THE GESTALT ACCORDING TO THE BERLIN SCHOOL

The Crossroads between Empiricism and Rationalism: Part III

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Introduction

The psychophysical project of German experimental psychology started out as an attempt to explore concrete relationships between the physical environment and the sensuous qualities of conscious experience that occur during perceptual stimulation. The idea is simple and reasonable: Press a needle through your skin and notice the pain – the relationship is immediately understood. Hence, the purpose was an investigation of a concrete relationship between two epistemological realms (Sundqvist 2007 a,b).

Psychologists disposed towards empiricist intuitions saw the psychophysical project as the very core of their science. According to them, psychology should attempt to specify the physical conditions for mental phenomena to appear and in this respect there was no distinction between psychology and natural science (Külpe 1999 [1893], 6; Cf. Sundqvist 2007 b). Mind had only to be 'squeezed' into the ontological frames of the psychophysical project.

However, used as a paradigmatic example of perception, the sting of a needle might deceive us. We might be led to believe that our perceptual system is sensitive towards physical magnitudes in isolation and that the corresponding sensuous content is equally isolated and atom-like. In this cut to pieces strategy of early experimental psychology, the perceptual state was conceived as bundles of sensuous elements standing in a one-to-one relationship with nervous processes of the brain.

When von Ehrenfels introduced the concept of Gestalt, he gave the psychophysical project a double stroke. Firstly, Gestalt phenomena cast doubt upon the supposition that one could ever find the basal elements of consciousness. The unifying powers of mind seem to outrun our capacity to decompose the conscious state in the way the psychological science took for granted. Given the atomist ontology, it now seemed impossible to understand the psychophysical relationship. Secondly, Ehrenfels' notion of Gestalt supported the rationalist intuitions that the task of psychology was to describe *the cognitive structures of mind*, rather than to explain mental phenomena with reference to events in the neurobiological substrate. In the evolving rationalist picture of mind, order was introduced from a non-material, purely psychological 'above' and by principle independent of the neural events. Hence, according to rationalist intuitions the psychophysical relationship and the causal laws in the neural substrate were irrelevant in an analysis of the essential aspects of mind.

This is the last part of a three-step investigation of the crossroads between empiricism and rationalism. In part one I argued that rationalist perspectives of mind – based on the concept of representation – to a certain degree are 'ontologically' blindfolded and by that reason not a useful tool in the psychophysical project of contemporary psychology and neurosciences. The failure of the information processing paradigm to produce empirical theories that reach beyond the computational abstractions and

the large scale functional level can at least partly be explained by this shortcoming. Further, *if* the task of cognitive science is to understand the relationship between neural processes and mental phenomena, one could argue that the same arguments used by rationalists to distance themselves from the psychophysical project are, in fact, also good arguments for contemporary psychology and neurosciences to look for empiricist perspectives rather than the prevailing rationalist models of mind. (Sundqvist 2007 a).

In the second paper I discussed the basic tenets of the empiricist approach, but also the predicaments of empiricism in light of von Ehrenfels' notion of Gestalt (Sundqvist 2007 b). This third investigation is an attempt to explore the main tenets of Wertheimer's solution to the predicaments of empiricism. I will also try to illuminate the different types of perceptual phenomena that have been used to confirm the intuitions behind the two diverging perspectives of mind. In a way, it's all ends up in an attempt to illuminate why I believe rationalist intuitions might lead us fundamentally wrong in our analyses of mental phenomena. So, let us return to these predicaments of empiricism.

The threatening collapse of the psychophysical project

In the beginning of the 20th century, empiricist psychology – commonly labeled associationism – was guided by a peculiar atomistic conception of sensory content and the specific notion of *psychophysical parallelism* associated with the atomism[1]. More precisely, this was a notion of parallelism based on the *constancy hypothesis:* Whenever the same external physical process stimulates the same well-circumscribed area of a sense organ (e.g., the retina), the same sense data cannot fail to appear[2]. Hence, the constancy hypothesis was important in the empiricist understanding of their science.

However, the constancy hypothesis does not hold and this fact pushed intuitions in a rationalist direction – explicitly by philosophers inclined towards rationalism and implicitly by psychologists using explain-away strategies that implied the typical rationalist diversion between the 'cognitive operations' of mind and the supposed outcome of sensory stimulation: atomized sensuous elements. The failure to establish the constancy hypothesis was blamed on 'inattentiveness' and 'errors of judgment'.

[1] This notion of *psychophysical parallelism* was discussed in part II (Sundqvist 2007 b). As a heuristic principle of research in the task to explore the concrete relationship between the mental and the physical realms, Ernst Mach suggested the principle of 'the complete parallelism of the psychical and the physical'. This principle was regarded as heuristic, a hypothesis that it was possible to correlate two sets of facts. According to Mach's idea, each observable change of sensation should be accompanied by a corresponding change of the nervous process. Mach 1999 [1897, 1886], 30.

[2] The constancy hypothesis in short: CH1. Genuine sense data is completely determined by, and depend only and exclusively upon, local stimulation. CH2. Whenever the same external physical process stimulates the same well-circumscribed area of a sense organ (e.g., the retina), the same sense data cannot fail to appear. CH3. Continuous change in local stimulation is accompanied by a continuous change in the corresponding sensations. (Sundqvist 2003, 39-42.)

This explain-away strategy meant that also empiricist psychologists were forced to draw a distinction between appearance and the real constituents of consciousness – the 'unnoticed sensations.' In this way the constancy hypothesis enforced certain rationalist assumptions in the analysis of mind: introducing a multilayered ontology of conscious states and as an ultimate consequence: the *homunculus* of rationalism (Sundqvist 2007 a,b).

At the time of Wertheimer's analysis of the Gestalt phenomena, the general trends in psychology and philosophy were abandoning the psychophysical project. Rationalists had found powerful arguments to establish a distinction between philosophical analyses of *essence* and natural science (Sundqvist 2003, 19-25). Husserl could accuse 'the experimental fanatics' for mistaking their 'cult of facts' for a genuine analysis of mind (Husserl E. 1910-1911, 319-321). According to Husserl, analyses of mind should not deal with hypothetical causal stories of the brain and old 'metaphysical' riddles like the relationship between body and mind.

Empiricist psychology, too, tended to abandon the psychophysical project. Empiricist psychology turned towards the study of reflexes and various forms of conditioned behavior. These were approaches that supposedly avoided the metaphysical tangles of the body mind puzzle. Pavlovian reflexes in the framework of 'stimulus and response' seemed to capture the behavioral aspects of the mental phenomena while avoiding the 'dualist trap' of conscious experience. Mind could be explained from a material 'below' only if one ignored conscious experience and defined away mental processes in terms of behavior.

In this way, the psychophysical project was dismissed as 'introspectionism' and became an invective. Scientists in all camps slowly started to believe that conscious experience belonged to either a forbidden realm (empiricists) or to an irrelevant realm (rationalists). (Sundqvist 2003, 19-25).

The Gestalt psychologists tried to show how the psychophysical project could be saved by shifting focus from the attempts to identify *qualities* in conscious experience to the description of *functional dependencies in the perceptual structure*. The concepts of Gestalt, Figure-ground and *Prägnanz* were introduced as ontological tools that replaced the old atomist framework and made it possible to understand the psychophysical relationship. In this picture it is crucial to understand that Gestalt theory concerns ontological issues and should be regarded as a device that provides a means toward further discoveries *and not* – as it is usually regarded – as an empirical theory to be proven wrong or even worse, a theory beyond the reach of verification[3].

The primary virtue and substantial outcome of Gestalt theory is the ontological framework that the theory provides. The primary failure of Gestalt theory, I have argued, was that it was ahead of its time. At the time, the neurosciences were lack-

[3] If one should characterize Gestalt theory, experimental ontology is the best label. Through their experiments the Gestalt psychologists provided ontological arguments (Sundqvist 2003). Köhler and Koffka did often assure their thoroughgoing empirical ambition to construct concrete physiological hypotheses. Despite this ambition and a sometimes considerable confusion between empirical and ontological matters in Köhler and Koffka's writings, Gestalt theory is a device rather than an outcome.

ing methodological tools to examine the mental from 'the subsymbolic' perspective provided by Gestalt theory. This fact might also explain why Gestalt theory in the past has appealed to (non-rationalist) philosophers rather than to psychologists. (Sundqvist 2003 chapters 1, 7 and 8).

So, it is time to present the line of arguments that Gestalt theory provided that disarmed the arguments stemming from rationalist intuitions. One simply has to understand the true nature of conscious compounds and then get rid of two old prejudices.

The first prejudice: The 'bundle' hypothesis

In the empiricist image of mind, one finds a conflict between the cut-to-pieces strategy of the laboratory and the conception of mind as a continuous cluster of processes. As discussed in Part II (Sundqvist 2007 b), there are two fundamental problems to perform the traditional empiricist type of analysis. The first concerns the problem of atomism: what is actually cut to pieces in our abilities to discriminate various aspects of experience? Are 'cold', 'blue', and 'salt,' concepts that actually distinguish elemental components of conscious states just like nametags on objects? The other problem concerns the other side of the coin: How is the unit of consciousness established?

In the early 1920s, when Wertheimer sums up the atomism that Gestalt theory was opposed to, he states that psychology at the time was thoroughly guided by two hypotheses about the constituent parts of conscious states: *the 'bundle' hypothesis* and the *associationist hypothesis*. These two hypotheses constituted the two-sided predicaments of atomism from Wertheimer's point of view. We now turn to the first of these hypotheses which concerns the 'item-per-item approach' in analyses of mind or, more specifically, the concept of sensation. Wertheimer calls this theme 'the mosaic or bundle hypothesis':

> I. *"The mosaic or 'bundle' hypothesis*. – Every 'complex' consists of a sum of elementary contents or pieces (e.g. sensations). Example: If I have $a_1b_1c_1$ and b_2c_2 are substituted for b_1c_1, I then have $a_1 b_2 c_2$. We are dealing essentially with a summative multiplicity of variously constituted components (a 'bundle') and all else is erected somehow upon this and-summation. Thus to sensations are added 'residues' of earlier perceptions, feelings, attention, comprehension, will. Also memory attaches itself to the sum of contents." (Wertheimer 1938 [1922], in Ellis (ed.) 1938, 12-13.)

Wertheimer describes the empiricist notion of ideas. The perceptual encounter evokes compounds of sensations from various sense modalities. The compound [or bundle] of sensuous qualities was the outcome of both past and present impressions. According to Wertheimer, the weakness of the bundle hypothesis was that it assumed the summative relation of conscious content. Take stones and put them in water; the basic properties of the constellation do not change regardless if there are more stones added to the heap of stones. This is a case of 'and-summation'. However, in nature one can find compounds of a completely different kind. If drops of oil are poured into water; a compound of oil drops will float on the surface and as such they seemingly are a case of 'and-summation'. But then, if some drops of detergent are added, the compound of oil-drops is dispersed to form another molecular formation. The addition of the new element is not simply an addition; it contributes to a change in the total constellation. Wertheimer's suggestion is that conscious states are compounds of this

latter kind. For instance, the figure below shows how color distribution is dependent on the total configuration (Koffka 1935, 113-160.); the figure also shows how the manipulation of the total configuration reveals certain interdependencies.

In the figure to the left, the circle is perceived as homogenously gray. This is no longer the case when a vertical band divides the circle. Then, we have one lighter-gray semicircle and one darker-gray semicircle (this effect is more impressive when the background colors are red and green).

This phenomenon indicates how color distribution in the visual space is a highly complex process with a tremendous amount of variables that are highly dependent on each other. Notice the fundamental difference between the notion of independent objects (like, for instance, objects in a room) and the constituents of the perceptual state; if you move one object out of a room nothing happens to the rest of the objects. On the other hand, the removal of the black line actually changes the constituents of the gray circle.

Külpe had been on the verge to conceptualize such relationships of dependency through the notions of *fusion* and *colligation*. Külpe acknowledges that it was a 'possible phenomenon in every sense department' that the relationships between the postulated elements of consciousness seemed to dissolve their absolute independence. However, according to Külpe this was a fact for the inattentive mind only (Sundqvist 2007 b). Wertheimer reverses this claim: there are no independent elements in consciousness to be found, not even in an attentive mind, because there are no independent elements of consciousness. In opposition to von Ehrenfels' analysis, Wertheimer claimed that a Gestalt phenomenon was not a relational component that was brought upon the independent sensory content in a mental act. Consciousness is not a room full of objects between which we impose relationships when we enter the room. No mental act, no Gestalt quality need to be added to establish the structure – the very nature of the sensory content is a structured whole.

A *Gestalt* in the conception of the Berlin school could be defined as:

"…an ensemble of items, which mutually support and determine one another. Thus they realize a total structure which governs them and assigns to each of them (as a part of the whole) a function or a role to be performed as well as a determinate place in that whole. Each detail exists only at the place at which it plays the role assigned to it by the whole of which it is a part." (Definition from Gurwitsch 1966 [1936], 25; Cf. Wertheimer 1938 [1922] , 52-54; Ellis (ed.) 1938, 14-15).

Sensory qualities turn into dependent parts (or moments) of the total structure of the conscious state.

The new conception of conscious states as structured wholes contained four important discoveries that supported the psychophysical intuition. First of all, the Gestalt properties of this structure imply that phenomenal consciousness is a structured whole by its intrinsic nature – the *homunculus* of rationalism has considerably less to do if the struc-

tural properties are intrinsic and not brought on to the sensuous content 'from above'. In fact, the *homunculus* has nothing to do! A compass in a magnetic field is a rather good analogy. The needle of the compass directs itself *as if* it was guided by a homunculus and the intention to strive towards north. However, the organization of the inner state of the compass is an outcome of the organizational forces of nature, involving the structural properties of the magnetic field as well as the material properties of the compass.

The second important discovery concerns the nature of stimuli and their relationships with the perceptual structure. Thus, Wertheimer demonstrated that there were concrete and easily comprehended relationships between stimuli and conscious contents even though the constancy hypothesis does not hold: The structures of sensuous content are highly determined by structural properties of the stimulus. Gestalt theory enriches our understanding of the complexity of stimuli. And it is in this perspective the Gestalt laws of Wertheimer should be understood (Wertheimer 1923a, 301-350; also Ellis (ed.) 1938.) Structural properties in stimuli, like *proximity, similarity, closure, good continuation,* and *symmetry* are some of the aspects that determine how dependence relations are revealed in conscious states, that is, how figures stand out from the background. Thus the total stimulation and many different kinds of invariant relationships in stimuli are decisive for what figure will appear and are equally decisive for how the background crystallizes as background surfaces and perceptual depth.

These insights into the nature of proximal stimuli weakened the rationalist line of argument considerably. Perception does not need to employ guesswork to the extent rationalism emphasized in their attempt to enforce dualism. Stimuli are not fragmentary and chaotic. Stimuli are rich, concrete and highly structured, and most importantly, the perceptual state is highly sensitive towards these structural properties of stimuli. Simply speaking, the *homunculus* of rationalism had less guesswork to do. For instance, one obvious consequence is that the experienced world does not need to lose perceptual identity in cloudy weather – it is just the intensity of light that changes, most other relationships in stimuli remain invariant. Hence, there are many aspects of perceptual identity that could be explained in reference to perceptual structure and in line with Mach's empiricist intuitions (Sundqvist 2007 a).

The figure-ground structure is the third discovery. We have to state that figure-ground phenomena are not restricted to two dimensional pictures in textbooks, but are instead the very essence of perceptual time and space, according to Gestalt theory. Phenomenal consciousness in a perceptual state is a highly dynamic and complex figure-ground structure involving perceptual frameworks, background, space, temporality and the 'tensions' of the phenomenal body/ego[4]. With the figure-ground structure,

[4] It is important to notice that the emphasis in Gestalt theory is on the dynamic interaction between figure and ground, rather than on the segregation of the figure itself from the background, in their analyses of perceptual states. The background is as important for the organization of the Gestalt structure as the figure – the background in the figure above decides the color of the semicircle. Segregation demands a mutual dependence relation with the background from which the unit is segregated. Koffka uses an analogy of an oil drop: if a drop of oil is poured into water the oil drop is organized into a certain type of structure due to external and internal forces effecting its molecules. In another liquid the segregation might not have appeared at all. Accordingly, the figure-ground phenomenon is rather a figure-context phenomenon.

Gestalt theory opens up possibilities to cover the phenomenal aspects of all kinds of mental phenomena including attention, thinking, volition as well as the important notion of an ego-object relationship within a perceptual framework.

The experiments conducted by Metzger on the so-called *Ganzfeld* might be the best illustration of the notion of figure-ground organisation in Gestalt theory[5]. The experiments demonstrate the way phenomenal consciousness is an outcome of the interplay between invariant structural traits in stimuli and the responding psychophysical state of the perceiving organism. The perceptual world unfolds and 'crystallizes' in different ways when the structural properties of stimuli change. The *Ganzfelt*- experiment showed that homogenous stimuli result in homogenous 'primitive' space. Inhomogeneous stimulation, on the other hand, gives rise to surfaces and transparent space (Koffka 1935, pp. 164-165). Accordingly, the simplest condition for visual perception is not dots or lines of some intensity, but a homogeneous distribution of proximal stimulus. Thus, the most basic perception is not a microscopic sensory atom but three-dimensional space as an overall perceptual framework. Even the most primitive perception is an organized dynamic structure of dependent moments stretching in space and in time (Koffka 1935, Chapter VII).

Gestalt structure, laws, and the principle of figure-ground all helped to provide a description of conscious phenomena that did not immediately imply an homunculus or symbolic order responsible for the unity of consciousness. Gestalt theory could demonstrate that the unity of consciousness is of another nature than the 'semantic unity' that rationalist intuitions assumed. However, to reach the sub-symbolic level of description one needs to make account for the symbolic level. Wertheimer's conception of conscious states as structured wholes contained a fourth important discovery. It made it possible to describe cognitive aspects of conscious phenomena without involving the cognitive vocabulary of ordinary language and the model of sign/reference used by rationalism. The experience of 'meaning,' 'attention' and 'volition' could be understood as natural effects of organisation tendencies in dynamic systems: the organizational principle of *prägnanz*. One of the major consequences was that empiricist psychology could get rid of another old prejudice: the traditional concept of association and a rigid conception of cognition.

[5] In the laboratory, Metzger created the simplest possible conditions, a homogeneous distribution of stimuli (a compact, evenly illuminated fog is a natural example of such a minimal perceptual situation). Metzger could then demonstrate that structural properties in proximal stimulus, not atomized portions of intensities, gave rise to figure-ground organization of various sorts.(Metzger 1930, 16; in Koffka 1935, 113.) It is possible to execute an 'armchair experiment' and create something like a *Ganzfeld* of your own. Just close your eyes and vary the illumination with your hands. You may get a clear impression of space after a while. (Note the colorfulness of the darkness. The relative lack of stimuli does not prevent the visual system from producing a shimmering. Many people find those activities of perceptual system extra vivid and 'perception like' just before falling asleep when this shimmer seems to be enough to establish regular perceptual objects – fascinating).

The second prejudice: The associationist hypothesis

The second hypothesis to criticize, then, which Wertheimer calls *the associationist hypothesis,* targets the concept of association, the connection of perceptions and ideas in the light of the summative bundle hypothesis:

II. *The associationist hypothesis* – If a certain content *A* has frequently occurred with *B* ('in spatio-temporal contiguity'), then there is a tendency for *A* to call up *B*. (*Typical case*: nonsense syllables.) This is the ground plan of Associationism. The principle here is one of merely *existential connection*, a union only as regards the appearance of these or those contents, a concatenation essentially extrinsic in character. The concatenated contents are arbitrary; the question of their intrinsic relations to one another is *on principle* never raised. (Wertheimer 1938 [1922], in Ellis (ed.) 1938, 12-13)[6].

The issue that Wertheimer addresses is complex and not straightforward, but concerns the cognitive aspects of conscious experience (with object recognition in visual perception as paradigmatic example). The principle of association was the glue that united the past with the present – *similar* perceptual encounters arouse *similar* ideas due to mechanized habit. By this simple formula, cognition was supposed to be explained. Like a train of thought, ideas pursued each other due to a mechanical habit of association. Propositional thought could be conceived as the nametags associated with a certain sensuous complex and certain behavioral dispositions (See Sundqvist 2007 b).

In the traditional atomistic framework the problem had been that the principle of similarity was impossible. This led empiricists to conceal the principle of similarity in reflex mechanisms and to unspecified future physiological explanations (Sundqvist 2007 b)[7]. The outcome was a rigid and mechanical conception think-

[6] Translators note: 'Extrinsic' is used for Wertheimer's '*sachfremd'*. By this term Wertheimer means a relation which is determined not by the *nature* of the related terms, but by the mere external fact of their contiguity. Correspondingly the word 'intrinsic' is often used for '*sachlich*'.

[7] As discussed in Part II, von Ehrenfels had shown that 'similarity' of particular sensation was not decisive in our experience of perceptual identity and, thus, is of no significance in cognitive operations – the same melody can be played in different keys and we still recognize it as the same. Rationalists claimed that one has to introduce an intentional realm, separated from the concrete content of a mental state, to explain why the shifting sensuous content could represent identical object – that is, be interpreted as the same object. Hence, to save the associationist formula of similarity one has to postulate an extra component or actually an extra 'free-floating' layer of consciousness. Without this intentional component one had only a mosaic of non-connected sensuous qualities.

Notice that the rationalist formula made account for the unity of consciousness in terms of semantic identity but not in terms of perceptual structure (i.e. figure-ground). The case is rather the opposite – rationalism emphasizes the fragmentary nature of sensations just to make the reference to cognitive powers and the intentional realm more convincing. In the 'semantic manoeuvre' the whole perceptual state could as easily be regarded as an abstract sign. Hence, rationalism turned their focus away from the actual psychophysical state while turning the sensuous content into signs. In fact, the intentional characterization can remain indifferent to the sensuous qualities, the perceptual structure, as well as to the material properties of the psychophysical state and still capture the relevant semantic properties. Two differently organized psychophysical states can still have identical intentional contents. This is just another aspect of the red ink argument; intentional characterizations of a mental state are independent of the exact psychophysical nature of the state (Sundqvist 2007 a).

ing. Wertheimer pointed out that the process of association seemed too random and mechanical to provide 'epistemic reliability'. It not only failed to explain the principle of similarity, it also failed to capture our awareness of 'intrinsic requiredness' of conscious states. The latter aspect – our experience of 'meaningfulness' and 'volition' accompanied with propositional thought – might very well be the chief argument for the rationalist model of mind. When a perceived object is seen as a certain object, a certain action pattern is demanded. However, in such a situation a certain feeling of decision making *between* various action patterns is also present. People are led to assume that the guiding principle of mind is agency and the ordinary language from the public domain (involving objects and agents) is used as a model to describe the conscious state. This model implies that within consciousness there is an activity with more or less free will contemplating and at best following a rational order rather than the laws of nature. Titchener dismissed such ideas as 'popular thinking' with no actual bearing on conscious experience. (Titchener 1999 [1896], 132-132). Nevertheless, the principle of association seemed even a less accurate tool of analysis.

The principle of association was a much too mechanical notion of thinking and failed to account for the 'experience of meaning'. Wertheimer argues that the associationist formula of contiguity merely lumps the elements together, like stones being brought together by external circumstances – nothing makes them a unit except the very fact of contiguity in space and time. In this respect, essential aspects of mind were missing in the associationist ontology. Wertheimer states that the associationist hypothesis fails to make account for psychological experience of meaning (to be distinguished from semantic analyses of meaning):

"The processes of whole phenomena are not blind, arbitrary, and devoid of meaning – as this term is understood in everyday life [psychological meaning]. […]The mosaic or associationist hypothesis is […] on principle unable to supply *any* direct approach to the problem of meaning. Whether there is such a thing as meaningfulness or not is simply a question of fact" (Wertheimer 1938 [1922], in Ellis (ed.) 1938, 16; Wertheimer 1922, 57).

Empiricism missed a certain sense of necessary direction in mental states and these were the aspects psychology had to make account for in order to disarm the *homunculus* of rationalism, according to Wertheimer's intuitions:

"Combination, integration, completion, far from being the adventitious results of blind extrinsic factors (such as mechanized habit) are determined by concrete Gestalt Laws. 'Elements' are therefore *not* to be placed together as fundaments in and-summation and under conditions involving extrinsic combinations. Instead they are determined as parts by the intrinsic conditions of their wholes and are to be understood 'as parts' relative to such wholes. Nor are 'Gestalten' the sums of aggregated contents erected subjectively upon primarily given pieces: contingent, subjectively determined, adventitious structures. They are not simply blind, additional '*Qualitäten*,' essentially as piece-like and intractable as 'elements'; nor are they merely something added to already given material, merely 'formal.' Instead we are dealing here with wholes and whole-processes possessed of specific inner, intrinsic laws; we are considering structures with their concrete structural principles." (Wertheimer 1938 [1922], Ellis (ed.) 1938, 14-15;Wertheimer 1922, 52-54).

Wertheimer argued that the principle of association is blind and without direction, while conscious compounds have an intrinsic direction in time and space.

To capture the phenomena of thinking, Wertheimer's solution for empiricism was the figure-ground organization and the all-embracing concept of *Prägnanz* – the tendency towards stable organization[8]. Psychological meaning is, according to Wertheimer's conception, the outcome of dependence relations that reveal themselves in conscious states. The 'demand-character' within the phenomenal Gestalt is most crucial: Every figure-ground organization 'affords' certain action patterns[9]. The organism is striving towards equilibrium and stable organization. Action is not realized through acts of 'volition' and 'formal considerations' but through the intrinsic requiredness of the situation, just like the compass needle's struggle towards the magnetic north. In this way, the Gestalt structure reflects our sense of psychological meaning as well as the 'motor aspects of attention' – awareness of objects release action patterns. The old conception of ideas and the mechanical 'train of thought' could be replaced by the Gestalt structure of figure-ground and the dynamic tendency to establish stable organisation. One thought leads to the other due to the intrinsic course of the events – like a river. If a stable organisation does not occur, the structure turns instable and a process of restructuring emerges (freedom of will).

According to Wertheimer, the content of consciousness is not given meaning; the functional dependencies in the Gestalt structure *are* 'meaning' in the experiential sense of meaning. According to this intuition, propositional thought is not inducing categorical form on sensory content from above by means of minds cognitive powers. One could rather say that the phenomenal Gestalt bestows propositional thought, linguistic communication, and behavior with psychological meaning because it is a reflection of the psychophysical system's involvement in the world:

"The processes of whole phenomena are not blind, arbitrary, and devoid of meaning – as this term is understood in everyday life. To comprehend an inner coherence is meaningful; it is meaningful to sense an inner necessity. A prediction may be meaningful in this sense as may also a competition of something incomplete; behaviour is meaningful or not, and so on. In all such cases meaningfulness obtains when the happening is determined not by blindly external factors but by concrete 'inner stipulation'. Hence we may say in general that a whole is meaningful when concrete mutual dependency obtains among its parts. The mosaic or associationist hypothesis is therefore on principle unable to supply *any* direct approach to the problem of meaning. Whether there is such a thing as meaningfulness or not is simply a question of fact." (Wertheimer 1938 [1922], Ellis (ed.) 1938, 16; Wertheimer 1922, 57).

In this way the principle of *Prägnanz* is the dynamic principle that reflects the human capacity to sense the intrinsic requiredness of perceptual situations as well as the ability to grasp the necessary truths of our conceptual systems. Hence, the perceptual capac-

[8] The general characteristic of these grouping tendencies, the law of *Prägnanz*, stated that perceptual grouping tends towards good Gestalts. The reasonable way to understand expressions like 'the most stable' or 'good Gestalt', without turning into circularity, is to conceive Prägnanz as the reflection of a lawful, but dynamic, complex, organized order of the world. Nature tends to go towards regularity, symmetry, and simplicity, without the need for an organizing agent and often without any prearranged physiological forms to mold the system. Order is intrinsic to the course of the event. Good shape and stability come with equilibrium of state; this is the privileged order. Soap molecules strive towards the shape of a sphere, the compass needle towards magnetic north; this is the privileged order, how the natural forces arrange themselves.

[9] J.J. Gibson's ecological theory of perception is a close relevant to Gestalt theory. See further discussions in Sundqvist 2003, chapters 7 and 8.

ity to discriminate among things and events according to a categorical order, and our rational capacity to judge coherence in our thinking, is *reflected* in the Gestalt structure but not explained through it. The explanation of the phenomenon lies in the revelation of the causal nexus responsible for the phenomenon to occur. On this point, Gestalt theory had no explanation to offer. As mention, today's Artificial Neural Network modelling provides promising means to explore the empiricists' intuitions of discrimination, and classification in perception – with reasonable biological realism (Sundqvist 2003, chapters 7 and 8).

To repeat: The Gestalt, figure-ground, and Prägnanz are just ontological tools to describe a phenomenon with out inferring the *homunculus*.

Mind as nature – The hypothesis of psychophysical isomorphism

The perceptual structure could now be ready to be understood as a 'readymade', a reflection of the transphenomenal reality in 'the seeing substance' and possible to explain through a physiological 'below'[10]: a product from natural organizational forces. This could be done without 'defining away' mental life, as it has to be done in an atomist phenomenalist framework or through 'behaviourism'. Gestalt theory is a suggested road for future discoveries.

It was Köhler that saw the full force in Wertheimer's findings: conscious experience had structural properties identical with the one found in dynamic systems in nature. *The hypothesis of psychophysical isomorphism* simply suggests that a proper psychophysical project is to understand how dependence relationships in conscious states co-vary with relationships of dependences in nervous system. Hence, this is a very general methodological suggestion built on ontological considerations, unfortunately often dismissed as an extremely vague empirical hypothesis.

Gestalt theory suggests that we should attempt to treat perceiving organisms the same way as other complex systems of nature. A compass needle in a magnetic field is a dynamic system striving to establish equilibrium. This system can be described by natural science without any reference to a *homunculus*. More importantly, intentional characterisations of the 'inner' state of the compass needle is pointless except for specifying the *use* we make of the compass. On the other hand, it is possible to apply the rationalist intuitions on this system too: The *homunculus* of the system uses the magnetic field as a sign referring to the magnetic north. The compass needle can be said to have the believe: 'North in that direction'. The intentional characterization specifies the function

[10] I have labelled the metaphysical stance of Gestalt theory 'critical monism': the ultimate source of our existence is a transphenomenal reality, a 'seeing substance' to use Ewald Hering's word. Phenomenal qualities are properties of the 'seeing substance' and are thus a direct reflection of the events within the latter. Interaction between the world and the 'seeing substance' alters the states of the substance and, accordingly, the phenomenal properties of the state. With this transphenomenal reality we only have an incomplete acquaintance from two directions: on the one side from observations of behavior, knowledge of the physical environment, and knowledge of nervous processes, and on the other side from conscious experience as such. Psychology then has two epistemological realms, one physical and one mental. Hence, the gulf between body and mind is considered to be epistemic in nature, not ontological. See discussion in Sundqvist 2003, 154-159; Sundqvist 2007 b.

we use, but does not explain the function. In fact, the intentional characterisation refers to behaviour in a context and not to the intrinsic properties of the system – which are the ones we are interested in if we want to understand the system thoroughly.

Gestalt theory asks us to regard the organism as a complex dynamical system that, in all its reactions, has a conservative tendency and in all its perceptual encounters tries to reestablish equilibrium. The newly established equilibrium is never entirely identical to any past one. Koffka asks us to regard the organism as a gradually changing continuous process, affected by both external changes and inner regulation. His idea is that process patterns gradually develop 'trace systems' in the organism (Koffka 1935, 309). The pattern of organic organization is not entirely conserved but develops due to influence from the environment.

The problematic side of the ontological 'assumption' made by Gestalt theory is that it is not yet possible to demonstrate in but a very general way: Gestalt theory states that *if* there were methods to explore the dynamic organisation of neural processes these field processes would be a good candidate for a psychophysical project. Köhler's suggestion has been treated as the worst kind of naïvety, largely due to the failure of Köhler to find testable empirical hypotheses. However, given the metaphysical stance of *critical monism* and given that the psychophysical intuition *the hypothesis of psychophysical isomorphism* is reasonable and not naïve: *If* proximal stimuli give rise to a field organization in conscious experience, it *is* reasonable to postulate the hypothesis that the neural substrate also is a dynamic field. This means that conscious experience in fact might indicate where and how to look if one wants to understand both the psychophysical relationship and important aspects of brain functioning. Hence, there are reasons to believe that the perceptual structure reveals a clue as to how being is attached to nature.

This is an important insight today when our possibilities to understand mental phenomena from the perspective of Gestalt theory have been improved considerably. The new methodological developments make it *possible* to moving on to a level of explanation that operates on a more fine grain bioorganic scale. As a result, the rationalist intuitions seem less compelling and people have started to talk about the rise of a new sub-symbolic paradigm of cognitive science.

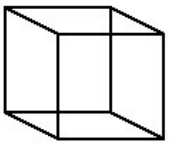
The psychophysical project in contrast to intentional analyses – The crossroads revisited

It was a confused borderland between *the perceptual structure of conscious state* and *object recognition* that got the name *'Gestalt quality'*. Take the answer Gestalt theory gives to Koffka's famous question, 'why do things look as they do'? (Koffka 1935, 75-105.). A short answer goes:

"Things look as they do because of the field organization to which the proximal stimulus distribution gives rise" (Koffka 1935, 98.)[11].

[11] Koffka summarizes his answer: "It has become apparent that the true solution, without being in the least vitalistic, cannot be a machine theory based on the sum of independent sensory processes, but must be a thoroughly dynamic theory in which the processes organize themselves under the prevailing dynamic and constraining conditions." (Koffka 1935, 105).

Thus, the claim is that conscious phenomena are, in a certain sense, covariant with the events in the physiological realm – and are thus a reflection of functional dependencies in the psychophysical system. Look at the cube below with your mind set with this 'psychophysical intuition'. The organization is not stable in this case. The visual pattern reorganizes itself into two different orientations. The task of psychology, according to the psychophysical project, is to find ways to understand the causal nexus in the brain that governs the phenomena. This is not a search for cubes in the brain but a search for those events in the brain that influence the (instable) structure of consciousness. For instance, it comes fairly naturally to imagine that the oscillation of the structure depends on some unstable physiological condition. Perhaps one process pattern is gradually blocked by fatigue while the other is recovering[12]:



The psychophysical intuition suggests that the appearance of the visual pattern might tell us something about some functional dependence in the brain: as the visual organization of the box changes, this reorganization has a counterpart in the organism in a spontaneous organization of the process pattern[13].

The central emphasis in Koffka's question then is on the appearance of things and all the factors that the appearance depends upon: 'why do things look as they do?'. Or, with other words: Why is the phenomenal outcome of the *Ganzfeldt* of our senses organized as it is – what kind of physiological factors govern this perceptual structure?

On the other hand, emphasis is not on the 'thing'. The issue is not: How do we recognize that the visual pattern falls under a certain category? In everyday life, it is the categorization of the object as a box, and not its appearance, that is important. It is the functional value of the public agent-object relation, the way we can make use of the object, that defines the object, not its appearance. The functional value of 'box-hood' is a relationship between observers as agents and certain mind-independent invariant traits of the external world.

The connection between our perceptual capacity to discriminate one category from another and the appearance is far from obvious. A range of experiences, that is many different types of appearances, might be about 'box-hood'. A box may appear in many colours and shapes. The box may be seen from any perspective, under various conditions; The box is still recognized as a box.

It is then no surprise why perceptual theories with object-recognition as their starting point end up somewhere else than theories that focus on the perceptual structure.

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[12] In fact, the 'fatigue-hypothesis' is the basic idea in Köhler's work on figural aftereffects (Cf. Sundqvist 2003, chapter 8).

[13] Köhler was *not* suggesting that there was a geometrical isomorphism between conscious experience and nervous processes. Köhler did *not* claim that there were processes shaped as cubes oscillating in the brain. The *isomorphism-postulate* is to be seen as a heuristic principle that suggests that the same structural principles that exist on the phenomenological side also govern the physiological states and processes that the stimuli arouses. Hence, the nervous system should be regarded as a complex of physiological Gestalts that mutually support and determine one another, in other words: a dynamic system. Nowadays, due to developments of neuroscience, the *isomorphism-postulate* is a lot less controversial than it used to be. A large set of dynamical approaches are under development. Neuroscience has begun to follow the path Gestalt psychologists [prematurely] suggested. (Sundqvist 2003, chapters 6 and 8)

Focus on the category that the perceptual state is 'about' leads us in a direction away from the psychophysical project towards the representational theory of mind and multiple realizable-fallacy (Sundqvist 2007a). The concept, or actually, our being familiar with the concept, establishes a referential relationship between us as agents and some properties in an environment. Hence the name/concept unite different perceptual states on a semantic level – different psychophysical organisations have identical descriptions. The name/symbol that we use to express the concept becomes a grand abstraction of the organism and its relation to some particular type of external features.

It is this abstraction that opens up the possibilities for representational theories of mind at the same time as the analysis is ineligible as a tool in the psychophysical project. When we perceive a box the intentional characterization implies that our perceptual system becomes a box detector. It is *as if* the nervous activities become loaded with semantic content just as any device that detects boxes is[14].

The step to make the rules of the representational system explicit is then a small one. It is enough to specify just a few loosely defined functional properties of the human perceptual system in terms of input-output and then to define the information processing in the system. In this type of analysis it is the semantic level that is important, not the material realization of the sign. In this way, there is an actual risk that the perceptual system is abstracted away in the semantic manoeuvre. Actually, no specified material or phenomenal properties are needed in the analysis. For instance, a box detecting device does not need the same biochemical properties as the human perceptual state. Consequently, such device does not need the same dynamic relationship among its processes. In such analysis, one certainly does not need to bother about the figure-ground organization of conscious experience and the fact that consciousness is a field phenomena – Herring's psychophysical intuition simply never enters into the analysis.

One could argue that a distinction between the human capacity to distinguish various categories of the world and the perceptual structure of it enforces rationalist intuitions. This is seen if we change examples, not using the shift of Gestalt, like the one in 'the box-hood experience' above, but using a shift of aspects. That is, when we first see one thing and then another even though the perceptual situation is not changing. For example, if one dark night while walking in a garden you first see a terrifying monster and then realize that it is an apple tree. It is as if we within our phenomenal consciousness encounter a visual structure which we first categorize as a 'monster' and then as an 'apple tree'. We might be led to believe that the perceptual state is constant while our interpretation of it has changed.

[14] The red ink argument: The intentional characterization of a mental state is independent of the properties of the psychophysical state; that includes both the material and the phenomenal properties. Another way to express this: representations are *multiply realizable*. 'Box-hood states', in the example above, could involve many different sorts of conscious states. In fact, an industrial robot producing boxes could also be said to be in a 'box-hood state'– the electronic circuits represent 'box-hood'. Intentional characterizations of mental states refers in this way rather to the capacity to detect and to the context of detection than to the internal state of the system. The 'box-hood state' of the robot tells us very little about human perceptual systems. The *multiply realizable-fallacy* is simply a consequence of the red ink argument: intentional characterizations is of no use in the psychophysical project.

The distinction between *figural moments* and *categorical grouping* might shed some further light on this intuition. It also makes it clear why categorical units are of a completely different nature than the Gestalt unit of a conscious state. However, I will argue that the distinction also puts light on why intuitions of a rationalist blend lead us wrong. The distinction is borrowed from Husserl[15]. Husserl acknowledges the existence of 'sensuous wholes' that are directly perceived constellations, and not constructions out of perceived relations between elements or parts. According to Husserl, immediately perceived wholes are endowed with '*quasi-qualitative*' or '*figural factors*' (*figurale Momente*)[16].

Categorical grouping concerns our ability to categorize. The categories in our language reflect (to a certain extent) this capacity. No one can deny the importance of the categorical aspect of perception. If we are looking for mushrooms in the forest, and we know how to categorize mushrooms into edible and non-edible ones, the edible ones stand out while we walk along. We have a concept of 'edible mushrooms' and the very concept 'picks out' objects or events falling under the concept – it is as if our gaze picks out the object and that our propositional thought directs the beam of attention. Hence, the good old attention-beam metaphor. Rationalism (with Husserl's phenomenology as a standard example) pinpoints the categorical aspects in perception. The issue is: What is possible to distinguish or 'single out' and how is this singled out entity conceptually related to other singled out entities?

The concept and the conceptual system are in many cases decisive for what entities/objects/events we single out in our perception – how we react to and cope with the world. For instance, it is difficult for us to distinguish edible types of mushrooms from other types without having a conceptual distinction between edible and toxic mushrooms.

Here is where theories focused on our capacity to categorize goes wrong in the analysis of phenomenal consciousness. Thanks to our perceptual capacity, the concept 'edible mushroom' has the potential to pick up every single edible mushroom in the forest. A concept or a term 'brings' diverging objects together. However, this is a completely other form of 'unit' than the Gestalt structure of phenomenal consciousness. For instance, the term 'red' brings together all red objects. This 'unifying power' seems to be due to the concept in thought – and certainly not to functional dependencies among the objects falling under the concept. This is not magic. This is how the representational system works. We decide in public agreement that the term 'red' refers to all red objects. It becomes clear in what sense categorical groping is 'structurally' blind. Köhler once exemplified this kind of grouping with a group of three stones, one stone for each continent of Africa, Europe and North America. It

[15] It is clear that Husserl found the subject of figural moments of minor importance compared to the formations of mind his phenomenological method set out to explore. Husserl writes in a footnote that: 'Stumpf as well known at first defines "fusion" in a narrower sense, as the relation of simultaneous sense-*qualities*, as a result of which they appear as parts of a sensational whole. He does not however fail to point to the wider concept that we here find pivotal. (Husserl 1970 [1900], Investigation III, Chapter 1, 451.

[16] Husserl 1970 [1900], II, vi, §51. Cf. Gurwitsch 1966, Chapter 1, 8.

is the concept 'Köhler's three stones' and not electromagnetic forces or some other natural dependencies that make them united into a group. Figural grouping is something completely different. Koffka made a nice illustration of *figural grouping* when he asked why we see this formation in the night sky:

And not this one:

Koffka's question concerns the figure's visual structure and the spontaneous grouping of sensational elements. The stars in Koffka's example have no real connection in the physical world outside the organism. The elementarist model has to regard both patterns as equal, thus, it is just a matter of which relation we choose to single out. One could then conclude that this is what happens in perception – the stars in the Big Dipper, a group of independent and unrelated objects possible to distinguish in isolation, become a unit thanks to the concept 'Big Dipper'.

Gestalt theory suggested that the *actual* organization, the actual figural grouping was determined by concrete Gestalt laws that reflect the structural principles of the nervous system. Perception in the sense of Gestalt theory is not gratuitous; it is not guesswork. We perceive some formations rather than others before any conscious analysis of internal relations. That is, our perceptual system is turned into one specific state due to the organisational forces of nature and not due to the interpretations and measurements done by a *homunculus* of the system. The perceptual system responds to stimulus structures that, in the normal case, correspond to 'real' structures in the environment – the outcome is a specific perceptual state with a specific figure-ground organization (including various behavioural dispositions).

The unifying powers of a concept have nothing to do with the unity of perceptual structures. In this way, models focusing on categorical grouping and the human capacity to discriminate, lack the means to understand figural grouping in other ways than by a non-perceptual mechanism. It is as if the concept and the following description bring 'the elements' together, not any intrinsic organization, just as the concept 'Köhler's three stones' brings those stones together. Further, We might be led towards a certain 'attention beam' metaphor and a 'thing like' conception of conscious states – consciousness is turned into an arena where we, in an act of inward directed attention, can locate and describe various objects.

The constancy hypothesis enforced the attention-beam metaphor. According to the constancy hypothesis, sensations remain constant under constant stimuli even though

attitudes change, at the same time as attitudes and attention change conscious experience considerably. Compare the sound of a fan that suddenly comes to our attention. Suddenly, we become aware of a fan whirring in the background: first, the noise was unnoticed, then it became annoying. We know that the fan has been on all the time; the constancy hypothesis says that like stimulation gives like sensation. The conclusion to be drawn on the basis of the constancy hypothesis is that we have been hearing the noise all the time, hence, the postulation of unnoticed sensations. It is as if we have the double consciousness: first with the noise present as unnoticed sensations in a hidden layer and then as noticed when the process of attention/apperception (the attention beam) has brought the sensation into presence. Thus, sensations are conceived as observed or yet unobserved objects.

Examples like the whirring fan lead to a popular idea of an arena of sensations – the matter of consciousness: unseen, unheard, unfelt, but still purely sensorial – ready to be picked up or brought to clear focus by some sort of ray of attention, conceived as an act of inwardly directed observation (Sundqvist 2003, chapter 4). We might also believe that the change of attention did not affect the sensory quality, and our psychophysical state, only how well we, the *homunculus,* noticed it.

In the light of Wertheimer's analysis of conscious experience the notion of unnoticed sensations becomes absurd. One major consequence of Wertheimer's conception of a Gestalt is that when the total configuration shifts, there has to be changes in the constituent parts as well – consciousness is a field phenomenon. This opens up to a different view on attention that helps us leave the 'attention beam' metaphor and, thus, the view of conscious states as something to observe by an inner eye. In the case of the whirring fan it is obvious that the fan is part of the overall framework of stimuli. However, if the fan is not heard the perceiving organism is attuned to other aspects of the perceptual situation. The fan might very well be an important aspect of the perceptual framework, contributing to the background in the figure-ground organization. Very likely the fan is also contributing to an instability of the field. The fan is contributing to the tendency of reorganization towards a new figure-ground relationship – the fan stands out as figure.

When the overall condition changes the parts change together with their function in the figure-ground organization. It is not the *homunculus* that turns its gaze, but the overall state that changes during a shift of attention. If background stimuli turn from hardly noticed background to figure then this reflects that one perceptual state has turned into another and that one psychophysical organization has turned to another.

The dynamic field of phenomenal consciousness is *being*, crystallized and evolving in phenomenal time and spatiality. There is no one there to observe it. There is no one there to give it meaning. There is no one there to interpret its activities as signs of an external reality. That is the lesson from Gestalt theory.

The three part investigation of the crossroad between empiricism and rationalism ends here, with the hope that the lights of the attention beam has gone out forever.

Zusammenfassung

In drei miteinander verknüpften Artikeln untersuche ich zwei widerstreitende Ansätze in der Psychologie. Im ersten Artikel (*Gestalt Theory 29*, 40–58) skizzierte ich typische Merkmale der rationalistischen Analyse des Mentalen anhand von Beispielen aus Werken von Helmholtz, Wundt und Husserl. Im zweiten Teil (*Gestalt Theory 29*, 130-147) stellte ich typische Merkmale des Empirismus sowie einige mit diesem Ansatz verbundene Probleme dieses Ansatzes dar (mit erläuternden Beispiele aus den Werken von Titchener und Külpe). Der vorliegende dritte Beitrag ist nun ein Versuch, die Wertheimersche Lösung für die mißliche Lage des Empirismus in ihren Grundzügen zu untersuchen. Die Gestaltpsychologen versuchten zu zeigen, wie das psychophysische Projekt gerettet werden könnte. Sie führten die Konzepte Gestalt, Figur-Hintergrund und Prägnanz als ontologische Instrumente ein, ersetzten damit den alten atomistischen Bezugsrahmen und ermöglichten es so, die psycho-physischen Beziehungen zu verstehen. In diesem Zusammenhang kommt es darauf an zu verstehen, dass die Gestalttheorie ontologische Fragen betrifft und als Werkzeug gesehen werden sollte, mit dem weiterführende Entdeckungen möglich werden, und die Gestalttheorie nicht – wie dies häufig geschieht – als eine empirische Theorie anzusehen ist, die sich als falsch erwiesen hätte oder, sogar noch schlimmer, als eine Theorie, die sich der Möglichkeit einer Überprüfung entzieht.

Weiters gehe ich abschließend auf die unterschiedlichen Arten von Wahrhnehmungsphänomenen ein, die zur Bestätigung der Annahmen der beiden widerstreitenden Sichtweisen des Mentalen herangezogen wurden.

Summary

In three interconnected articles I explore two diverging perspectives on psychology. In the first article I sketched out typical traits of the rationalist analyses of mind with examples taken from Helmholtz, Wundt and Husserl (Sundqvist 2007a). In the second paper (Sundqvist 2007b) typical traits of empiricism are examined, as well as some of the predicaments of the approach (with examples taken from Titchener and Külpe). This third investigation is an attempt to explore the main tenets of Wertheimer's solution to the predicaments of empiricism. The Gestalt psychologists tried to show how the psychophysical project could be saved. The concepts of Gestalt, Figure-ground and Prägnanz were introduced as ontological tools that replaced the old atomist framework and made it possible to understand the psychophysical relationship. In this picture it is crucial to understand that Gestalt theory concerns ontological issues and should be regarded as a device that provides a means toward further discoveries and not – as it is usually regarded – as an empirical theory to be proven wrong or even worse, a theory beyond the reach of verification. Finally, I will also attempt to illuminate the different types of perceptual phenomena that have been used to confirm the intuitions behind the two diverging perspectives of mind.

References

Ellis W. D. (ed) (1938): *Source Book of Gestalt psychology*. New York: Harcourt, Brace & World.

Gurwitsch A. (1966): Some Aspects and Developments of Gestalt Psychology. *Studies in Phenomenology and Psychology.* Evanstone: North Western University Press.

Husserl E. (1910-1911): Philosophie als Strenge Wissenschaft. *Logos*.

Husserl E. (1970 [1900]): On The Theory of Wholes and Parts. The difference between Independent and Non-independent Objects. *Logical Investigation.* (Investigation III, Chapter 1.Trans. Findlay J.N., London: Routledge and Kegan Paul).

Koffka K. (1935): *The Principles of Gestalt Psychology.* New York: Harcourt, Brace, and Comp., London: Kegan Paul.

Külpe O. (1999 [1893]): *Outlines of psychology.* Reprinted in Wosniak R.H. (ed) 1999.

Mach E. (1999 [1897, 1886]): *Contribution to the Analysis of the Sensations* (reprinted from Mach E. 1897, *Contribution to the Analysis of the Sensations*. London. Translation from Mach E. 1886, *Beiträge zur Analyse der Empfindungen*. Jena), in Wozniak R.H (ed.) 1999.

Metzger W. (1930): Optische Untersuchungen am Ganzfeld. II Zur Phänomenologie des homogenen Ganzfelds. in *Psychologische Forschung 13*; Koffka K. (1935).

Sundqvist F. (2003): *Perceptual Dynamics. Theoretical foundations and philosophical implications of Gestalt psychology*. Göteborg: Acta Philosophica Gothoburgensia,16.

Sundqvist F. (2007a): The Gestalt Phenomena and Archetypical rationalism. The Crossroad between Empiricism and Rationalism: Part I. *Gestalt Theory 29*, 40–58.

Sundqvist F. (2007b): Two Themes of Reductionism and the predicaments of Archetypical Empiricism. The Crossroad between Empiricism and Rationalism: Part II. *Gestalt Theory 29*, 130-147.

Wertheimer M. (1938 [1922]): Untersuchungen zur Lehre von der Gestalt. I. Extract in Ellis W.D. (ed.) (1938), 12-16.

Wertheimer M.(1938[1923]): Untersuchungen zur Lehre von der Gestalt. II". Extract in Ellis W.D. (ed.) (1938), *A Source Book of Gestalt Psychology*. New York: The Gestalt Legacy Press, 71-88.

Wosniak R.H. (ed.; 1999): *Classics in Psychology, 1855-1914. A Collection of key works*. Bristol: Thoemmes. Tokyo: Maruzen.

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