

Christian von Ehrenfels –

The Founder of Gestalt Theory or merely the Provider of a Trade Mark in Science?

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When looking into modern dictionaries or companions of philosophy, especially in the Anglo-American field, one does not succeed in finding a biographical entry for Christian von Ehrenfels. However, the same books will dwell in detail on the role of his 1890 article on „Gestaltqualitäten“ as the single-handed breakthrough of which later became Gestalt psychology. In the following I will argue that neither the theoretical (and scarce empirical) background of the article was as revolutionary as the research programme of Gestalt Psychology later became nor that the core principle of transposition went beyond Meinong's Relationism or Richard Wagner's music theory, which Ehrenfels admired. For these reasons, Meinong as well as Husserl received the article very positively but both suggested to skip the term „Gestalt“ and suggested in turn „fundierter Inhalt“ (Meinong 1969, p. 288, later „fundierter Gegenstand“ Meinong 1971, p. 399) or „Einheitsmoment“ (Husserl 1984, p. 237).

Christian Freiherr (baron) von Ehrenfels was born in Rodaun, Austria on the 20th of June 1859. During his studies at the University of Vienna he was strongly influenced first by Franz Brentano and later by Brentano's pupil, Alexius Meinong. Less oriented towards experimentation than Meinong, Ehrenfels followed Brentano's empiricism insofar as his method consisted of posing hypotheses and evaluating them by means of examples and counterexamples, however, in disavowing 'Evidenz' as leading to an infinite regress he limited the scope of empiricism to intersubjectively communicable events. After presenting his habilitation thesis 'Ueber Fuehlen und Wollen' in 1887, he became 'Privatdozent' at the University of Vienna in 1888. He moved to Prague in 1896 and there was appointed 'Ordinarius' (full professor) in 1900. He served in this position until 1929 and shortly after his emeritation died in Lichtenau (8th of September 1932). Beyond his philosophical writings on epistemology, value theory, and philosophy of mathematics, he published 4 musical dramas, the drama 'Melusine', and discussed the merits of Richard Wagner's theory of music. Today he is most referred to as the father of the poet Imma von Bodmushof.

What I want to show before going into the details of Ehrenfels' arguments and their consequences and further developments is that choosing the term „Gestalt“ was fortuitous, not primarily because the non-philosophical scientific community regarded it as more poignant than Husserl's or Meinong's alternatives but because this term opened a word field with connotations which allowed to bring together the classical approaches to the whole-part problem and the new-mechanistic epistemological attempts of the end of the 19th century. In these attempts, avenues of argumentation were opened to overcome the straightjacket of mechanistic explanations without falling into the traps of Vitalism.

Only once before in the German mental history the term „Gestalt“ had played a significant role: Notker Labeo (950 – 1022) used the Old-German ‚gestaltim‘ in his translations and commentaries of the Psalms (23,7). As becomes apparent from his translations of Aristotle and Boethius, he regarded ‚gestaltim‘ as prototypical for the conceptual field demarked by the terms ‚figura and forma‘. For instance, in the fifth book of his 'Consolationes Philosophiae' (S. 28/29)

Boethius writes:

Sensus enim figuram in subiecta materia constitutam, imaginatio vero solam sine materia iudicat figuram. Ratio vero hanc quoque transcendit speciemque ipsam, quae singularibus inest, universali consideratione perpendit.

In modern terminology one could translate this as

Sensation perceives a stimulus in its specific spatio-temporal parameters. Perception results in an unitary representation (an object) which goes beyond the specific parameters. The detection of invariances transcends the specifics of a given singular object by applying all those rules characteristic for the basic category to which the object belongs.

He adds (S. 30)

Intelligentiae vero celsior oculus existit; supergressa namque universitatis ambitum ipsam illam simplicem formam pura mentis acie contuetur. (This results in the representational format of mental images where generic forms are the content of consciousness).

While modern psychological terminology uses different terms for the same referent on the different levels of processing, Boethius and the Scholastic tradition up to Brentano, but also Husserl and Meinong, use the same term, *figura* or its equivalents, on all levels thereby stressing the fact that perception is unitary and its dissection into different levels has a more didactical than ontological intention. The only exception is the scholastic level of *intellectus*, where ‘*forma simplex*’ is used for the most abstract representation; this corresponds to Meinong’s distinction of ‘*fundierende versus fundierte Inhalte*’. The problem of transition from sensorically based representations (Boethius’ *figura*) to an abstract representation (*forma simplex*) had been resolved in a reductionistic mode by Gassendi who regarded the consecutive levels in perception and cognition as a kind of filtering, while Descartes in contrast, stuck to the dualism between ‘*figura*’ and ‘*forma*’. Finally, Kant in his “*Critique of Pure Reason*” postulated ‘*schemata*’ as specific cognitive processes bridging the gap between concepts and ‘*images*’.

By suggesting the term ‘*Gestalt*’, Ehrenfels - at least implicitly - stresses the continuity of perception and cognition because the term *Gestalt* comprises ‘*figura*’ as well as ‘*forma*’. Furthermore, *Gestalt* is used by Notker Labeo as translation for *ratio*, which corresponds best to ‘*invariances*’ (Koffka 1935 and Gibson 1979); and thereby hints at Ehrenfels’ solution for the problem of transition from sensation to concepts, namely *Relationism*.

The alternatively suggested terms as Husserl’ *Momente* or Meinong’s *Inhalte* in contrast lack the saliency of the term *Gestalt*, insofar the fortuitous choice of this term has opened a - partially - novel epistemological perspective beyond the dilemma of *Mechanism* and *Psychologism*.

When in 1890 Christian von Ehrenfels published the ‘*Gestaltqualitäten*’, he joined the heated debate about the epistemological status of mechanical explanations which dominated the discussion about the foundation of physics in the end of the 19th century. Gassendi’s dictum of 1658 that explaining a phenomenon is equivalent to building a mechanical device producing this phenomenon had influenced epistemological thinking in physics for 200 years but had proved as inapplicable to Faraday’s and Maxwell’s observations. This had led Ernst Mach in 1882 to state apodictically that ‘*Physik ist ökonomisch geordnete Erfahrung*’- physics is experience economically ordered (in: 1897, p. 219); for him especially thermodynamics did not allow to

adhere to the mechanistic approach in epistemology any longer. As how revolutionary this turning point has been regarded, shows Wilhelm Planck's inaugural lecture at the Prussian Academy of Sciences (1897) where he argued in favor of a reduction of all natural phenomena to mechanics because the goal of science is the connexion of all phenomena 'but the most integral form of this connexion ... is identity and in no other field of physics than in mechanics this can be attained' (1958 vol. III p.4).

I think it is possible to argue that by using Ehrenfels' term 'Gestalt', the Graz school on the one hand and the Berlin school on the other hand propose contradictory answers to the epistemological debate regarding the role of mechanic explanations at the end of the 19th century: Ehrenfels used the intellectual instruments of Aristotle, namely the concept of invariance, to solve the problems due to a direct application of the mechanical explanation by pointing out that invariance is not given directly but in regard to the relations between relations, that is, a second-order isomorphism (Shepard & Chipman 1970). In a way, Ehrenfels tried to save the traditional point of view by raising it to a higher level. Köhler had an entirely different approach: In 1920 he proposed the concept of a potential field as a novel, integrative approach for explanation in physics, biology, and psychology. Very soon he realized the problems of any explanation (including his own field theory) based on the assumption of static states, therefore, in 1927, he showed that the approach of the Berlin school of Gestalt psychology fits very well in the then emerging new approach of systems sciences. As it is well known, he gave up this avenue of thinking and ended up with the concept of an isomorphism between the potential field of the physical reality and its representation in the brain "field" (1958), which - at least up to now - has turned out to be illusive. In contrast, the systems approach in Miller, Galanter, Pribram (1960) revolutionized psychology because it made apparent that a naturalistic approach to psychology is possible, which is at the same time materialistic and non-reductionistic.

Despite the fundamental differences between the two schools of Gestalt psychology (devided by different interpretations of the same term: "Gestalt"), there is one central unifying background assumption in both schools, namely, that perception is not aimed at features but at objects in the real world. Insofar, both schools shared Bergsons' criticism of psychophysics and explicitly (the Graz school) or implicitly (the Berlin school) used Brentano's concept of intentionality as the starting point of any psychological activity.

In the second part of the 19th century science and reductionistic materialism were regarded as equivalent (see for instance the oath to materialism formulated by Helmholtz et al.), holistic approaches to natural phenomena were regarded as obsolete. Even Mach repeatedly observed phenomena which did not fit into the reductionistic approach (e.g. the 'Mach square', the 'Mach bands', and the transposability of melodies, but in his explanations he always tried to salvage a kind of reductionism as the more economical explanation. For instance, the phenomenon of transposability was 'explained' by postulating that in addition to the sensation of single tones there is the (characteristic sensation) 'charakteristische Empfindung' of the sequence of tones; in so far he remains in a framework resembling Locke's simple and complex ideas. Thus Mach upheld the Associationist tradition of psychology despite his observations which show that this approach is not sufficient. The specific merit of Ehrenfels' "Über 'Gestaltqualitäten'" consists in showing that Mach is correct in his observations but fails to give adequate explanations, namely that these observations run counter to the reductionistic approach of association psychology.

Quite often critiques of Gestalt Theory have pointed out that the arguments postulated there can

already be found in Aristoteles' dogma of forms, in medieval scholasticism and in the dogma of Modi of John Locke. Already in 1890, the dictum 'The whole is more than the sum of its parts' was regarded as an epistemological truism because in the first part of the 19th century physiologists had shown that the chemical analysis is insufficient for physiological analyses and for this result had **coined** this dictum. When this expression was still discussed – as, for instance, by Schlick - then because of the different possible interpretations of 'sum' in this context. The specific novelty of Ehrenfels' approach consists in his making more precise the meaning of 'trans-**summativity**' in Gestalten and thereby opening a new avenue for empirical investigations.

From the point of view of history of science the importance of Ehrenfels' article consists in **coining** the concept 'Gestaltqualitäten' (in 1890 he still used quotation marks, but in his 'Weiterführende Bemerkungen' of 1922 and in his posthumous 'Über Gestaltqualitäten' (1937) he uses the term Gestalt and Gestaltqualitäten without quotation marks, which shows how this term had become accepted as a scientific term). His method in developing his new terminology consisted in an analysis of phenomena, where he followed Brentano's 'deskriptive Psychologie', combined with the formulation of empirically testable hypotheses for psychological processes (the 'genetische Psychologie' of Brentano). In so far he regarded his definition of 'Gestaltqualitäten' not primarily as a contribution to the epistemological debate but as a contribution to empirical psychology:

With 'Gestaltqualitäten' we mean positive contents of imagination which are coupled with the existence of complexes of imagination in consciousness, these in turn consist of separable (that is independently imaginable) elements. The complexes of imagination which are the necessary precondition of the existence of Gestaltqualitäten are called the foundation (Grundlage) of 'Gestaltqualitäten' (p. 136).

This definition of Gestaltqualitäten resembles very much Husserl's 'figurale Momente' which have had a strong influence on structuralism in mathematics, to which Ehrenfels contributed with a series of articles starting with 'Das Primzahlengesetz - entwickelt und dargestellt aufgrund der Gestalttheorie' (1922).

The Graz School of Gestalt Psychology was strongly influenced by Meinong's discrimination between founding (inferioras) and founded contents (superiora); in Meinong's ontology Gestalten (in his terms 'fundierte Inhalte') are regarded as real, but especially his demarcation criterion for reality has been attacked by Russell in the discussion about Bishop **Berkeley's** example of the golden mountain. The **Relationist** interpretation of 'Gestaltqualitäten' by Ehrenfels and the further discussion by Meinong make it apparent that for the Graz School of Gestalt Psychology objects were regarded as points in a homogeneous feature space where every combination of orthogonal (independent) features is possible. Gestalten like melodies 'as produced objects' are real objects (that is, objects given in actual presentation), whereas 'as founded objects' (that is, as objects seen from an ontological point of view, i.e. independently on the psychological act of perception) are ideal objects (hence the misunderstanding by Koffka). A "homogeneous feature space" gives the collection of objects that can *subsist*. Some of them may be real (that is, can find a temporal collocation), but there is no way to consider all of them as real. Another way to consider the same difference is the following one: the feature space is an apriori construction, therefore it pertains to the realm of the possible (or of the subsistent); on the other hands, real, existing objects can be recognized only a posteriori. In contrast, the Berlin School of Gestalt Psychology followed Mach in applying the principle of economy to epistemic processes which led Köhler (1920) to the minimum principle working in an inhomogeneous space with a structure

resembling the potential field in electromagnetics. In this space some configurations simply can not happen (see especially Köhler (1925) where his analysis of 'Komplextheorie' resolves the problem of the mountain of gold and other configurations, insertion of L. Albertazzi's comment which are not singular ("prägnant" in Wertheimer's (1925) terminology), can only be kept stationary if they are prevented from gravitating to the nearest singularity, that is, a nearly quadratic object will be perceived as quadratic or at least remembered as quadratic.

For the Berlin School of Gestalt Psychology Gestalten were regarded as 'real' objects in the phenomenal world of the perceiver and not mere carries of features (fundierte Inhalte). In his 'Weiterführende Bemerkungen' (1922) Ehrenfels discusses the problem of reality of Gestalten:

Are Gestaltqualitäten something real, or something which exists not only in our imagination? Many arguments are in favor of it. However, there is the apparently unresolvable problem in assuming that Gestaltqualitäten exist beyond our consciousness. Assumed that the tones are real, how it is possible, that a melody is real too? (p. 157).

In this context, Ehrenfels refers to Köhler, however admitting that he has only been able to get a very superficial acquaintance knowledge with this work (namely Köhler's 'Physische Gestalten' of 1920). After this passing reference to Köhler he implicitly discards the field approach and argues in favor of Relationism as the basis of Gestalt Psychology: "Conceiving 'Gestaltqualität' as the sum of all relations between the elements of its basis is really not so bad and as consistent with all the consequences of Gestalt Theory" (p. 162). That Relationism is not sufficient in explaining many phenomena had been shown by Wertheimer (1912), where in his description of the phi-phenomenon it became apparent that pure motion can not be reduced to the spatial and temporal relations of two points of light. Even in his posthumous article of 1937, Ehrenfels does not refer to the experimental and theoretical results of the Berlin School of Gestalt Psychology - in my point of view due to the unbridgeable differences concerning the reality of Gestalten. Despite all these differences, Ehrenfels has been of high importance for the Berlin School of Gestalt Psychology because, already in his article of 1890, there can be found arguments which later have led to the concept of 'Prägnanz':

we have an instinctive and irresistible tendency to perceive the relative motion of objects in our field (sic!) of vision in such a way that greatest possible stability in our field of vision is achieved. Our perception of space is naturally and irresistibly tuned to optimal stability. In a similar fashion our Gestalt perception of nature is tuned to towards optimal simplicity. (p. 162).

Without referring to Ehrenfels, Kanizsa & Luccio (1986) have taken up this argument and have shown that the ambiguity of 'Prägnanz' consists in the polarity of stability and singularity.

It is my opinion that without disregard for the analyses of Ehrenfels in his article of 1890 it has been his principal merit to have changed the fate of psychology by throwing the word 'Gestalt' as the bone of contention to the warring epistemological fractions at the end of the 19th century. His theoretical arguments can be found - sometimes quite more precisely - in the works of Meinong and Husserl. But their terminology was perhaps too academic to start a debate as Ehrenfels' term 'Gestalt' has done since more than 100 years. It is interesting to observe that self-proclaimed neo-Gestaltists like Steve Palmer from Berkeley work with an entirely relationistic framework without referring to either Ehrenfels or Meinong.

There are, however, influences of Ehrenfels on the cultural history, which go beyond cognitive

science. That becomes apparent in the development of atonal and 12-tone music in the 20th century. Without quoting the ardent Wagnerian Ehrenfels directly, in 1921 Schoenberg told a pupil:

Today I have discovered something which will assure the supremacy of German music for the next 100 years." – A quote which very much reminds of Wagner's megalomania. His "discovery" was the 12-tone method first realized in his piano suite Opus 25. In this method "each composition is formed from a special row or series of 12 different tones. This row may be played in its original form, inverted (played upside down), played backward, or played backward and inverted. It may also be transposed up or down to any pitch level. All of it, or any part of it, may be sounded successively as a melody or simultaneously as harmony. In fact, all harmonies and melodies in the piece must be drawn from this row.

The basic assumption, already resident in Ehrenfels (1890), is that *any row of tones* can form a transposable Gestalt and that any rules of transposition known from the visual field, namely geometry, can be applied in other – in this case the acoustical – domains of perception. The implication is that the perceptual space of hearing does not have a structure beyond the dimensions of loudness and pitch.

An entirely different consequence could be drawn from Köhler (1920) because his concept of a potential field implies a much more restricted structure of the perceptual field. Revesz (1946) and especially Roger Shepard and his pupils have shown that the perceptual space of music perception is a manifold in a multi-dimensional space, namely a helix. Here again the central question is about the homogeneity or inhomogeneity of the perceptual space: The constructivistic music of Schoenberg assumes a homogeneous auditory space of equally possible pieces of music while Shepard - originally in his work on multidimensional scaling a follower of Relationism - points out that in the auditory space there is a singular manifold which constrains what can become a melody (an acoustical Gestalt): Beyond this manifold there is only noise.

In conclusions the Encyclopedia Britannica refers to Ehrenfels as the philosopher remembered for his introduction of the term 'Gestalt' (German "figure") into psychology' (1980, Vol. III, p. 811), Simons (1988) in his introduction to volume 3 of Ehrenfels' 'Philosophische Schriften' refers to the 1890 article as 'the work which has made him famous: "Über Gestaltqualitäten"' (p. 1) and following Schischkoff (1965) he argues that 'Ehrenfels *invented* the Gestalt qualities in the domain of perception' (p. 4). I hope to have shown in this text that Ehrenfels has the outstanding merit to have coined the term 'Gestaltqualitäten' which – in a nutshell – brought together much of the essence of the epistemological debate in the end of the 19th century. The term apparently had exactly the right mixture of concreteness and abstractness (the English term 'figure' is obviously too concrete and Husserl's 'figurale Momente' or Meinong's 'fundierter Inhalt' were too abstract to attract the curiosity of natural scientists) to start a novel approach to the problem of emergence. However, what Ehrenfels definitely did not do was 'inventing' the problem underlying the phenomena Ernst Mach confronted the mechanistic approaches with: He coined a term which started a revolution in psychology and for this term he will and has to be remembered.

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