2. The Picture as Diagram and Proposition

The distinction between configuration and structure suggested above (in 1.1.) should not be understood as a simple dichotomy between perception, on the one hand, and cognition, on the other. After all, you can only gain a command of language if you have some grasp of structure, and yet linguistic understanding is a fairly early accomplishment of most children aged one year and a half. This seems to indicate that some kinds of structural comprehension do not stand in need of much “abstraction”, or, to be more specific, any kind of “*conscious* and *volitional* mode of behaviour” (Goldstein & Scheerer 1941, 4. Their italics). In fact, some kind of structure is necessary even for the Maluma vs. Takete kind of perception to occur (see 1.2 and Sonesson 1989; 2012). On the other hand, rational thinking would seem to require structure, rather than configuration (although “insight”, as described in the *Gestalt* tradition and afterwards, may be an exception, in spite of being situated in a structural context). Structure, in this sense, may involve (a network of) opposition(s), as conceived in linguistic structuralism, or (as one of many possibilities) it may pertain to triadic structuralism, of the kind suggested by Peirce, in particular in his third trichotomy, separating the levels of rhemes,

dicents, and arguments, or, in more common parlance, terms, propositions and inferences.

One of the least publicized ideas of Charles Sanders Peirce, which has recently become the subject of two books by Frederik Stjernfelt (2007; 2014) is the notion that iconic (and, in fact, especially visual) signs are sources of knowledge in a way which cannot be said of other signs. This applies particularly to diagrams, the kind of signs in which the similarity does not pertain to single features, but to the relationship between features. Thus, if there are two items on the expression plane of a sign, the relation between them may represent the relation between two items of the content, without the items necessarily being similar as individual features. Douglas Greenlee (1973) coined the term “exhibitive import” for that “great distinguishing property” of the iconic signs that Peirce (1932, 11.279) describes as having as a result that by

“the direct observation of it other truths concerning its object can be discovered than those which suffice to determine its construction. Thus by means of two photographs a map can be drawn. This capacity of revealing unexpected truth is precisely that wherein the utility of algebraical formulae consists, so that the iconical character is the prevailing one”.

In a further quote (which I only know from Stjernfelt 2014, 216f, but the italics are mine, since Stjernfelt does not heed this particularity of Peirce’s definition; cf. Sonesson 2014), Peirce goes on to say that “a diagram ought to be as iconic as possible, that is, it should represent relations by *visible* relations analogous to them”. This is exactly the kind of pictorial sign that Arnheim (1969, 208ff) epitomizes as “thinking with pure shapes”.

I will argue, against Peirce and Stjernfelt, and perhaps also against Arnheim, that this kind of thinking is not visual in a general sense, but (mostly) restricted to pictures. It requires, in fact, the difference between expression and content in the sign, which is something Arnheim rightly pinpoints in the case of abstraction. It will be remembered that, from the Peircean point of view, vigorously defended and extended by Stjernfelt (2007; 2014), the whole world of our experience is perfused with signs, including propositions and arguments.² This means that also percepts are signs, and moreover are susceptible to form propositions. As for Arnheim, his stand is less clear, because, although the title of his book is “visual thinking”, his examples seem to be more particularly of the kind better epitomized as “pictorial thinking”.

² Whether a proposition is necessarily a statement/utterance is an issue that will be ignored in this context; cf. Sonesson 2014b.

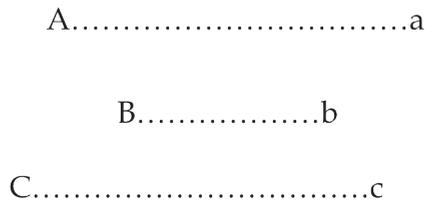


Fig. 3 Lambert’s logical art of signs.

It is important, I submit, to think of the icons to which Peirce refers when talking about the “great distinguishing property” as being iconic signs, in the narrow sense in which we defined signs above, that is, phenomena that can be separated into expression and content. It is only by being signs, made up of expression and content, that icons can guarantee their own “cognitive value”, which is a property of icons, no doubt consequent on that “great distinguishing property” referred to by Peirce, that Tomás Maldonado (1974) has underscored, and which was singled out, in connection with mathematical and logical signs, already in the semiotic theories of Leibniz and Lambert (cf. Holenstein 1976, 151ff; Dascal 1978). This, at first sight, curious rapprochement between pictures and logico-mathematical formulae is a constant theme, also of Peirce’s theory of iconicity. When Eco (1976, 333ff) denies the iconicity of Peirce’s existential graphs, he clearly misses the point: Peirce would certainly not want to claim that the parts of which his graphs are made up are motivated in themselves, any more than he would have said so about the numbers and letters of the mathematical formulae. Only the relationships are *exhibited*. Long before Peirce’s graphs and Euler’s circles, Lambert invented a “logikalische Zeichenkunst”, in which logical relations could simply be read off (cf. Eisenring 1942, 22 ff). Thus, for instance, if we know that all B are A, and that some C are B, and if we transcribe these two relations on paper, we are able to see directly, rather than conclude by reasoning, that at least some C are A (Cf. Fig. 3.).

A percept may be conceived as the attribution of a property to an object, which is, fundamentally, the definition of a proposition. In the world of our perception, nevertheless, a non-definitive number of properties are, as a matter of course, assigned to every object, as well as to the relations between this object and others, and to the relations between the totality of objects, and each individuality, to the subject of perception. The idea that direct perception is made up of perceptual judgments is therefore problematic. On the other hand, according to a position that I have defended elsewhere (Cf. Sonesson 2012b; 2014b), pictures clearly can be statements/judgements, in the formal sense of ascribing a property to an object, and they can do so because they feature a point of view and a frame (and sometimes, as we have seen, an opposition). The act of attention may be said to

imply such a judgement, though only a transitory one. Pictures, however, have at least two additional advantages: 1) they are necessarily both similar to and different from what they depict, and this difference implies a kind of statement about the object depicted (this is the homogeneous transformation according to Groupe μ 1992); 2) unlike perceptual reality, they can be reduced to what is essential at this point, though the reduction must be realised in much bigger chunks than in verbal language (this involves some of the heterogeneous transformations according to Groupe μ). Scientific images, traffic signs, and other pictures used mainly to convey information are of this latter type. There are no doubt also some occasions in which perceptual reality may fulfil a similar part, such as, notably, show windows and “installations”, in the artistic sense, which come closer to being visual propositions than ordinary perception, not only because they are framed and often have limited points of view, but also because they are clearly staged.

Still, the primary means for thinking about the world of our experience, imposing a structure directly on (visual) perception as such, is no doubt the picture sign. Interestingly, William Noble and Iain Davidson (1996) have suggested that depiction is a necessary stage on the way to language, because by means of freezing the percept, it introduces a kind of communication independent of the immediate context and so capable of being the subject of reflection and narrative. In this sense, the picture would be more of a precursor to language than gesture or other kind of mimesis. It could be objected that some kinds of gesture already inaugurate communication independent of the immediate context. However, a case could be made for gesture being itself movement, and thus incapable of freezing the percept. In fact, gesture may in fact have played that part on the level of simple visual meanings, at least at the level of non-configurational holistic properties, but the more extended resources of depiction may still be required for more complex reasoning on the level of propositions and inferences.

3. Concluding Remarks

Arnheim's work, in particular his book about “visual thinking”, is a rich source for extending our understanding of the semiotics of the picture sign. Unfortunately, not much seems to have been done with Arnheim's examples and suggestions in the intervening time. Some kind of conceptual framework for taking on this challenge could be offered by Peirce's work on “exhibitive import”. Before we can go further, however, it is necessary to clearly establish the difference between visual thinking in general, whatever that is, and pictorial thinking, which is something which goes on all the time, in particular in a society as dependant on pictures as ours. This already supposes that the issue of the relation between different kinds of perceptual holistic experiences and that of depiction by means of a sign has been resolved.

Summary

To gain an understanding of Arnheim's contribution, and to be able to develop further his ideas, it is useful to place him in his original academic setting. We start out by considering the Berlin school in the context of contemporary holistic psychologies, which all more or less influenced, and were influenced by, Husserlian phenomenology. Relying on the work of the Leipzig school, we suggest, using some of Arnheim's own examples, that the notion of *Gestalt* should be separated from structure, and that both should be distinguished from elementary configurational properties. Focusing on the notion of "visual thinking", we next discuss abstraction, starting out from another influential contemporary, the neuroscientist Kurt Goldstein. In order to specify the notion of visual thinking, we ponder the work done in semiotics, before and after Peirce, which engages with what the latter called diagrammatic signs, i.e. visual signs which are based on the similarity of relations.

Keywords: Semiotics, Leipzig School, Kurt Goldstein, Visual Thinking.

Zusammenfassung

Um ein Verständnis für den Beitrag Arnheims zu gewinnen und um in der Lage zu sein, seine Ideen weiterzuentwickeln, ist es hilfreich, ihn in sein ursprüngliches akademisches Umfeld zu versetzen. Wir beginnen mit der Betrachtung der Berliner Schule im Kontext der zeitgenössischen ganzheitlichen Psychologien, die alle mehr oder weniger Husserls Phänomenologie beeinflussten und ihrerseits von dieser beeinflusst wurden. Unter Berufung auf die Arbeiten der Leipziger Schule regen wir - unter Verwendung von einigen Beispielen Arnheims - an, dass der Begriff der *Gestalt* von der Struktur getrennt werden sollte, und dass beide von grundlegenden strukturmäßigen Eigenschaften unterschieden werden sollten. Um, ausgehend von einem weiteren einflussreichen Zeitgenossen, dem Neurowissenschaftler Kurt Goldstein, den Begriff der Abstraktion zu erörtern, stellen wir den Begriff "visuelles Denken" in den Mittelpunkt. Zur Präzisierung dieses Begriffs denken wir über Arbeiten zur Semiotik vor und nach Peirce nach, die sich mit diagrammatischen Zeichen, d.h. visuellen Zeichen beschäftigen, die auf Ähnlichkeiten von Beziehungen beruhen.

Schlüsselwörter: Semiotik, Leipziger Schule, Kurt Goldstein, visuelles Denken.

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