ORIGINS
OF PICTURES

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ANTHROPOLOGICAL DISCOURSES IN
IMAGE SCIENCE

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Bildwissenschaft

Anyone talking about pictures by necessity refers to those using pictures. It is therefore essentially the competence of using pictures that has to be considered. Such competence is not common among higher developed mammals, at least as far as we know today. This fact raises the question whether and to what extent that ability has to be conceived as a strictly anthropological one. In an interdisciplinary approach, the first international conference of the Society for Interdisciplinary Image Science (GiB) titled *Origins of Pictures* has taken a closer look at the role of pictures for the conditio humana.

The primary goal of the conference was to present empirical findings of the origins of picture uses, considering in particular research in paleo-anthropology, archeology, cultural anthropology, and developmental psychology. Furthermore, those findings were to be related to philosophical considerations concerning the conditions of the conceptual formation of picture competence.

DIETER MAURER

Early Pictures in Ontogeny and Phylogeny: Preliminaries to a Comparison

1.　　　Introduction

Ever since the ontogenetic development of drawing and painting became the subject of a scientific investigation in the late 19th century – true to tradition under the term »children's drawings«, although it would be more precise to name it the »development of pictures in ontogeny« – it raises the general question about a potential relatedness, or even parallel, to pictures or the pictorial in phylogeny. Of particular interest are the respective earliest graphic expressions. To date, no uniform view has emerged on this matter.

　　We take the view that a direct comparison of early graphic expressions, i. e. emerging pictures, in ontogeny and phylogeny is not appropriate at this stage. Prehistoric drawings from about 40,000 BCE discovered until now reflect a level of ability in drawing and painting that is already highly developed, also in terms of graphic and aesthetic qualities, and they cannot be defined as early expressions. We know of a few objects produced in the time period of 40,000 to 100,000 BCE which indicate an »abstract« graphic intention. The status and the significance of all earlier objects is a matter of contention.[1] For a phylogenetic investigation we are thus lacking the concrete foundation of early pictures. And yet, an indirect attempt at discussing the ontogeny and phylogeny of early graphic and pictorial expressions – whose clearest prehistoric indications are stone tools – would both be possible and of exceptional interest, not only for pictures as such, but also for the origins of human symbolic and aesthetic behavior.

But even concerning the ontogeny, we have yet to inquire into the foundations, and this is what the present paper proposes to discuss. We wish to call attention to the need for some ontogenetic clarifications, without which any further discussion of early pictures, regardless of the angle taken, must remain precarious, namely: bringing clarity to the picture concept, clarifying the empirical or phenomenological reference and shedding light on the syntactical aspect, sign character and representation of pictures, at least with regard to early pictures. In this last context, we shall also investigate the potential affinity of pictorial and vocal expressions.

The following comments are to be understood against the background of extensive documentary and phenomenological studies of early pictures in ontogeny; they comprise morphology, early pictorial processes as well as so-called »cross-cultural« comparisons.[2] We will treat the terms and foundations mentioned from this point of view[3] while focusing on the early stages of pictures, their emergence and their first attributes.

2. Picture Concept

The traditional discussion of earliest pictures in ontogeny (earliest in terms of temporal sequence within the development of »children's drawings«) is based on a largely unexamined differentiation of »picture« and »sculpture« and only considers two-dimensional products.[4] This differentiation, or rather separation, is by no means self-evident. With regard to a potential parallel in phylogeny it even challenges us to a fundamental reconsideration. That notwithstanding, we will uphold this qualification here and look at the concept of the picture solely in terms of two-dimensional products, which we will call the graphic. More precisely, the term »graphic« shall refer to intentional, two-dimensional and visually perceptible products, whose purpose lies in their contemplation.

Based on this assumption and looking at pictures from a genetic perspective, we must ask the question whether or not all graphic matters should be considered pictorial.

Leaving aside the differentiation between the pictorial and the picture (individual aspects vs. the product in its entirety) and disregarding two-dimensional manifestations that are directly perceived as sensory motor prints, literature offers us three principal assumptions on pictorial development in ontogeny. These correspond to the following three conceptual formulas:

1. Graphic expressions = pictures = depictions
2. Graphic expressions
   in a preparatory phase = drawings = formal or abstract expressions
   in the actual phase = pictures = depictions
3. Graphic expressions = pictures = drawings and/or paintings = formal or abstract expressions and/or depictions and/or other types of relationships between the graphic and the non-graphic

We are thus dealing with three different picture concepts with regard to picture genesis. The first one assumes that the graphic as an intentional two-dimensional product primarily and on principle relates to the depiction. The picture comes into being with the depiction. The second concept assumes that the drawing develops first and is then transformed into a depiction and thus into the pictorial.[5] The drawing permits the depiction and subsequently merges with it. The third concept assumes that intentional two-dimensional manifestations can be depictions but may not be reduced to them. According to this last assumption, all depictions are pictures but not all pictures are depictions; it follows that their genesis has to be regarded in a differentiated and reciprocal way.

How come that, despite the sprawling literature on the subject, there has been no agreement on a uniform conception? In our view, there are three main reasons for this: a general and fundamental difficulty to form a concept of »picture« or »pictures«, a certain conception (narrowly defined and mostly deriving from verbal language) of sign and representation, as well as a lacking uniform reference of empirical foundations. Because of this, the discussion of picture genesis in ontogeny i) cannot rely on a simple given picture concept from semiology or semiotics, from visual studies or from »Bildwissenschaft«; ii) furthermore, it instinctively takes pictures as signs and representations to mean »depictions of figures, objects, scenes and events«, alternately labeled »real or fictional«,[6] and iii) it falls back on empirical studies in an inconsistent manner.

This last point is of principal importance for our present perspective: clarifying the matter of empirical reference allows us to retroactively provide the foundation required for an agreement on the picture concept; at the same time, it can shed light on how pictures as signs and representations – at least early pictures in ontogeny – are to be discussed.

3.   Empirical foundations

As mentioned before, existing surveys of so called »children's drawings«
rely on a number of different empirical foundations in their description
of early graphic phases. The following compilation of selected examples
serves to illustrate this:

- Widlöcher (1965), based on Luquet (1927), refers to the three authors
  Naville (1950), Prudhommeau (1951) and Lurçat (1961, 1964; for a
  more extensive description cf. also 1979).
- Richter (1987) refers to the three authors Meyers (1950, 1957), Kel-
  logg (1959, 1970) and Gardner (1980). In a later compilation Richter
  (2001: 24 - 27) makes reference to Matthews (1984).
- Meili-Schnebeli (1993) refers to Richter (1987) as well as to Grötz-
  inger (1952), Lowenfeld (1982; see our citations LOWENFELD 1952;
  LOWENFELD/BRITTAIN 1982), Bachmann (1984), Trümper (1986, cited
  in MEILI-SCHNEEBELI 1993) and Egger (1991).
- Reiss (1996) refers exclusively to the study by Nguyen-Clausen (1982,
  see also 1987).
- Greig (2000) mentions Anzieu, Bernson, Boesch, Cambier, Corman,
  Dolto, Haag, Kellogg, Lurçat, Marc and Marc, Stern as well as Tis-
  seron as the basis of his own account (due to the great number of
  publications listed for individual authors which are not directly
  related to Greig's text, we here refer to his bibliography).
- Golomb (2004) mentions Kellogg (1969, see our citation 1970), Smith
  (1972), Haas (1984, 1998, 2003) and Matthews (1984, 1999), but indi-
  vidually only treats Kellogg and Matthews as well as her own studies.
- Willats (2005) treats the early graphic phase based on Matthews
  (1984, 1992, 1999; cf. also 2003).
- Seidel (2007) uses a comparison of the stage models by Kerschen-
  steiner (1905), Luquet (1927), Lowenfeld (1960; see our citation 1952),
  Piaget (1973), John-Winde (1981) and Richter (1987), and subsequently
  illustrates early graphic development with her own examples and
  according to her own approach, based on a modification of the con-
  cept of Piaget.
- Schuster (2010) refers to Meyers (1968) and Matthews (1984).
- In this context it is worth mentioning the rarely quoted study by
  Olivier (1974). This study is one of the few distinctly structuralist
  attempts at describing early graphic stages; Krampen (1991: 31 - 45)

uses it as the only fundamental reference, beside the aforementioned work by Lurçat, for the discussion of early graphic development within the perspective of semiotics.

Literature on the subject of emerging and early human depiction (the appearance of the so-called »tadpole«) is exempt from the above collection. Equally excluded are works on the emergence of object-analogy as schematic for early depictions. To both of these a much greater amount of attention and scholarly reference is paid in research than to other types of early manifestations. Excluded is also the issue of the influence of the graphic process and the production context on early pictures.

The various ways in which empirical studies are relied upon each come with a different general description of early picture genesis. As indicated with regard to the picture concept, we can identify three positions.

According to the first one,[7] the earliest two-dimensional manifestations are seen as an expression of sensory motor functions with increasing subsequent differentiation, both in terms of the movement itself and in terms of its visual control.[8] Where visual abilities assume control over the graphic expression, i. e. dominate it, a shape is produced (as a rule a closed shape), which directly turns into a carrier of meaning and is then mostly used for the depiction of humans. Subsequent graphic differentiation is entirely at the service of depiction.

According to the second position,[9] the early sensory motor traces are followed by differentiations of distinct visually controlled formal or abstract manifestations – named the »birth of the drawing« by some authors – in which a graphic vocabulary of individual shapes, sometimes linked to simple topological arrangements, is prepared.[10] These are increasingly used for creating analogies until finally the entire graphic configuration is subjected to the depiction principle as »birth of the picture«.

According to the third and rarely proposed position,[11] formal or abstract expressions follow the sensory motor manifestations in creating a primary and partially independent domain within graphic development; this is the first domain of graphic differentiation, and it continuously develops even after the emergence of depictions.[12]

The three different picture concepts mentioned at the outset are thus mirrored by three different structural summaries of the early graphic and pictorial stages.

But how come that no empirical foundation and corresponding unified structural summary of early graphic stages managed to establish itself as a

reference and that, instead, such different descriptions of the early stages of pictures exist side by side? In our view this has to be seen against the background of a fundamental methodological difficulty in analyzing picture genesis, along with an insufficient regard for early and earliest graphic manifestations. This explains why i) the discussion of picture genesis in ontogeny does not abide by an actual methodological standard which is both traceable and replicable, and why ii) existing phenomenological foundations have remained disparate and fragmentary, with existing literature referring to them in an inconsistent manner and interpreting them in different ways, and why iii) early manifestations are often described as »scribblings« and are therefore scarcely considered or even misunderstood.[13]

The methodological problem is due, first of all, to the subject in question: a mass-like or even »infinite« phenomenon, whose representation – namely, the number and selection of children and their pictures to be compared in establishing a representative corpus – cannot rely on any given or simple measure. The same applies to the question of attributes: which ones should be examined, which ones can be objectively or justifiably delimited, described and concretely attributed to graphic products? A final difficulty lies in publishing research findings in a scientifically adequate and justifiable manner.

The heterogeneity of existing foundations manifests itself in the various types of opposing studies:

- Illustrations of general development models based on pictures by different children without any transparency as to the method of their selection
- Longitudinal studies of single children (usual the researchers' own children)
- Cross-sectional studies
- Representations of graphic vocabularies
- Data collections on single aspects or topics
- Experimental, laboratory-like studies on narrowly defined questions

The concepts applied, the attributes examined and the rules for assigning them do not undergo any kind of decisive reciprocal and continuous critical examination or subsequent coordination. Many studies do not in themselves distinguish between a purely descriptive survey of attributes, structure building and development tendencies on the one hand and their explanation on the other hand.

In addition to differences in type, method and embedding in a paradigm, the way studies – with the exception of experimental studies in the narrowest sense – arrive at their results is rarely sufficiently verifiable; this is because the results depend on the investigators' interpretation, which cannot be sufficiently verbally quantified, but also because only very few and specifically selected pictures are used in publications to illustrate the results.[14]

The word »scribbling«, to return to the third aspect mentioned, may carry meaning in everyday language, but it is often misleading due to its negative connotation and association with »mere motor skills«, »unconscious production« and »randomness«. It is not suitable, in any case, as a scientific term for early pictorial activity. There is no binding definition for it, and even if it were to be defined as a technical expression, it would not lend itself as a useful designation for the actual activity as a whole: its association with graphic intention, formal differentiation or any kind of meaning is too fuzzy; conversely, it is too closely linked to subtly or openly derogatory reflexes. Hence, the expression must be replaced.[15]

To avoid misunderstandings: existing literature offers a wealth of picture descriptions and picture examples, each connected with corresponding classification suggestions and extrapolated development processes; and it is true that this allows us to gauge the extent of observable manifestations. As mentioned above, we also possess a limited number of individual examinations and documentations of early graphic expressions which are both excellent and extensive and which are not restricted to comparative compilations and summaries of other examinations, or to specific aspects such as early human depictions or the so called »schematism« of depictions, nor to narrowly defined experimental angles, but rather look at early graphic phases in their entirety. (The works of Kellogg and Matthews referred to above, even if very different in their approach, are particularly worth mentioning here as well as, outside of the academic sphere, the works of Stern. Based on our own studies, we expect that many of their claims will be confirmed in future empirical and phenomenological studies.) What we are lacking, however, is the possibility to derive from all of this a general, binding and transparent system of attributes in combination with rules for their assignment. We are lacking a way to determine the temporal sequence of each emerging attribute or attribute type in a binding and traceable manner so as to deduct mutual interrelations in terms of structure formation and development processes. We do not yet have an organizing principle for

the wealth of early graphic manifestations that is sufficiently objectified and traceable, accepted as a standard and based on which we could assign the individual examples to a structure that describes the appearance and the emerging development of early pictures according to their fundamental attributes.

But what requirements must such a categorizing principle meet, and what shape should a phenomenology[16] take in order to assume the status of a reference?

4. Forthcoming standard of a phenomenology

Based on the discussion to date, it is apparent that method and traceability are fundamental requirements. Their realization initiates everything else.

The methodological requirements concern the clarification of the individual picture attributes to be described – their purpose and designation, their relevance, their hierarchical order within a structure of attribute types, as well as the rules of their assignment to graphic manifestations. Clarifying the method thus means reaching an agreement over a binding catalogue of attributes.

The requirement of traceability concerns the verification and critical review of how individual attributes or attribute types are assigned, as well as the development structure that are deduced from this assignment. Clarifying traceability thus means reaching an agreement on the kinds of picture descriptions and related evaluations that are required to meet scientific standards.

Defined in this way, a phenomenology must start off a picture corpus of representative value for a given culturally delineated context – constituted of spontaneously produced pictures apart any given task – combined with a catalogue of attributes to describe the pictures if it is to serve as empirical reference. Based on this catalogue, the corpus must be examined in longitudinal and cross-sectional studies to answer the question which general, i.e. inter-individual, single graphic characteristics and types can be proven and in which mutual relation and temporal order they occur. Corpus, picture descriptions and deducted statements must be made available for review and published in their entirety.

Only a reference in this form would allow assessment of inter-individual qualities, structural formations and development tendencies in early

graphic expressions with regard to drawings and paintings as products in a specific cultural context. However, the assessment has subsequently to be subjected to a critical reevaluation in the form of three comparisons: – What relativizations or additions result from the comparison of early graphic expressions as products with the early graphic process? – Do qualities, structural formations and development tendencies in so-called »cross-cultural« studies prove to be fundamentally conveyed and coded throughout, thus making them fundamentally culture-dependent, or is there evidence of cross-cultural qualities, structural formations and development tendencies? – What relativizations or additions result from the comparison of spontaneous early graphic expressions with graphic expressions produced in the context of experimental issues and studies?

5.　　Conclusion

We conclude, therefore, that we do not yet have a fundamental and reliable agreement among specialists on the type of picture concept to apply to picture genesis or on the fundamental attributes, structure formations and development tendencies of early two-dimensional productions.[17] We would draw attention to this fact. It is the reason for the title of this paper and symbolic of the fact that we are as yet only in the opening stages of a potential comparison of early pictures in ontogeny and phylogeny. We still need to establish the ontogenetic foundations in terms of clarifying and organizing existing representations. Depending on the difficulties in retracing them and the gaps that may become apparent, this will necessitate additional surveys. We repeat and insist: without a conceptual agreement and a phenomenological frame of reference, the comparison of ontogeny and phylogeny can only be attempted in a fragmentary fashion, if at all.

The matter of earliest graphic manifestations in ontogeny may seem marginal to some. But contrary to the scant attention they receive, they provide direct and fundamental access to the origin of pictures and to an understanding of their earliest attributes and the principal conceptual premise applicable to them – and perhaps to pictures in general. As marginal as the earliest graphic phenomena may appear, they concern a core of human symbolic and aesthetic behavior.

6. Vision

Based on our own examinations, whose focus lies on the question of a descriptive reference,[18] we already have some idea of the direction the clarification of the current controversy is going to take. We have mentioned it earlier. In light of our question of the possible relation of early pictures in ontogeny and phylogeny, let us repeat some of our earlier statements concerning this relationship.[19]

Even if studies of the early graphic process as well as cross-cultural studies will lead to substantial restrictions and additions, in our view, the literature as well as our own studies provide strong indications of process-independent and cross-cultural qualities, structural formations and development tendencies in ontogeny. For these, the following applies: So-called formal or abstract graphic manifestations tend to appear before analogies (i.e. depictions, representations of real or fictional figures, objects, scenes and events) in terms of the temporal sequence of their production, and their differentiation cannot be reduced to an »action representation«. Formal or abstract manifestations continue to exist both as an independent domain as well as intrinsically linked with the formation of analogies. Formal or abstract manifestations are not ornaments, therefore, nor can they be reduced to signs in terms of a coded reference to something other than the graphic; they genuinely belong to the fundamental character of the graphic itself. They are its constituting factor.

Such an insight thus challenges us to *genetically* equate the concept of the picture with that of the graphic and to consider depiction as merely one of many picture types. It follows that the examination of earliest pictures does not commence with depictions but with the graphic as intentional two-dimensional product.

We should therefore reconsider what sign and representation are meant to denote in early pictures – and perhaps in pictures in general: formal or abstract manifestations may not represent anything other than the pictorial, but the question arises whether they do not themselves, as picture attributes, represent those attributes. Peirce accordingly points out: »An icon is a sign which would possess the character which renders it significant, even though its object had no existence; such as a lead-pencil streak as representing a geometrical line« (PEIRCE, CP 2 304).

This would mean that not only depictions but also the graphic itself possesses a sign-like and representative character, which conversely raises the question of what we call the syntactics of pictures.

The distinction between qualities of the sign itself as qualities of the signifier (syntactic qualities) and of the signified (semantic qualities) is generally derived from a linguistic or structuralist approach. Yet, according to this approach, the syntactic side is articulated, separated out, at the same time and in a mutual relationship with the semantic side (SAUSSURE 1916/1995). Both the syntactic and the semantic side are subdivided into substance and form, with, in the case of the syntactic dimension, form representing an articulation of a material that is physically present and therefore open to description. Put more simply, the structuralist approach works on the basis that a given material is marked, in order to use these (oppositional) markings as defining qualities.[20]

Let us first consider such an approach with regard to voiced speech sounds: the tonal characteristics of the movements of the vocal folds and the resonances created in pharynx, mouth and nose (in the vocal tract) form a physical sphere of resonance phenomena which can be described as a physical dimension in terms of possible resonance patterns of the human vocal tract. According to the current theory, the vowels in a particular language emerge by a marking of resonance patterns that are clearly distinguishable from each other (FANT 1960). In a particular language, resonance patterns that are very similar to each other each correspond to one vowel, and resonance patterns that are clearly distinguishable from each other represent the differences between various vowels.

But how can such a distinction between material or substance and form be applied to graphic qualities? In terms of color it is tempting to define the physically given spectrum of light and the corresponding human perception of it as the given dimension and the colors and mutual color relationships in a graphic product as markings of this dimension. But important difficulties emerge when considering drawn lines, forms and their configurations. The line does not correspond to a physical dimension that is perceived as such and then is marked (as straight, wiggly, curved, undulating, with corners, but this series does not make a lot of sense and definitely cannot be continued satisfactorily to include all phenomena in pictures). In consequence, it is not possible to provide a physical property or value to which the phenomena of the line can be related.[21] The same holds true for graphic forms and their configurations. It may be right to say of colors

in pictures that they are sensory in the narrower sense, »prints« of something physical in perception and imagination. But no corresponding simple statement can be made for drawn lines, forms and their configurations.

However, let us take up the apparently plausible example of voiced speech sounds again. Remarkably enough, vowel sounds do not behave according to the principle of substance and form that has been described: every broadly based phenomenology of actual sounds shows that the resonance patterns that can be observed deviate strongly from the values to be expected of it. And it deviates so strongly that the same resonance pattern and with it the same expected physical qualities for one single vowel can be identified for vowel sounds of very different perceived identities. Remarkably enough, a particular resonance pattern does not define a particular vowel identity but reveals itself as ambiguous.[22] Remarkably enough, with regard to syntactics, a phenomenology of voice and speech sounds is also needed.

So why not assume that the »concrete« element of words and pictures – and may be of other signs too – cannot be compared with other concrete things? Why not assume that going back to the »sensory image« of a physical property and its marking is not successful to describe the qualities of voice and speech sounds and of pictures, and that is precisely where the »concrete« element *in them* lies?

So why not assume that formal or abstract phenomena of some types of expression carry sign character? That they do not exist without understanding? Why not assume that, when questioning the emergence of such expressions, the primary aspects lie in their qualities themselves, as such, and not in their meaning as a relation to something outside themselves?[23] When applied to the early development, then, the non-derivable quality of the observable phenomena from physical, motor or sensory properties would have to be investigated and discussed first, and only subsequently their ritual meaning (phylogeny) and their qualities as copies or codes or other types of relationships between the graphic and the non-graphic (phylogeny and ontogeny).

So why not consider »scribblings« as pictures – because intentional graphic expressions – and why not assume that it was not Homo sapiens who was the first Homo pictor, and not even Homo neanderthalensis, but Homo erectus?

Acknowledgment

Endnotes

1   On the question of earliest aesthetic expressions cf. Lorblanchet (1999); on an attempt to interpret stone tools as aesthetic expressions, cf. Le Tensorer (2010); for unambiguous examples of graphic expressions before 40,000 BCE, cf. Henshilwood et al. (2002), and Texier et al. (2010).

2   For an overview, cf. Maurer und Riboni (2010d); for our morphological or phenomenological investigation of early graphic expressions in the European context, cf. Maurer und Riboni (2007 a, b; 2010 a-c) for the re-edition of the historical Kellogg archive, cf. Kellogg (1967/2007); for an investigation of the early picture process, cf. Maurer et al. (2011, 2013); for a comparison of qualities, structural formations and development tendencies in early graphic expressions of European, Indian and Indonesian children, cf. Maurer et al. (2012).

3   We are therefore not considering further areas, such as general developmental psychology, perception, cognition, general production strategies as well as individual and depth psychology.

4   We use the expression »two-dimensional products« in regard to flat products which are to be understood as two-dimensional.

5   Painting is not considered under this kind of perspective.

6   On this point note the following quotations:
     »There is no term more appropriate to children's drawing than realism. Children's drawing is realistic, first of all, in the choice of motives and subjects. A drawing consists of a system of lines, their ensemble having a form. Yet, this form can fulfill two different aims, dependent on the intention of the drawer. It can be produced either for the pleasure it gives to the eye by its simple visual aspect or for the purpose of representing real objects. [...] there are two types of drawings, the figurative drawing and the non-figurative or, in a large sense, geometric drawing. The second concept seems alien to the child. The child is not totally insensible to what can be

called the beauty of the abstract, above all to the regularity of a figure. [...] But this represents only an accessory element: even in the exceptional case where a child does pay attention to it, the child's attitude is not intentional, and the drawing continues to have as its principal role the representation of objects. The conception of a drawing representing nothing at all is so alien to a child that many children, who unable to give a precise interpretation of a drawing they produce, explain that it represents ›something‹. [...] Children's drawing is as realistic in its choice of motives, as it is in that which it renders. It seems that a figurative drawing has to be realistic a priori, because it graphically translates the visual characteristics of the object depicted.« (LUQUET 1927: 99f.; translation by the author; original text: »Nul terme ne convient mieux que celui de réalisme dans son ensemble le dessin enfantin. Réaliste, il l'est d'abord par la nature de ses motifs, des sujets qu'il traite. Un dessin consiste dans un système de lignes dont l'ensemble a une forme. Mais cette forme peut avoir, dans l'intention du dessinateur, deux destinations différentes. Elle peut être exécutée soit en vue du plaisir qu'elle procure à l‹œil par son simple aspect visuel, soit pour reproduire des objets réels. [...] il y a deux sortes de dessin, le dessin figuré et le dessin non-figuré ou, dans un sens large, géométrique. Cette seconde conception du dessin semble étrangère à l'enfant. Non qu'il soit absolument insensible à ce qu'on pourrait appeler la beauté abstraite, et en particulier à la régularité d'une figure. [...] Mais ce n'est la qu'un élément accessoire: même dans les cas relativement exceptionnels où l'enfant y prête attention, il n'est pas prémédité, et le dessin a pour rôle essentiel de représenter quelque chose. La conception d'un dessin qui ne représenterait rien est tellement étrangère à l'enfant que divers enfants, n'arrivant pas à trouver une interprétation précise pour le dessin qu'ils viennent de faire, déclarent qu'il représente ›une chose‹. [...] Réaliste par le choix de ses motifs, le dessin enfantin l'est encore dans leur rendu. Il semblait a priori que le dessin figuré ne pût être que réaliste, puisqu'il consiste dans la traduction graphique des caractères visuels de l'objet représenté.«)

»[...] we have realized that the child, by no means, deals with any formal aspects with regard to art. His main inclination is the use of art as a means of self-expression. [...] We shall therefore notice that the earliest stages of creativity by no means show this innate sense for design, since the urge for repetition in drawing starts during the schematic stage« (LOWENFELD 1952: 134; see also the chart on p. 385).

»The drawing consists of graphic signs: its main characteristic is to resemble in some way the conditions of visual perception« (WIDLÖCHER 1965: 41; my translation; original text: »Le dessin est fait de signes graphiques: leur caractère principal est de ressembler dans une certaine mesure aux données de la perception visuelle«).

»A different method of drawing has begun – the conscious creation of a form, the beginning of graphic communication. This stage grows directly out of the last stages of scribbling. [...] The marks and scribbles have lost more and more of their relationship to bodily movement and these marks are now controlled and related to environment. Scribbling was mainly a kinesthetic activity, but now the child intends to represent something. [...] This gives the adult a

concrete object to see [...]. Usually, by the age of four, children are making recognizable forms, although it may be somewhat difficult to decide just what they are. By the age of five these marks are usually quite distinguishable as people, houses, or trees. By the time the child is six, these shapes and forms have evolved into clearly recognizable pictures with a theme or purpose« (LOWENFELD/BRITTAIN 1987: 220).

»The development of a drawing can be described as a process, whose beginning lies in the perception of a real object or fact stored to memory [...] and which then, by means of an action plan, enables the drawing« (KOEPPE-LOKAI 1996: 45; my translation; original text: »Das Entstehen einer Zeichnung lässt sich als Prozess beschreiben, an dessen Anfang die Wahrnehmung eines realen Gegenstandes oder Sachverhaltes steht, die im Gedächtnis gespeichert wird [...] und die dann mit Hilfe eines Ausführungs- oder Handlungsplans die Zeichnung ermöglicht«).

»Common to all approaches is probably the rough tripartition of development stages: scribbling phase, schematic phase, pseudo-naturalist phase [...]« (WICHELHAUS 1992: 50; also 2003: 77; my translation; original text: »Allen Ansätzen gemeinsam ist wohl eine grobe Dreiteilung des Entwicklungsgeschehens in: Kritzelphase, Schemaphase, pseudonaturalistische Phase [...]«).

»At this point it is important to make a clear distinction between drawing as a pure action on the medium and drawing as representation. At the heart of representation as a symbolic activity lies the differentiation between the symbol and its referent, the knowledge that a drawn shape point beyond itself, that it can ›stand‹ for an object and thus represent it in some fashion. [...] Only when the child recognizes that her lines and shapes carry meaning that is independent of the motor action that produced the shape can one consider the drawings as a representational statement. Almost from the moment the clear circular form emerges it becomes endowed with internal markings that usually represent a human; indeed, in the spontaneous production of young children, humans are one of the first figures drawn intentionally or labeled retrospectively after inspection of the figure« (GOLOMB 2004: 16f.).

»The dramatic transition from scribble-patterns to clearly delineated graphic shapes requires a special account. The freely ambulating scribble-lines are somewhat antithetical to the controlled shape that emerges when the child intends to represent an object« (GOLOMB 2004: 24).

»The notion of an entirely non-representational stage or period in children's drawing development is difficult to sustain; at least, it is not as clear as some writers have claimed« (COX 2005: 69f.).

»[...] what children look for in their drawing is realism, and what they want to produce is what I have called ›effective representations‹« (WILLATS 2005: 18).

»Furthermore, the imagination of the child takes a nearly abstract turn, even if the pure abstraction in the adult's sense does not exist in children's drawing« (WALLON 2007: 26; my translation; original text: »Ailleurs, l'imaginaire de l'enfant prend un tour presque abstrait, même si l'abstraction pure, au sens de l'adulte, n'existe pas dans le dessin d'enfant«).

»Drawing behaviour has been studied from many different points of view and used to assess many different aspects of psychological functioning (i.e. perceptual, motor, cognitive, emotional). Among these approaches, one distinguished between the ›syntax‹ and the ›semantics‹ of drawing (VAN SOMMERS 1984). Syntax in drawings refers to the way the movements are executed and ordered in a sequence (the ›how‹ of drawing), while semantics deals with what is depicted in terms of symbolic content (the ›what‹ of drawing)« (VINTER et al. 2008: 139f.).

7   Elaborated in exemplary fashion by Golomb (2002, 2004); cf. in this context also the short summary by Wallon (2007: 29‑31).

8   Where verbal meaning is attributed to such manifestations, this usually happens in the form of subsequent additions without any representative intention as such. In addition, recent literature offers so called »action representation« in the sense of an early graphic relation to real processes (MATTHEWS 1984).

9   Elaborated in exemplary fashion by Widlöcher (1965) and Richter (1987).

10 Also according to the second position, added meaning (»romancing«) and »action representation« occur in these early graphic periods, and the same applies to the third position.

11 Elaborated in exemplary fashion by Kellogg (1970); cf. also Stern (1978); cf. our own presentation (references in second footnote).

12 Authors adhering to a two-fold structure of development into sensory motor differentiation and object-analogous representation (cf. the title »from action to representation«, combined with the corresponding explanations in GOLOMB (2004)), see early graphic development explained in a structuralist perspective, according to which the syntactic and the semantic – discrete pictorial forms and their composition on the one hand, the representation of objects, figures, scenes and events they carry, real or fictional, on the other hand – are differentiated simultaneously and in a mutual relationship. Authors accepting a phase or even independent domain of discrete forms tend to explain early object-analogous representations by means of the use of a previously established graphic vocabulary. The explanation of this vocabulary of discrete forms covers a wide range itself.

On the one hand, the development of such forms is treated within a cognitive theoretical, action theoretical or process oriented approach, whereby general developmental psychology, sensomotorics, perception, memory, knowledge, imagination, graphic production and various modes of representation are alternately put to the foreground of the discussion. On the other hand, early discrete forms are interpreted in terms of their intrinsic »meaning« or »representation« – beyond object analogies or »action representations« – for example as an expression of fundamental structures of visual sensory functions and perception (cf. for example KELLOGG 1965, 1970), or as an expression of individual or depth-psychological processes and developments, occasionally incorporating ante-natal experiences (cf. for example GRÖTZINGER 1952; JACOBI 1953; CORMAN 1966; STERN 1966, 1978; BACHMANN 1984; MEILI-SCHNEBELI 1993); LEFEBURE 1994; MARC/MARC 1997; GIER 2004).

13   This last statement must be qualified, however. Especially Kellogg and Stern have decidedly pointed out the early and exceptionally differentiated development of discrete forms and their status and significance apart from visual analogy and depiction. The empirical foundations Kellogg offers, as much as they are individually open to criticism, are still able to furnish the proof of our interpretation. Golomb does not share this view, however, and again it becomes clear that a clarification is needed:

»Kellogg's formal description of the child's construction of a seemingly abstract graphics vocabulary ignores the meaning children attribute to their scribbles and designs. An examination of the finished product on which Kellogg's taxonomy is based, of necessity eliminates the interpretive comments children make while drawing or when they inspect their finished work. Kellogg's taxonomy of shapes and her emphasis on the non-pictorial or nonrepresentational nature of complex configurations does not provide an insight into the representational origins of drawings. Her orientation betrays a preference for abstract forms, an appreciation of shape independent of meaning that determines her choice of units of analysis, and, ultimately, imposes an adult's vision on children's drawings« (GOLOMB 2004: 24).

And: »Some authors have attributed great significance to the child's geometric and abstract design, and have deplored their decline during the childhood years as the pressure to draw recognizable figures increases. [...] In my own studies, I have found little evidence of deliberate design making. Usually, before assigning a task, I ask children for one or two ‹free› drawings: ›Please, draw anything you like‹. In response to such a request, children up to the age of four years either scribble, or more commonly, make an attempt to draw a representational figure. It is only among those four-year-olds who already draw distinctly representational figures that I also find designs – approximately 30 percent of the drawings. The designs are quite simple in their construction and the child, far from being content with her abstraction, tends to interpret them and to assign meaning to the configuration [...]. These findings suggest that the desire to make designs, and to create purely decorative effects independent of meaning, emerges concurrently with the ability to represent objects. My data, however, are inconclusive and may not reflect the spontaneous activity [...]« (GOLOMB 2004: 92f.).

Influenced by Richter's assessment (cf. endnote 17) and with reference to works by Matthews (1984, 1999, 2003), a fundamental change and re-assessment of earliest graphic manifestation seems to announce itself in the last ten years in German literature, as demonstrated by the works of Peez (2006: 69 - 94, 2007 a, b) and Stritzker et. al. (2008) on the subject of »smudging« and its transition to »scribbling« as well as the single case study »Scribbling Notions« by Baum and Kunz (2007).

14   For what is, to our knowledge and until recently, the only – and paradigmatic – attempt to make the debate of early graphics retraceable down to the assessment of a single picture rather than being limited to an illustration based on a few examples, we refer to the Kellogg archive

(1967, 2007). However, the archive only documents the graphic vocabulary and not the direct relationship of individual attributes and their chronologically earliest appearance.

15   As mentioned, we propose the two terms »graphic expression« or »picture« to be the alternatives (on terminological difficulties cf. MAURER/RIBONI 2007a, 2010a: chapters 2-1-01 and 6-1; see also MAURER/RIBONI 2010 c: 17-21).

16   We refer to the term »phenomenology« not as a philosophical one but as a general expression for an extensive and methodic demonstration and description of phenomena in the actual context of early graphic expressions in ontogeny.

17   Several authors have pointed out the second part of this conclusion, Richter first and foremost, either in making reference directly to early graphic periods or as general assumption about the ontogenic development of pictures. On this point the following quotes:

»Yet, if we look at the mountains of literature on children's drawing, surprisingly few of them take the scribbling period itself as their object; in most cases, the description of the development of shapes and of formal systematics during the scribbling age are chosen as a starting point for looking at later utterances. According to the earliest survey, recapitulated in our section on research history, […] man began to draw by depicting tadpoles« (RICHTER 1987: 26; my translation; original text: »Allerdings haben, betrachtet man die Berge Literatur zur Kinderzeichnung, erstaunlich wenig Darstellungen das Kritzelgeschehen selbst zum Gegenstand; meist wird die Beschreibung der Formentwicklung und der Formsystematik während des Kritzelalters zum Ausgangspunkt für die Betrachtung späterer Äußerungen gewählt. In den ersten Untersuchungen, die wir in den Abschnitt über die Forschungsgeschichte rekapitulieren, […] begann der zeichnende Mensch sowieso mit der Darstellung des Kopffüsslers«).

»We find systematic presentations of the scribbling period primarily in the survey by (1.) H. Meyers (1950, and particularly 1957 […]), (2.) R. Kellogg (1959, 1970) and (3.) H. Gardner (1980). Each of those three presentations, however, represents a different view of the scribbling […]« (RICHTER 1987: 26; my translation; original text: »Systematische Darstellungen des Kritzelgeschehens liegen uns vor allem in den Untersuchungen von (1.) H. Meyers (1950 und bes. 1957, 4. unv. Aufl. 1971), (2.) R. Kellogg (1959 und 1970) und (3.) H. Gardner (1980) vor. Alle drei genannten Darstellungen vermitteln aber eine jeweils andere Sicht des Kritzelgeschehens […]«).

»The giant edifice of interpretations, assignations, classifications et al. only rests on a meager foundation of confirmed knowledge on the sequence of *draughtsmanly* processes, *pictorial and aesthetic* mergers, (early) *structure formations*, *individual* variants of shapes and topics etc. This creates the impression that existing information is continuously being reinterpreted rather than verified, questioned and supplemented or replaced with new surveys. Some of the data on which we base our considerations, assessments and interpretations to this day were collected in the first decades of our century under socio-cultural conditions that were entirely different and using inadequate methodological instruments« (RICHTER 1987: 370; my translation; original text: »Das riesige Gebäude von Ausdeutungen, Zuordnungen, Klassifikationen o.ä.

steht nur auf einem dürftigen Fundament von gesichertem Wissen über die Abläufe des *zeich-nerischen* Geschehens, die *bildnerischen* Zusammenschlüsse, die (frühen) *Strukturbildungen*, die *individuellen* Varianten von Formen und Themen usw. So muss sich der Eindruck aufdrängen, dass die vorhandenen Informationen immer nur umgedeutet werden, anstatt überprüft, in Frage gestellt und durch neue Erhebungen ergänzt bzw. ersetzt zu werden. Manche der Daten, auf die wir unsere Überlegungen, Beurteilungen und Interpretationen bis heute gründen, wurden in den ersten Jahrzehnten unseres Jahrhunderts unter völlig anderen sozial-kulturellen Bedingungen und mit unzulänglichen methodischen Mitteln erhoben«).

»Research initiatives on children of younger age groups, especially three- to four-year-olds, are remarkably underrepresented, although this is the very age group which experts unanimously consider to be of high scientific interest [...]. Where more recent surveys have been undertaken to gain basic scientific knowledge, the results are often critical, either because investigators collected the corresponding documents and data unsystematically or in a way that cannot be scientifically verified [...] or because they rest on an insufficient number of samples [...]. Consequently, the data do not allow for a legitimate description of the early representational drawing [...]« (SCHOENMACKERS 1996: 91ff.; my translation; original text: »Bemerkenswert unterrepräsentiert sind hingegen Forschungsinitiativen bei Kindern jüngerer Altersstufen, insbesondere bei den Drei- bis Vierjährigen, obwohl dieser Altersabschnitt nach einhelliger Auffassung der Fachautoren als wissenschaftlich besonders interessant eingeschätzt wird [...]. Dort, wo aktuellere Erhebungen zur Gewinnung grundwissenschaftlicher Erkenntnisse vorgenommen wurden, erweisen sich die Resultate zumeist als kritisch, weil die Untersuchenden entweder unsystematisch und wissenschaftlich nicht nachvollziehbar angelegt wurden [...] oder auf zu kleinen Stichproben beruhen [...]. Dieses Datenmaterial lässt folglich keine legitimierbare Deskription des frühen repräsentationalen Zeichengeschehens zu [...]«).

»The diversity of foundations [...] and the different ways of describing and classifying the pictorial and aesthetic phenomena of the child has engendered a large number of developmental theories on types of drawings. Common to all approaches is probably the rough tripartition of development stages: scribbling phase, schematic phase, pseudo-naturalist phase [...]. The terminology, the assignment of these phases to age groups, the demonstration of intermediate or transitional phases and the explanation for the emergence of these phases diverge in the individual theories. Consequently, the reasons for the emergence of developmental phenomena are considered resolved by some theoreticians [...], while they remain entirely open to others« (WICHELHAUS 1992: 50; also 2003: 77; my translation; original text: »Die Vielfalt der Grundlagen [...] und die unterschiedliche Art und Weise der Deskription und Klassifikation bildnerischer Phänomene des Kindes haben zu einer Vielzahl von Entwicklungstheorien zeichnerischer Gattungen geführt. Allen Ansätzen gemeinsam ist wohl eine grobe Dreiteilung des Entwicklungsgeschehens in: Kritzelphase, Schemaphase, pseudonaturalistische Phase

[...]. Sowohl die Terminologie, die Zuordnung dieser Phasen zu Altersgruppen, als auch die Einteilungsmodi innerhalb dieser Phasen, das Aufzeigen von Zwischen- bzw. Übergangsphasen und die Begründung für das Entstehen dieser Phasen divergieren in den einzelnen Theorien. So sind manche Theoretiker der Auffassung, dass die Ursachen für die Entstehung entwicklungsbedingter Phänomene geklärt sind [...], andere halten sie noch für völlig offen«.

»[...] because although children's drawings have now been studied for more than a century there is no generally accepted theory that can account for them, and existing theories are full of contradictions and confusions« (WILLATS 2005: 1).

»The child's drawing is an exceptionally rich topic which, paradoxically, remains almost unexplored despite the numerous works and articles published on the subject every year« (WALLON 2007: 124).

»In all, we know little about scribbling and symbolic development and almost nothing about the impact of scribbling in symbolic development from 14 to 28 months old, possibly because children at those early ages, instead of making drawings, just scribble« (STAMATOPOULOU 2011: 164, citing ADI-JAPHA et al. 1998.).

18   Cf. second endnote.

19   On this point cf. Maurer et al. (2009) and Maurer (2010); lengthier passages in this paper are taken from Maurer et al. (2009: 36-38), with abbreviations and adaptations.

20   Albeit with the important rider that this material is not seen as something merely physical, but something sensory, i.e. a mental image of a perception of something physical.

21   The possible objection that lines, patches and contours in a picture are not based on a physical dimension but very probably on general processes or structures of visual perception, has not been proved, and it is permissible to doubt that it ever could be proved successfully. In any case – early picture genesis represents one of the touchstones for such a thesis. If the thesis were true, then the temporal sequence of early graphic forms emerging in ontogeny would have to ›mirror‹ the general structure of visual perception. Early picture genesis would have to correspond with a kind of hierarchic structure of visual perception itself, a parallel that we assume cannot be established.

22   On this point cf. Maurer (1994), and Maurer and Landis (2000), and Maurer (2013). The proven ambiguities of formant patterns concern vowels and vowel fragments produced in isolation and which have been subjected to an identification test outside of their acoustic and semantic context of production. The ambiguity cannot therefore be related to the influence of co-articulation, transitions and semantic context. – For our new studies on the subject matter, see the information given on the website <www.phones-and-phonemes.org>.

23   »It used to be believed that when very young children are babbling they are simply making random noise, but we now realize that they are rehearsing the sound patterns they will use in later speech and that even in the womb children can recognize differences between the speech patterns of different languages. Similarly, it used to be believed that children who were scrib-

bling were just making random marks, or at best rehearsing the motor movements they would need later on to make representational drawings [...] . As a result, the study of representation in children's drawings used to begin with the study of the tadpole figures, the first obviously representational drawings to appear« (WILLATS 2005: 45).

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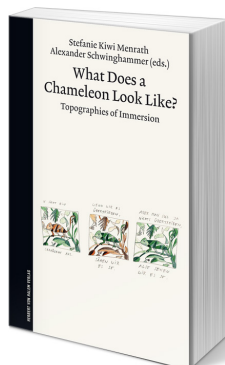
Stefanie Kiwi Menrath /
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**What does a Chameleon Look Like?
Topographies of Immersion**

Liberating the concept of immersion from the technical and digitally-oriented rubrics under which it is often thought, What does a Chameleon Look Like? indicates the concept's applicability throughout the humanities. It assembles recent interdisciplinary work on immersion as technique and cultural topos: While the human-machine relationship has long been one of fascination and utopian positivism, the advent of visual technologies such as television in the 1960s created a certain uneasiness towards immersion, or indeed an outright fear of it. As our societies become increasingly technologically determined immersion has become a pervasive phenomenon. In the 1990s the notion of immersion merged with discussions on artificiality and the aestheticization of everyday life. Not technology per se, but rather the consumer worlds that it constructs were the focus of this critique of the spectacle and a ›society of immersion‹. Likewise, technology has become conceptualized as a second nature, albeit one that is both internal and external. Subsequently, debates around human-computer-relationships (HCI) returned – although this time with a focus on immersion as a basic human capability.

What does a Chameleon Look Like? explores the concept of immersion as extending far beyond the remit of virtual reality. This volume provides enquiries into the historical and contemporary significance of immersion and offers new perspectives on aesthetics, technology and ethics.
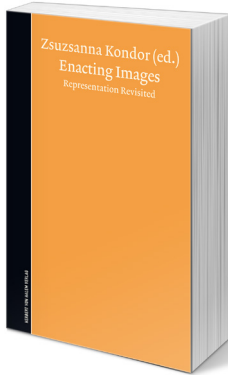
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Enacting Images is devoted to images as they can mobilize cognition and theorizing. Though we can speak of a pictorial turn now that images have become a distinct and full-fledged topic of investigation, some may continue to cling to the impression that images should still be considered within a fundamentally representationalist framework.

As an alternative, the enactive approach provides a conceptual setup within which images, beyond their informational, immersive, and aesthetical power, can be considered as being the manifestations of a new epistemic access to the world. The present volume is a collection of essays that reflectively investigate the theoretical prerequisites, scope, and limits of enactive approach.