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About the Role of Perceptual Psychology in Art History

Old Unit, New Opportunities

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Abstract

Numerous challenges that arise in the field of art history require recourse to expertise in perceptual psychology. In addition to explaining the meaning that people attach to individual works of art and their content, the effect that arises in the recipient is essential to deciding whether the work of art could adequately represent a statement. In addition, with in-depth knowledge of the human act of perception, it is easier to understand what people can and cannot process, when, and how. Art and perception have always formed a unity, as a work of art has no meaning without perception. Artists often acted as intuitive psychologists who understood very well how human perception works and how certain effects can be achieved. Accordingly, art history, which is dedicated to art from a historical perspective, requires precisely this expertise in a systematic manner to adequately depict, describe, and explain the dimension of perception. The following programmatic paper aims to make clear why both disciplines should work closely together and shows what such fruitful paths of joint work could look like.

Keywords

perception, art history, interdisciplinary research, empirical aesthetics, presentation technique, Wölfflin, Warburg, analytical, Amazon Stream Approach to Processing Art

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1. Prologue

Humankind's earliest works of art bear witness to a deep, albeit intuitive, knowledge of perceptual sciences, particularly the psychology of perception. Beginning with cave paintings, which did not simply depict realistically but aimed to achieve a specific effect by cleverly using environment-specific aspects and employing suitable techniques through the use of perspective in the Early Renaissance to direct attention (Kubovy, 1986) to the use of simultaneous contrasts in Impressionist masterpieces to potentiate the color effect: artists always used targeted techniques relevant to the psychology of perception to control perception and increase the impact of their works. Knowledge of steering and enhancement mechanisms was fragmentary and was not fully documented because the artists' intuitive perceptual knowledge was never systematically transmitted across the generations. Without the dedicated and holistic inclusion of the scientific field of the psychology of perception, we will neither understand the motivation, drive, and purpose of the creators of artworks nor the psychological impact of an artwork. People create art because they want to be human — without knowledge about human beings and human perception, we will not fully understand art, either from a historical or a current perspective.

2. The Psychological Turn

Significant parts of art history over the last 100 years have been inspired by theories of perceptual psychology. Throughout the 20th century, there was a fruitful alliance between art history and perceptual psychology, whether Konrad Fiedler (Fiedler, 1913), Heinrich Wölfflin (Wölfflin, 1899, 1917), Hans Gombrich (e.g., Gombrich, 1951, 2002) or Rudolf Arnheim (e.g., Arnheim, 1954, 1988), to name just a few prominent representatives.

For example, Wölfflin's consistent introduction of the technique of "comparative seeing", a method from the psychology of perception, heralded a paradigm shift in art history (Bader *et al.*, 2010). His idea of using the then-modern technology of slide projectors to view photographic reproductions of masterpieces in parallel with the help of a double projection was as fascinatingly simple as it was ingenious. Suppose this technology is taken for granted today. In that case, it is usually underestimated how things were done before Wölfflin. For centuries, it was a given for art lovers, both if they were actively engaged in art and if they were interested in viewing and evaluating art, that they had to seek out the original masterpieces worldwide. This was intended to subsequently use the power of imagination to recall the works of art that had been recorded if a comparison between individual works was sought. Notes, both textual and pictorial, supported the memory process. However, this

technique cannot be considered valid or even exact, as human memory recall processes are extremely distorted, as empirical psychology can easily demonstrate. For example, images are perceived and reproduced schematically (Bartlett, 1932; Carbon and Albrecht, 2012) and portraits of people who are not personally known are only processed superficially at the level of individual characteristics in a so-called "iconic" manner (Carbon, 2008). What is also widely underestimated is that Wölfflin's approach was not simply an innovative use of modern technology. Rather, it meant a departure from the concept of the universal knower who keeps the corpus of world artworks present in his head. This concept overestimates the possibilities of a person, especially concerning perception and memory, and is, therefore, to be qualified as "psychologically naïve". The effects of Wölfflin's ideas were correspondingly diverse. Through the consistent use of images and modern image analysis techniques, disciplines related to art history could develop confidently, for example, the visual sciences through Aby Warburg (Hensel, 2010). The techniques used soon became standard equipment in every art history seminar. Wölfflin not only used a much more realistic cognitive model of human processing, but also indirectly led to a democratization of the art-historical approach: from this moment on, one could not only look at distant works of art, but moreover make substantial comparative observations. Wölfflin's ideas and practical approaches to perception were well founded and, unfortunately, have not been received in any depth until recently. The aesthetics philosopher Bence Nanay stresses that Wölfflin's sophisticated work on pictorial organization and the development of such principles in art from a historical perspective in particular is essential to comprehend how important the understanding of perception was and is still for art history (2015; see also Nanay, 2016).

Behind these innovations were media-optimistic and innovative personalities obsessed with improving the conditions for proper inspection and perception of artworks. For instance, Herman [sic!] Grimm, Wölfflin's predecessor in the Chair of Art History in Berlin, can be regarded as the first art historian to make light projection accessible to the discipline (Kemp, 2006; Schlink, 1999) and Bruno [Ludwig Julius Boguslaus] Meyer, who as Professor of Art History in Karlsruhe finally brought this technique to fruition (Hensel, 2010). The *skiopticon*, an optimized type of *Laterna Magica* (magic lantern) and thus the predecessor of the slide projector, which is hardly known today, was consistently used to improve art didactics (Meyer, 1879/1880) and could contribute to a more objective assessment of works of art (Peters, 2019), at least as long as a very high quality was rigorously achieved in the photographs, as demanded and enforced by Bruno Meyer (Männig, 2019). From then on, the public was able to make direct comparisons and was inspired by the works. The cross-fading technique, which was often used at the time and involved a considerable amount of equipment to minimize parallaxes effectively, is easy

to implement today, but is hardly ever used anymore. Instead, double projection, or the now computer-aided presentation of two works shown in parallel, which requires constant jumping from one image to the other, is used. In most cases, where parallelism of themes and groups of figures is simply to be compared, this technique may be appropriate. Still, combination projections actually become exciting when it comes to comparing individual versions of works of art because here, an essential limitation of the human visual perceptual apparatus plays an important role: as soon as we make a rapid eye movement, a so-called "(fast) saccade", the visual input from the eye is inhibited, we are thus functionally blind (Utz and Carbon, 2020). This effect, known as the saccadic suppression mechanism, typically lasts at least 30 ms but can also last up to 120 ms (Joos *et al.*, 2003) and apparently also occurs in other animal species (Pastukhov and Carbon, 2021). Classification of relevance: we involuntarily make many saccades per second, whether we are jumping back and forth between images or simply inspecting a singular image. This is accompanied by another effect that shows that we do not have an image-based, but only a schema-driven perceptual memory for visual impressions: as soon as saccadic suppression has ended, the previously developed percept can no longer be accessed en détail, which manifests itself in the phenomenon of *change blindness* (Simons and Levin, 1997): even strong changes to the image at hand cannot be detected as soon as there has been a brief suppression of the visual input, i.e., a break in the continuous visual impression (Carbon, 2015; Noe, Pessoa and Thompson, 2000). Our imagination and the immanently developed image in front of our "mind's eye" are, therefore, a mere construction that is orientated toward the visual input, but is far from being able to reproduce it exactly (Cohen, 2002; Noë and O'Regan, 2000). The massive reduction of image information is obviously necessary in order to optimally meet the typical requirements of a human being in an evolutionarily shaped world (Carbon, 2014). Whether we want to or not, we cannot switch off this mode (Goetz and Carbon, 2023); we are thrown back on these strong limitations, and at the same time we are not aware of them — yet the resulting perceptual realities significantly determine us. By studying the psychology of perception, however, we can explicitly categorize these constructive cognitive elements and consistently implement measures, both of an instrumental and perceptual nature, in order to deal with the perceptual results obtained in a more qualified manner.

3. A Work of Art without Gestalt Does not Affect

In addition to precise photogrammetric imaging, today's possibilities for digitizing works of art also allow for three-dimensional recording as well as scanning and storing surface features and material determinations. This helps to

take a better look at details, to compare them with technical possibilities, and to work out differences. Still, in turn, one can lose oneself in details, and the view for the whole, for the "Gestalt" (Gestalt in further contexts, see Bohde, 2011; Gestalt in its original meaning, see von Ehrenfels, 1890) can no longer arise (Carbon, 2019). This is precisely where Gestalt psychology, an important part of the psychology of perception, can be productive. Not only is a Gestalt more than the sum of its constituent parts — the Gestalt emerges from the parts as a new quality through perceptual emergence (Koffka, 1935). What is important here, and this is often not completely clear, is that the parts themselves, through the Gestalt in which they are embedded, have a different effect than they would if they were free (Henle, 1971): this effect affects assessments regarding color, form and essence and can lead to drastic distortions of perception (Leder and Carbon, 2005). The real effect of a work of art only comes about when a form develops, i.e., when a figure stands out concisely from the ground (Köhler, 1929). One could now draw the false conclusion that one should not look at the details because they work against the possibility of a perception of form.

However, you can achieve both by consciously and dynamically adjusting your focus: first, there should indeed be an overall view, without specific detailed views. It is about holistic perception — about the effect of the Gestalt (Wagemans *et al.*, 2012a, b). This mode works automatically and non-consciously (van der Helm *et al.*, 2003). Psychologically, a staged presentation can help to make this figure appear — we speak of immersion (Diemer *et al.*, 2015). Such a staged presentation made it possible for people to perceive multisensory information: visual perception (the staged image display) and semantic information (via a performative speech act) could now occur synchronously in the lecture hall.

On the other hand, the visual presence of the art object, which was now greatly enlarged and brightly illuminated by projection, could be significantly increased by darkening the room. This effect could be further enhanced by the performative qualities of the lecturer (Unger, 2017). For example, it is known from Wölfflin's lectures that his very engaging and captivating lectures, which he delivered freely from the middle of the students using their visual axis, created the feeling among the audience that they, themselves, had the visual experiences described by Wölfflin (Nelson, 2000). In a further step, similar to a shot-countershot technique, which is also successfully used in film art to illustrate dialectical processes, Wölfflin changed position and explained deeper details that may have remained hidden in the first inspection (Nelson, 2000). This psychological trick presumably enabled him to systematically induce a change from a view of form to a view of detail to allow the work of art to be seen both in terms of its subjective overall effect and objective material properties. Such a performative presentation using the most modern media

possibilities can create a deep understanding and a high level of memorization of the artworks viewed. At the same time, however, it harbors the danger of transferring the subjective effect that the lecturer feels through the reception of the artwork to the students without them authentically experiencing their own impression. This has been repeatedly demonstrated with other content in research on autobiographical memory (Loftus and Pickrell, 1995). Despite these possible dangers, the appropriate staging of a work of art is a good way of allowing a Gestalt to develop. In this way, not only can the effect of a work of art itself be experienced, but one can also better empathize with the intention and the creative act of the artist behind it to gain a broader understanding of the work of art. The deliberate restriction to purely descriptive explanations would undoubtedly lead to a more objective description of the details, but the details alone do not produce meaningful units (Köhler, 1933). First and foremost, we need the imagination because, without it, no judgment of artistic value seems possible (Hüppauf and Wulf, 2006). One could say that we can certainly assess the artistic qualities of a work of art by looking at it in detail, but what makes it a work of art remains reserved for the overall view and thus for the imagined *Tertium Comparisonis* (Bredekamp *et al.*, 2012).

4. A Work of Art without Context Has no Meaning

Even if we succeed in bringing the image of a work of art to life (see Carbon, 2023a), making it vivid and tangible in Gestalt and effect through the performative and psychologically skillful act of staging in the lecture hall, it usually remains an image without context.

This poses two problems: firstly, the effect cannot be fully captured if typical viewing conditions of the original setting are not observed, such as the viewing time (Locher, 2015), the original size (but see Bertamini and Blakemore, 2019; Carbon, 2020), the typical distance (Carbon, 2017; Locher *et al.*, 2001) that viewers would adopt, or the original lighting conditions (Carbon and Deininger, 2013). Moreover, the essence of the original cannot unfold because, as a viewer, you can always be aware that what you are looking at is not unique (Wolz and Carbon, 2014). In psychology, this is also referred to as "ecologically valid conditions of perception" which make it possible to truly experience art (Carbon, 2020, 2023b). On the other hand, the context of the artwork itself acts as a reference for and to the artwork, i.e., we expect different effects in specific contexts and deal with them differently (Muth *et al.*, 2017). Above all, however, the context gives the work its semantics. In a strict sense, without contextual embedding, the work of art has no meaning, or at least a different meaning, because it is torn from the context of meaning and stands alone, like a Gothic cathedral in a high-rise setting, without a cathedral forecourt, bells and worshippers. How can we escape the

problem that it is almost impossible to create ecologically valid visual conditions and contextual information? First of all, it is important to address such aspects and make them a subject of discussion. But it is also essential to address these critical meaning-generating dimensions. The semantic embedding of a work of art is an obligation, but reconstructing the psychological conditions of perception and context as precisely as possible is not just a voluntary exercise but a decisive factor in being able to experience and understand the work of art (Carbon, 2023b). Getting to know the artwork *in situ* is probably the most environmentally problematic method, but it is also the most ecologically valid (Carbon, 2023b). Modern visualization techniques, such as the creation of entire museum contexts via virtual reality (VR) in high-resolution graphics, can not only help to emulate the art experience (Madjarev *et al.*, 2019) but, in special cases, even enhance it. This is the case, for example, when texture elements can be made more tangible than in the original or when unusual perspectives can be adopted (Jankovic *et al.*, 2019). As the possibilities of VR are still extremely limited, this can only be a possibility in conjunction with other techniques that consistently address the aspect of meaning. The exact recreation of perspectives (Solso, 1994) or the simulation of authentic lighting or spatial conditions (Carbon and Deininger, 2013; Pentcheva, 2016) can help to bring the impact and meaning of artworks closer than standardized and context-free modes of representation ever could.

5. A Work of Art without Resonance Does not Exist

With all this use of media technology innovations to support psychological processes, it is always important to adapt this use to the target audience in such a way that it can resonate with the artwork. If there is no visceral contact with the work, it cannot begin to exist and so it really remains just a physical artifact without effect, meaning or personal relevance (cf. Fingerhut and Prinz, 2018). It is only through personally relevant associations that the artwork can be explored more deeply. Such associations can hardly be consciously controlled but form a decisive basis for evaluating the quality of a work of art, as Fechner aptly described in his *Aesthetic Association Principle* (Ortlieb *et al.*, 2020). Kant already referred to these associations, which he further subdivided into different forms: in addition to the reproductive (*imaginatio associans*) imagination, which connects ideas according to laws of association, there also exists a productive imagination (*imaginatio plastica*), which functions according to rules of understanding and is counted among the subjective sources of knowledge (Eisler, 1930). One could describe the process of approaching a work of art as an act of *Einfühlung* (Gerger *et al.*, 2017; Lipps, 1903) or *empathy* (Freedberg and Gallese, 2007; see for an overview about aesthetic emotions, Menninghaus *et al.*, 2018) — in terms of brain physiology, it is generally

associated with the activity of mirror neurons (Lieberman, 2007), which are also decisive for aesthetic experience (Gallese and Freedberg, 2007). The resonance that arises between the effect of a work of art and one's own feelings, which is also known from successful interpersonal dyads, e.g., in psychotherapeutic practice (Tschacher and Ramseyer, 2017), creates an affective and profoundly understanding quality, right up to further possibilities of interpreting mental and affective states that were inherent in the artist when creating the work of art (Daum, 2016).

6. Epilogue

In conclusion, it must be emphasized that the classic Panofsky-style art-historical approach to artworks in the sense of a fixed interpretation schema, which is intended to uncover individual layers of meaning in the artwork to be interpreted (Panofsky, 1955), appears to be limiting and incomplete. Panofsky's three-part method of analysis, based on a pre-iconographic description, an iconographic analysis and an iconological interpretation, certainly belongs to the impressive canon of methods in art history. However, this approach is not comprehensive in the psychological sense. Undoubtedly, clear methodological instructions allow systematic comprehension; one might almost say aseptic, unemotional, cold-cognitive scanning of a work of art, but the aspect of reception and impact is not only ignored but also rendered impossible. As explained in this text, it is essential, first of all, to fulfill all the basic conditions to allow the perceptual effect of a work of art to have an unbiased, associative and not intellectually superimposed effect; otherwise, only a work (in terms of a mere object) but not a work *of art* (in terms of a true artwork) can be described. To achieve this effect, the general approach of reception aesthetics (see, e.g., Kemp, 2015) can help, as this approach explicitly allows for the mental and emotional processes involved in the perception of artistic works. However, the approach has mainly been applied to literature and does not consider the diverse advances in knowledge in the psychology of perception in recent times.

I, therefore, propose the following procedure, which I would like to call the *Amazon Stream Approach for Processing Art* (ASAPA), a concept which is metaphorically orientated toward the constantly branching and merging Amazon stream, which never remains the same and, therefore, never takes on a uniform Gestalt. Accordingly, the experiencing of artworks and the acquisition of experiences, insights and knowledge about them takes place in a complex interaction of different processing modes which can be recursively updated, yielding an infinite process. Typically, but not mandatorily, such a process starts with a beholder devoting themselves to the work of art in the World of Effect — *Wirkungswelt* (Experience World): one immerses oneself, experiences immersion, feels, and senses. This synthetic level of perception

and effect operates based on Gestalt perception; it is a matter of holistic experience. In the *Wirkungswelt* you should try to avoid interpreting as far as possible, as otherwise you will permanently destroy the act of experience. There is a parallel, but often subsequently, starting process, where one enters the World of Analysis — *Analysewelt* (Analytical World), in which analytical methods are used to dissect and divide and thus dissect using iconographic approaches. In the allegory of a big stream like the Amazon, the product of the Experience World serves as input for the Analytical World and will be processed further there, but often we also face the opposite pattern: we start quite academically, analytically and aseptically and this moderates the Wirkungswelt. While *visceral* access to knowledge and resonance phenomena is made possible in the Experience World, an *analytical* access to knowledge can be created in the Analytical World through the use of a systematic set of methods. This is followed by the essential World of Dialectics — *Dialektikwelt*: this contains the outflows of the two previous processing worlds, again remaining in the image of the big stream that flows further while discussing the temporal insights and experiences. This means that the dialectical process is also in permanent transformation, so the result of this process can only be a provisional judgment that will be revised sooner or later when new trickles or floods reach the Dialektikwelt. The judgment must be considered provisional not only because the two other worlds show an ongoing process character but because the Umwelt around us will change, too. And with Umwelt changing, the evaluation systems change, too, e.g., due to the *Zeitgeist*, new associations, and altered viewing habits. Lastly, the iconological evaluation itself can be altered by new methods, insights, and assessments. Essentially, although most people approach the works of art in an educated and often very analytical way due to cultural and educational training and habits, we should be constantly aware of the fact that a holistic approach to processing art requires the Wirkungswelt, too. Especially for the highly educated and skilled beholder, we often do not let the Wirkungswelt unfold over times, often, we even inhibit processes from this world in order not to "contaminate" the pure reasoning of artworks. Such a purist approach will hardly reveal the overall power of a work of art and will not allow the underlying qualities to be recognized. In the end, this would not do justice to the work of art itself, because a work of art needs the Wirkungswelt as an artwork plays with and is customized to this Wirkungswelt.

In order to fully understand how to conduct such assessments and how to deal with the output of such an Amazon stream approach, we urgently need lively cooperation between the disciplines of art history and perceptual psychology. Interdisciplinary courses, interdisciplinary research teams, and joint publications are essential for this dialogue and collaborative work (see for a critical review, Kubovy, 2020). In doing so, one can rely on already

established institutions that bring together different worlds of knowledge, e.g., relevant interdisciplinary conferences such as the *Visual Science of Art Conference* (VSAC) or the meetings of the *International Association of Empirical Aesthetics* (IAEA), or publication organs such as *Leonardo* and *Art and Perception*. Following this exciting path will open up great opportunities for both disciplines (and further disciplines which play important roles, too) to enjoy, appreciate, and better understand art, art reception, and the ongoing fascination for art.

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Conflict of Interest

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