

THE GESTALT PHENOMENA AND ARCHETYPICAL RATIONALISM

The Crossroads Between Empiricism and Rationalism: Part I

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Introduction

In my doctoral thesis, *Perceptual Dynamics. Theoretical foundations and philosophical implications of Gestalt psychology* (Sundqvist 2003), I made an attempt to present the philosophical relevance of the Gestalt theory of Max Wertheimer, Wolfgang Köhler and Kurt Koffka to present day cognitive science. My thesis was written under the firm conviction that a historical perspective and a fresh look at past contributions could vitalize the analysis of mind in contemporary cognitive sciences and contemporary philosophy of mind¹.

The main theme in my thesis was that the concept of *Gestalt* is primarily a signpost on an ontological/metaphysical crossroads, a fact which I think that the Gestalt psychologists failed to explain because of their eagerness to present their approach as an empirical and scientifically useful method. The crossroads concerns the nature of explanation in psychology and was a reflection of the traditional rationalist/empiricist stances in epistemology. The rationalist road led to the concept of intentionality and to representational theories of mind, while the empiricist road was taken by Gestalt theory. The two different types of perspectives were based on epistemological considerations, but led to radically different conceptions of mind and how to understand the relationship between mind and physical nature.

For a proper understanding of the philosophical implications of the Gestalt theory of the Berlin school, I believe it is important to explicate the difference between rationalist and empiricist perspectives on psychology. In three papers I will sketch the outline of the crossroads. In this first paper I try to pinpoint the aspects of the rationalist perspective that create an antithesis to Gestalt theory. In the second part I will present the basic assumptions of empiricist perspectives on psychology and certain predicaments that threatened the empiricist perspective at the time. Finally, in the third part I will explicate the main tenets of Wertheimer's solution to the predicaments of empiricism. 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.

¹ Mentioning this, one has to emphasize that *Perceptual Dynamics* was not a work within the history of psychology, even though a large amount of historical material was provided. Hence, and this is naturally true also for this present work, the historical material is brought into the discussion to support a point: Gestalt theory provides an important yet largely neglected alternative perspective on mental processes – a strong alternative to past and present representational theories of mind.

Let me start with the claim that contemporary rationalist perspectives on mind base their models of perception and cognition on a duality between the physical state and the meaning or ‘aboutness’ of the state. The distinction allows us to talk about ‘inner representations’ and of brain events as ‘information processing’. It is possible to give these events in the nervous system a purely physiological description but such a description misses something essential – the semantic content, as the argument goes. This argument is actually an age-old companion to the hallmarks of rationalism and the obstacle Max Wertheimer and Wolfgang Köhler tried to bypass in their analyses of the *psychophysical states*.

The ‘information processing paradigm’ has had large difficulties in explicating how the step from the computational and algorithmic levels of description should be taken down to a proper understanding of the ‘implementation’ in the ‘hardware’. The level of description is not on a fine grained bioorganic process level, but actually one that tends to dismiss the material properties of the nervous system as unimportant.

In fact, many philosophers have during the past decades argued that ‘the information processing’ approach basically is a non-reductionist stance: the representational theory of mind. The philosophical analysis says that mental representations are *multiply realizable*; the semantic content of a sign is independent on the physical appearance of the sign. The essence of a mental state is what it represents and the semantic relationship between the ‘meaning’ of the sign and the world that the sign represents. The consequence is that the exact nature of perceptual systems can remain out of focus. The material properties and/or the exact causal story of the nervous system are unimportant in the analysis. The analysis focuses only on the semantically relevant relationships: any specific psychophysical state can be treated as a sign; in this way can all material and phenomenal aspects be abstracted away from the analysis. Conscious experience – the dynamics of the figure-ground organization for instance – as well as the biodynamic organization of the nervous system is never even a subject matter. Or rather, cognitive science lacks the ontological tools to understand the dynamics of mental states and thus, I would claim, cognitive science lacks the tools to understand how *being* is attached to nature. It is in this respect Gestalt theory can serve as a prosperous alternative perspective.

A central theme in my doctoral thesis was that cognitive science slowly seems to turn towards a Gestalt theoretical perspective. New horizons have opened up due to recent methodological developments, not least in the field of artificial neural

² There is a growing awareness that Gestalt theory is ‘close in spirit’ to connectionism and contemporary dynamical approaches that oppose cognitivism. Epstein & Hatfield 1994 establish that Gestalt theory forms a contrast to most contemporary theories of mind, but draw attention also to contemporary dynamical approaches like Kelso J.A.S. and Haken H. which are similar to Gestalt theory in many aspects; (see Epstein & Hatfield 1994 for references). They also highlight that Gestalt theory ‘is closer in spirit to contemporary connectionism than to symbolic theories’, p. 171; Cf. Epstein W. 1988; Stadler M. & Kruse P. 1994; Scheerer E. 1994. Scheerer argues that recent trends in neuroscience are broadly compatible with Köhler’s views on cortical functioning. He also points out similarities between Gestalt theory and the theory of neural networks. (See discussions in Sundqvist F. 2003, chapters 6 and 8.)

network modeling and various dynamical approaches². Slowly, science is leaving large scale functional and computational levels of descriptions. In fact, cognitive science might be on the verge to moving on to a level of explanation that operates on a fine grain bioorganic scale. People have started to talk about the rise of a new sub-symbolic paradigm of cognitive science.

In this way our possibilities to understand nervous systems and mental phenomena from the perspective of Gestalt theory have been improved considerably. In my book, I argued that Gestalt theory not only is an important historical precursor to more sophisticated contemporary approaches, but also that Gestalt theory actually can provide a clarifying framework to this new paradigm of cognitive science. The notions of Gestalt and of psychophysical isomorphism can provide means for analyses of mental phenomena without the standard detour to various concepts of representation.

Hence, I believe that Gestalt theory helps us to leave the ‘intentional stance’ of everyday psychology (that permeates the information processing paradigm) and move forward toward an understanding of mind as nature and, accordingly, not separated from nature. This three-step investigation is aims to pin down why this is the case.

The birth of experimental psychology: Fechner’s invention and the rationalist perspective of Herman von Helmholtz and Wilhelm Wundt

To a large extent, German experimental psychology as well as the Gestalt phenomena themselves were based on the methodological assumptions of Gustav Theodore Fechner’s invention, *Psychophysics*. Fechner’s psychophysical approach can be seen as an attempt to specify the conditions for sensations to appear. The idea is simple and reasonable: Press a needle through your skin and notice the pain. Fechner started a tradition of experimental psychology that attempted to explore such concrete relationship between the physical environment and these sensuous qualities of conscious experience that occur during perceptual stimulation. According to Fechner, psychophysics should be understood as ‘an exact theory of the functionally dependent relations’ of the physical and the psychological worlds (Fechner 1997 [1966, 1860]). This meant that Fechner set out to study the connection between well-defined, quantified physical stimuli and different thresholds in experience, for instance a difference between two stimuli that have just been noticed. The whole approach was built on well-trained scientific minds’ sensitivity for discriminations³. Notice that the psychophysical project was governed by ‘causal thinking,’ later an invective among rationalist philosophers. The purpose was not to unite physical nature and phenomenal consciousness [as such] on a conceptual level, but to investigate the concrete relationship between two epistemological realms.

³ Fechner did find law-like regularities that were possible to express in logarithms. For instance, according to Fechner’s law the experience of intensity is a logarithmic function of sensory stimulation, hence the stronger the base level of sensory stimulation, the less an enhancement of a fixed size is noticed.

The interesting problems start when Fechner's psychophysical findings were turned into the frames of a perceptual theory. The peculiar atomistic conception of sensory content, the sensation⁴, and the specific notion of *psychophysical parallelism*⁵ – a notion of parallelism based on the *constancy hypothesis*⁶ – are contained in the assumptions that followed from Fechner's psychophysical method. 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. Thus, the bottom line of any psychophysical project is a certain assumption of concrete unity between the temporal sensory quality of mental processes and the neurobiological substrate. Two distinct epistemological realms – pure awareness in terms of sensations and nerve activation – were united in such a tight concrete relationship so *one could assume* that there was a hidden unity on a transphenomenal level between the material properties of the nervous system and the corresponding phenomenal properties. I have called this assumption of a concrete functional relationship and a concealed ontological unity *The psychophysical intuition* (Sundqvist 2003, 37-39).

These were assumptions that fitted well within the frames of rationalism. The hallmarks of *Archetype Rationalism* (AR) relevant to this discussion were based on a presupposed distinction between sensibility and understanding and can be roughly outlined as follows:

AR 1. Mind was regarded as an active and directive principle by which sensory processes became regulated. This active principle was a manifestation of a formal structure, a 'permanent background' against which temporary sensory processes stood out. In this Aristotelian way rationalists distinguish at least two 'ontological layers' of the conscious state. According to this perspective a 'cognitive component' needed to be added to sensory material to establish perceptions.

AR 2. The essential structures of minds were subject matter for philosophical analyses rather than for laboratory experimentation. The structures of minds were conceptual in nature built on logical, not factual, relationships.

AR 3. A sharp dividing line was drawn between the laws of minds and the laws of physical nature. The consequence was that psychological explanations were equally sharply separated from explanations in natural science.

⁴ Among others, Marshall (1982) notes that Fechner's atomism was basically methodological and his stance explicitly pragmatic. The element was a conceptual tool motivated only by its scientific usefulness.

⁵ This notion of *psychophysical parallelism* will be discussed in part II. As a heuristic principle of research in the task to explore the concrete relationship between the mental and the physical realm, 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 should be 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. See Mach E. 1999 [1897, 1886].

⁶ 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. See Sundqvist 2003, 39-42.

The key strategy in this rationalist approach was to emphasize the large difference between the fragmentary character of stimuli and the ‘abstract’ character of nervous activities on the one side and the complex, synthetic nature of consciousness on the other. The perceptual models of the pioneers Herman von Helmholtz and Wilhelm Wundt exemplify both this strategy and the first postulate of rationalism: perception is the outcome of a cognitive process operating on a basic level of sensations⁷.

Perception is described as a cognitive process that interprets incoming abstract signals. Helmholtz draws the analogy of nerve fibers as (isolated) telegraph wires sending signals to the mind (Helmholtz 1968 [1873, 1868], 83). The metaphor brought forward a ‘linguistic’ character of the sensory signals that is very typical for the later developments in rationalist psychology. The sensory qualities are bestowed with perceptual meaning just as the ink on paper becomes meaningful words when we learn to read (Helmholtz 1968 [1879], 219). Take the following passage from Helmholtz:

“The sensations of our nerves of sense are mere symbols indicating certain external objects, and it’s usually only after considerable practice that we acquire the power of drawing correct conclusions from our sensations respecting the corresponding objects” (Helmholtz, *ibid*).

Helmholtz emphasizes that it is only by learning and by drawing conclusions from experiences that perceptions of the world can be established⁸. A striking aspect of rationalist perceptual theories like Helmholtz’s is that sensory material seems to be unstructured, even less structured than atomized Morse signs. Further, there are no references whatsoever to any hypothetical anatomical structures responsible for some perceptual phenomena or other; nerve tissues are just regarded as transmitters of information (Helmholtz 1968 [1873, 1868], 127).

⁷ It might sound surprising to categorize Helmholtz perceptual theory as rationalism. Helmholtz is after all considered to be ‘the father of empiricist perceptual theory’. However, Helmholtz’s approach to perception and his position in epistemological issues are not only coherent with, but are the outcome of his overall rationalist assumptions. As we will soon see, sensations should be clearly distinguished from full-grown perceptions, according to Helmholtz. AR 1 was basic to Helmholtz’s model of perception.

The concept of empiricism is confused in perceptual theory. A consequence of the division between sensibility and understanding (AR 1) is that the archetype rationalist stance, paradoxically, is closely related to what is usually called ‘empiricism’ in psychology. Empiricism in perceptual theory (from now on called P-empiricism) emphasizes learning from experience, but more importantly, it emphasizes the active mind, and uses terms like ‘inference’, ‘hypothesis-testing’, ‘unconscious conclusion’ and the like when characterizing the perceptual process. The distinction between sensibility and understanding is the guiding principle.

As a philosopher and epistemologist, Helmholtz argued against the Kantian concept of synthetic a priori when he showed that Euclidean geometry could not have such a privileged status as the Kantians thought. Helmholtz provided significant arguments for the Logical Empiricism of Moritz Schlick and Rudolf Carnap. His epistemological stance was in opposition to the a priori-fundamentalism that had dominated German post-Kantian thought. According to Helmholtz, no conceptual system is pre-given, not even Euclidean geometry. In this sense, Helmholtz fits the common picture of epistemological empiricism. See Moritz Schlick editorial comments in Helmholtz H. von 1977 [1921].

However, as we soon will find out closer examination reveals a deep rationalist influence in Helmholtz’s theory of perception. For instance R.S. Turner writes: On a philosophical level his empiricism reflected his rationalistic concept of mind, the notion that the problem of psychology is not to explain the nature and functioning of mind but rather to explain the nature of the information that flows to and away from mind. Turner R.S. 1982, 162.

⁸ Sundqvist F. 2003, 93-101. See also Helmholtz 1968 [1873, 1868]; Helmholtz 1968 [1866].

Helmholtz was careful to point out that there is no close correspondence between his 'signs' and the world, like the one between a man and a statue. The sensory signs of his theory are not at all like images in their method of representing the external mind-independent world. Helmholtz characterizes the relation between stimuli and sensory signs in the following way:

Similar light produces under like conditions a like sensation of color. Light which under like conditions excites unlike sensations of color is dissimilar. When two relations correspond to one another in this manner, the one is a sign for the other (Helmholtz 1968 [1873, 1868], 100).

Notice, the abstract character of the sensory signs leaves all questions about perceptual structure and perceptual dependencies untouched. The relation between the mind-independent world and mind was regarded as a semantic one.

In sum, the perceptual process had two components in Helmholtz's rationalist model: 1) the sensory element standing in a functional relationship with physical stimuli of a certain magnitude; 2) a cognitive component that made the sensation to a sign of some aspect of the environment. The second component of the perceptual process resulted in the production of 'appearance' based on the 'interpretation' of the sign. Notice that the cognitive component operated on an unconscious level.

Further, the gulf between sensory information and perceptual awareness is large. All the various kinds of constancy phenomena, depth perception, binocularity, and so on become further proof that something more is needed to establish perception: an act of judgment. Illusions are explained as 'errors of judgments' due to habitual conclusions drawn from our knowledge and prejudices of the world:

"The simple rule for all illusions of sight is this: we always believe that we see such objects as would under conditions of normal vision produce the retinal image of which we are actually conscious" (Helmholtz 1968 [1879], 130).

In this way the distinction between appearance and real constituents of consciousness was established in the rationalist psychological tradition.

Helmholtz had great difficulties explaining the nature of the postulated 'unconscious judgments' and vaguely defined cognitive events of inferences⁹. With his references to cognitive operations, Helmholtz highlights the fact that it is *as if* there were a *homunculus* observing and interpreting the sensations, because the concept of sensation is not enough to establish a connection between physical nature and minds. The 'as if' move

⁹ One can ridicule Helmholtz's approach using the phi-phenomena as an example. If we, for instance, make the judgment that something has moved from location A to location B, this activity usually does not cause us to see the movement. For instance if we first see our friend in London and then two weeks later in Prague, we draw a conclusion that movement has occurred, but we do not see him move. Also, in the case of visual phenomena, if we see an object move from A to B we do not have to make any judgments at all in the everyday sense of the word, we just notice the movement. Then, if someone asks, we state that we have seen the movement – we make a judgment after some reflection. Helmholtz's 'judgments' seem to be immediate, unconscious (as well as the material to be judged upon) and impossible to correct. Consequently, as the most bizarre side effect, the judgment makes us not only believe in, but also actually 'see' non-existing movement.

The arguments are familiar. Koffka calls this method of explaining perception with the help of cognitive concepts used in everyday language 'the interpretationist theory' (Koffka K. 1935, 96).

makes us refer to human cognitive skills to explain the workings of the human mind. While dismantling naïve conceptions of the eye as a camera, Helmholtz concealed the fact that he was far from any kind of explanation of perception. Or rather, his rationalist premises pre-empted any psychophysical explanation. The use of expressions like ‘unconscious judgments’ just signals the notion that the facts of psychology belong to a different realm than the facts of natural science (Sundqvist 2003, 98-101).

Other rationalist philosophers and psychologists made more elaborate attempts to overcome the vagueness of ‘intellectualism’ – the threatening *homunculi* – by elaborating a descriptive approach in the dualist framework of rationalism and, thus, postulating a certain kind of stop line for scientific explanations of mind.

In fact, there is reason to claim that rationalist conceptions of psychology are not intent on forming explanations of mind’s semantic powers, only on describing their structure. These exposed structures are the sole explanation psychology can offer. The core of the AR 2 postulate is that the essential structures of mind have no direct connection to physiological explanations (apart from the vague causal link between the environment and the material aspect of the representation – the token). The *homunculus* of rationalism is just an unimportant side effect that is easy to explain away using functionalist *as-if* moves, that is a very casual use of everyday cognitive concepts.

Another way to put it is that rationalists use cognitive concepts just to highlight their belief that minds are separated from nature. The AR 2 postulate says that *in principle* we can never understand the operations of mind using the methods of natural science. On the other hand we can describe the structural laws of the *homunculus*. In this way psychology leaves the descriptive levels of natural science and the much too complicated causal events of the brain for an investigation of a robust phenomenon – the logical and conceptual structures that are revealed through the operations of mind¹⁰.

This was the strategy of Wilhelm Wundt¹¹. When Wundt established psychology as an independent science, apart from physiology and Fechner’s psychophysics, he made it by emphasizing that *the mind* was something else than just temporary sensory events. The synthetic or, rather, semantic powers of mind got a name: *apperception*. According to Wundt, apperceptive processes brought meaning to the conscious state and concerned ‘the interconnectedness of experiences’¹².

According to Wundt, psychology was basically the science of the apperceptive process and its products. Wundt claimed that a psychology of apperception revealed universal traits of human experience and examined laws different in nature than the laws of physical science (Wundt 1999 [1897], 15-16). The more basic apperceptive processes were studied in the laboratory by measurement of reaction times in simple recognition tasks, thresholds and attention span¹³. The ‘high level’ of mind – the more complex

¹⁰ John R. Searle has argued at length that ‘the *homunculus fallacy*’ is endemic to cognitivism, for instance in Searle 1994, 197-226.

¹¹ Wilhelm Wundt started as Herman von Helmholtz’s assistant (1858-1862).

¹² Apperception is a process defined as ‘the process through which any content is brought to clear comprehension’ (Wundt 1999 [1897], 209).

products of the interconnecting capacities of minds – was considered at the time to be largely the subject matter for *Völkerpsychologie*, in which the structures of language, myths, and customs were the ‘chief source of indirect information regarding the general psychology of complex mental processes’ (see Leahey 1997 [1981], 178-188).

Psychology was conceived as ‘the science of the universal forms of immediate human experience and their combination in accordance with certain laws’, the very foundation of the mental sciences (Wundt 1999 [1897], 16). By the descriptive approach Wundt assumed a clear demarcation line between psychology and natural science (AR 2 and AR 3).

Wundt was part of a rationalist tradition that came to develop the concept of intentionality. The conception of mind as a ‘permanent background’ (taken from Titchener 1999 [1896], 339) soon moved this tradition away from the initial phenomenism of Wundt towards the ‘irreal’ realm of universal laws in Husserl’s conception (AR 2). In fact, this development moved the rationalist tradition away from psychophysics and soon even banned every attempt to understand the psychophysical relationship.

The Gestalt quality in the framework of Archetypical rationalism

It was a confused borderland between *the perceptual structure of conscious state* and *object recognition* that got the name ‘Gestalt quality’. Christian von Ehrenfels introduced the term ‘Gestalt quality’ in a paper published in 1890 (Ehrenfels 1988/1890). Von Ehrenfels’ point of departure¹⁴ was the passages in *Beiträge zur Analyse der Empfindungen* in which Mach claims that we perceive spatial shapes and also temporally extended configurations like melodies *directly* by means of ‘sensations of relation’. Mach drew attention to the fact that, for instance, black text on a white surface and the opposite white text on black surface remain the same in an important sense even though the sensory constituents are not.

By this simple means, Mach wanted to explain how identity is maintained when sensations seem to have been exchanged completely, as in the case with the differently colored letters. Muscle sensations of movement expand the spectrum of sensations so that these may explain how objects in general remain identical under different changing circumstances. Actually, in most perceptual situations changes in the qualitative aspects of the conscious state are of very low significance. A cloud can suddenly hide the sun and change the light conditions from one moment to another. Thus, Mach’s model explains why we experience a structural identity and for that reason manage to see objects as identical without the postulation of hidden judgments and similar auxiliary rationalist moves that enforce the distinction between sensations and understanding.

¹³ Wundt describes many of the various kinds of experimentations in his *Outlines*. For the central research on reaction times and attention spans, see Wundt 1999 [1897], 197-215.

¹⁴ Stefan Poggi traces Ehrenfels’ discussion back to Mach (1865) and Herbart (1840). Poggi S. [1989], “Herbart, Mach, Ehrenfels”, in Poggi S. (ed.) 1994.

However, Mach's solution actually forces intuitions towards rationalism. The atomism was taken for granted and a paradox was created: sensations raise and vanish while perceptions of things and events are extended in time. Muscle sensations just do not seem to be enough. For instance, perceptual structures change with perspective. Thus, 'muscle sensations' of perceptual space could not be static and accordingly seem to lack the sustainability that guarantees identity. In this way the temporal dimension is crucial. Ehrenfels uses music as example: in a melody, the individual tones arise and disappear but somehow remain influential on later impressions. It is not easy to understand this relationship between one existing sensation and other non-existing ones, if one sticks to Mach's atomism (and strict phenomenalism).

Von Ehrenfels asked the question: Is a melody (1) just the sum of the elements constituting the melody, or (2) something new in relation to this sum, something that comes hand in hand with, but is separated from this sum of melody elements?

Von Ehrenfels takes Mach as a proponent of (2) and accepts that solution himself (even though Mach never makes a clear statement about his solution). It is the *extra* element in (2) that von Ehrenfels defines as the Gestalt quality:

By a *Gestalt quality* we understand a positive content of presentation bound up in consciousness with the presence of complexes of mutually separable (i.e. independently presentable) elements. That complex of presentations which is necessary for the existence of a given Gestalt quality we call the foundation [*Grundlage*] of that quality (Ehrenfels 1988 [1890], in Smith B. (ed.) 1988, 93).

Earlier von Ehrenfels stated that the Gestalt quality is a carrier of the experienced relation between the independent elements of the foundational substrate. Von Ehrenfels writes:

"This relation is, according to our present conception, founded in a new positive element of presentation, the tone-Gestalt. This new element is such that one and the same tone-Gestalt always determines an identical relation among the elements of its tonal substrate (the presentation of the individual tones)" (Ehrenfels 1988 [1890], in Smith B. (ed.) 1988, 92) .

According to von Ehrenfels, the Gestalt quality is 'responsible' for the experienced structural unity; the relation is founded in the Gestalt and further, the Gestalt has a double nature: it is the outcome of the presentation of the individual tones but is in a certain sense independent of the tonal substrate. A melody, for instance, is perceived as the *same* melody even if played in a different key – as long as the intervals between the tones remain constant. Von Ehrenfels starts to complicate things by noticing that a distinction has to be drawn between *sensory* atoms, or absolute simple constituents, and elements or units in *experience* – the Gestalt qualities. This is a seed to a multi-level ontology; thus, it is a departure from Mach's views and a severe threat to the psychophysical project – the basic constituents of consciousness might be very difficult to find. In fact, von Ehrenfels enforces a postulation of a double consciousness with the assumption of a foundational level of sensation that we often lack conscious awareness of. It is very hard even for trained listeners to distinguish the individual tones in a chord. So, von Ehrenfels asks, what if each tone is a composite of even smaller atoms? von Ehrenfels recognizes that the transition downwards could be made upwards to Gestalts of higher ranks, creating new compounds. In addition, using small adjustments, the same melody can be played in several ways, thus expressing different moods and by this means be part of diverging classifications. When von Ehrenfels made this step, he realized that there were Gestalts of different orders – spatial and temporal – everywhere in conscious states.

All of these Gestalt qualities were independent of the foundational layer of sensory atoms and responsible for the experience of units. We recognize familiar faces even after decades of aging; we recognize familiar patterns of movement (of friends, of male and female, of homosexuals, of different emotive states), all these different kinds of recognition and classification had to be governed by the Gestalt qualities. von Ehrenfels highlights that the only element which can play such a role is the Gestalt quality – every sensation can be replaced except this extra element. von Ehrenfels' theory sketched a stratified picture of the world with Gestalt qualities of different orders related to different complexes of sensory atoms.

The ontological status of the Gestalt was actually a question left open by von Ehrenfels. He did not specify in any definite manner how he thought Gestalt qualities existed in consciousness. The expression '*Gestalt quality*' seems to signal the existence of a concrete sensory element. However, in the perception of a melody or any other temporal Gestalt the perceived tones seem to create an element which is not at all like Mach's concrete sensations but, rather, a logically reconstructed *universale*, the invariant 'something' which guarantees the identity in various realizations (see Grelling & Oppenheim 1988 [1938], 191-204). A *Gestalt quality* turned out to be any kind of 'unit' in thought or consciousness and so the notion of Gestalt grew rapidly towards abstraction – of what nature is the Gestalt *quality* when you think about different instances of the number 3 or about your grandfather?

In this way the Gestalt phenomena awakened intuitions in line with the Aristotelian form–matter distinction. One can sense the resemblance with Wundt's apperceptive process. The Gestalt quality of Ehrenfels' was the 'form' corresponding to the apperceptive powers of minds in Wundt's model. This is a move towards rationalistic appeals to a 'semantic realm' bestowing unity and logical structure to the material provided by the senses. *Gestalt* was no longer a concrete element among the other sensory elements of consciousness as Mach thought, but was rather conceived of as an object of an abstract order.

In this tendency towards a stratified picture of the world, one can definitely recognize the influences from the Brentano School, from which von Ehrenfels received deep influences. (Both Mach and Brentano were his teachers). It was Meinong (1853-1920), another of von Ehrenfels' teachers in Graz, that elaborated the distinction between the 'founded objects' (*superiora*) and 'founding objects' (*inferiora*) in a way to establish a clear distinction between the raw sensory material and the product of constructive powers of mind. According to this picture, the constituent parts or *inferiora* existing in consciousness are not sufficient to establish a unified complex; there must also be an awareness of the joint presence of the constituent parts. This awareness was supposed to be realized by a special kind of mental act – once again, compare with Wundt's notion of *apperception*. In the elaborated rationalist picture, the world of experience was divided and associated with different sorts of mental acts, pure awareness of *inferiora* on one level and presentations added to *inferiora* as founded objects (*superiora*) by other mental activities on other levels.

Meinong and other leaders of the Brentano School supported in this way Wundt's perspective of psychology¹⁵. Mach's idea of the spontaneous and direct perception of Gestalts was dismissed. Gestalt phenomena became rather the opposite: signs of a cognitive process ascribing relational attributes to sensory matter. The Gestalt quality

turned out to be the final proof of the partition between sensations/ *inferiora* and the products that were a result of mind activities. Consequently, the Gestalt quality was the final proof that mind was separate from physical nature since sensations were regarded as the link between mind and nature (AR 3). In fact, all the basic assumption of Archetypical rationalism (AR 1, AR 2 and AR 3) are enforced¹⁶.

The Road Taken by Rationalism

The more evidence that was gathered against the constancy hypothesis and the assumptions of psychophysics of a strict one-to-one relationship between sensation and stimulus¹⁷, the more the rationalists were encouraged to affirm the multi-layered ontology of mind. The outcome of this type of analysis is the duality between the phenomenal content of a conscious state and the meaning or ‘aboutness’ of the state. The sensuous qualities could rise and vanish. It is the special mental act that turns the unstable mosaic of sensations to be ‘about’ something else than just a certain chaos of arising and fading sensuous qualities. As mentioned, it was a confused borderland between perceptual structure and object identification that was named the Gestalt quality. One can blame Mach for this confusion due to his ambitions to explain identity through experience of structure. Nevertheless, there is a distinction to be drawn between *the perceptual structure of conscious state* and *object recognition*¹⁸. The Gestalt theory of the Berlin school elaborated notions like *figure-ground* and *Prägnanz* that extended our understanding of perceptual structures. *Figure-ground* phenomena also make it clear that some structural properties are usually kept constant even though perspective is shifting. Rationalists, on the other hand, focused on object recognition and developed intentional analyses of mental states. Due to the distinction between sensations and the semantic content, rationalism developed a certain neglect of perceptual structures of conscious states. Further, rationalism developed a typical ‘ontological blindness’ for any understanding of the psychophysical problem. The remainder of this paper will try to explicate this criticism and some important consequences.

¹⁵ This line of thought gave rise to *The Graz Production Theory* and the first experimental investigation of Gestalt phenomena with the Benussi experiments in 1902. Meinong initiated the first psychology laboratory in Austria, in which psychologists like Vitasek, Höfler, Ameseder, and Benussi executed the first systematic investigations of Gestalt phenomena from a rationalist point of view. Benussi 1902, 264-351, 385-433; Benussi in Meinong (ed.) 1904. See Smith (ed.) 1988 for further references. See also Geert-Jan Boudewijnse (1999).

¹⁶ Gurwitsch comments on this: “This freedom of so-called superior factor of perception is taken by many psychologists and philosophers as evidence for a special dignity of human beings. Thus Lindworsky, who denies any physiological, even cerebral, substratum for acts considered as superior to mere sensations, makes this freedom the privilege of man”. Gurwitsch 1966, 15 (cf. Lindworsky 1922, 341-350).

¹⁷ The evidence against the constancy hypothesis will be discussed in part II (forthcoming). See also Sundqvist F. 2003, 39-49.

¹⁸ This distinction will be discussed at length in part III. (forthcoming).

Helmholtz uses an analogy between perception and reading: when we learn to perceive the noise is turned into melodies or meaningful speech just like ink on a paper turns into meaningful sentences when we learn to read. This analogy hits the kernel of the anti-reductionism of archetypical rationalism. Compare a written word and a spoken one; they mean the same thing. Parallel to that example: in the rationalist view two divergent mental states with two divergent sensory contents can 'be about' one and the same object.

This is how the rationalist road leaves phenomenism and psychophysical intuition – you do not need red ink to represent red. You need to bother neither with the sensory content nor the material substrate in any analysis of what a mental state is 'about'.

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*.

In the light of the constancy hypothesis and the postulated close connection between *inferiora* and the material substrate the diversion of mind was complete – the interpreting, judging and object-identifying powers of mind were separated from physical nature following laws of their own.

With Edmund Husserl's phenomenological method¹⁹, the partition between the psychophysical project and rationalist analysis of mind was complete. In this respect Husserl's phenomenological method can be regarded as the final step in the development of the archetypical rationalist model of mind. In the following discussion, this trait in Husserl's thinking will be emphasized (and perhaps slightly caricatured) in order to serve as a mature rationalist contrast to Gestalt theory.

Husserl (in his later writings), analyzed the conscious state as a correlation between two different realms: one of temporal psychological events – *noesis* in Husserl's case – on the one hand, and on the other hand a realm of ideal entities – *noema*. This leads to a special kind of duality, the so-called *noetico-noematic* parallelism. The *noema* is not a part of the concrete conscious act where it is actualized (as *noesis*) but it is closely related to it. This *noema-noesis* correlation is the very signification of intentionality. So, corresponding to every act there is a *noema*. Every mental act or *noesis* is about something; it has a sense. Further, each *noema* is consistent with many types of sensory ingredients in the act – with different *hyletic data*. Any actual conscious state could be replaced and the new state could still be about the same object due to the correlation to the same *noema*. We can perceive an apple tree under various circumstances, in darkness and daylight, we can approach the apple tree in different moods and with differ-

¹⁹ Note that influential thinkers like Brentano and Carl Stumpf have been left out of this very short rendering of the birth of intentionality. Cf. Henle's comments on Stumpf's rationalist views. Henle, Jaynes & Sullivan (eds.) 1973, 23.

ent attitudes, and we can imagine an apple tree and so on. The *noema* is identical while the concrete sensory matter goes under change. We could of course also see the same concrete sensory matter as something else, with a replacement of the *noemata* for another – the apple tree becomes for instance an oak or a monster in the dark. The focus is always on the significance of the perceptual act.

The objects in every description should be treated as results of acts or operations of mind. This function operates according to logical dependencies and the *noemata* of these operations are the essence of a conscious state. Husserl had hoped to explicate the essence with his *constitutive* or *transcendental phenomenology*. Different types of objects and their ‘sense of existence’ may be investigated through Husserl’s method²⁰. According to Husserl the keys to reaching this inter-subjective knowledge are the *epoché* and eidetic reduction. *Epoché* places the ‘natural attitude’ (temporarily) within brackets²¹. The *epoché* is the first step in a rather complex methodological process of making eidetic reduction possible – getting from the concrete conscious state and everyday attitudes to the essence.

As can be seen, one of the outcomes of the descriptive approach of Husserl was that the sensuous content of a perceptual state is of little or no significance. Every *noema* can correspond to various types of *hyletic data* and it is the *noema* that is essential for Husserl. Sensations turn into signs or representations – tokens that have been loaded with sense. The physical state is of even less importance. It is enough to assume that there *is* a semantic relationship between the world and mind – a minimum requirement is that the *noema* is relevant most of the time. We can simply assume that the sensuous content of perceptual states establishes a reliable referential link between some aspect of the world and minds’ apperceptive powers. The exact nature of the link is not a subject matter in the analysis. Husserl’s methodological idealism even forbids him to speculate about any psychophysical relations at all.

As Husserl’s *phenomenology* developed, his conception of sensuous matter diminished towards total abstraction. In *Logical Investigations*, *Empfindungen* were real and vaguely structured constituents and, in an important sense, independent of but (probably) contributing to the intentional act. In *Ideen*, the conception of *hyle* has taken the place of *Empfindungen*. *Hyle* is, however, without *morphe* and does not contribute in any sense to the character of the intentional act. The *hyletic data* is not

²⁰ The most controversial idea here is Husserl’s concept of *Wesensschau* and the programmatic claim that he could reach apodictic truths valid for every conscious mind through his method. (This led empiricists to conclude that Husserl was in search of *synthetic a priori*; Moritz Schlick dismissed Husserl’s method as being ‘the science of nothing at all’.)

²¹ This ‘methodological idealism’ was rooted in a disdain for putting the experienced world in a framework of causal explanations, for treating experienced objects as external mind-independent emitters of causes and effects. Husserl’s method supposedly put mind-dependent objects under a clean description without any prejudices from ‘the natural attitude’. The essence, then, was the formal structure laid bare by the pure and unprejudiced description. Talk about *Wesensschau* put aside, this could be interpreted as something rather close to plain conceptual analysis, with the content and internal relations within our conceptual system as the subject matter. See the discussion in Haglund 1977.

as ‘thing-like’ as the *Empfindungen* of early Husserl. Husserl leaves no place for any pre-shaped perceptual entities serving as the basis of the intentional act. The *hyletic* data is something radically more primitive; it is actually hard to see how *hyle* could transfer information from the transcendental world at all (Haglund 1977).

In my understanding (or caricature), Husserl is looking for the conceptual relations embodied in language and other representational systems *as they appear in conscious states when we categorize* – and obviously not how the perceptual system adapts to the stimuli or how the physiological state of the organism is related to the appearance of the (psychological) meaning of the conscious state. The red ink argument says exactly this: you don’t have to deal with the issues of genetic psychology when dealing with conceptual issues. This was a hard won discovery in post-Kantian Germany. The laws of mathematics are not dependent on the constitution of psychophysical systems.

The rationalist tradition became hostile to any attempt to explain the organic genesis of conscious states and by doing so it turned the methodological idealism into dogmatism. One might argue that the human capacity to take something *as a sign* needs to be explained by psychology. There are obvious dangers with representational models – can something inside the head or inside consciousness be a sign or a representation without an introduction of a *homunculus* in the explanation of mental phenomena?²²

In a certain sense the answer is yes, there are ways to disarm the threat of *homunculus*. However, the homunculus fallacy has been exchanged for a *multiply realizable* fallacy.

Representational Theory of Mind

Contemporary representational theories of mind in the information-processing paradigm have found ways to disarm the threat of *homunculi* through elaborated functionalist moves and the computer metaphor. That is, physiological events are treated as representations or signs without any references to conscious experience. The semantic properties of the event are nowadays often explained by some sort of causal/functional connection to the property they represent, combined with syntactical properties of the signal. The bogeyman-judgments of Helmholtz are replaced by computation, or ‘causation that preserves semantic values’ as Jerry Fodor defines it. Fodor describes the starting point of the paradigm (representational theory of mind), the token, which is the basal unit:

[Token] mental representations are symbols. Tokens of symbols are physical objects with semantic properties. To a first approximation, computations are those causal relations among symbols which reliably respect semantic properties of the relata (Fodor 1998, 10).

²² Cf. Searle’s well-known thought experiment ‘the Chinese room’ and discussions in Searle J.R. 1980, 417-424; Searle J.R. 1982, 345-348.

A discussion of the endemic ‘*homunculus fallacy*’ and an analysis of the multiple realization of semantic content that indicates the irrelevance of a computational level of description when it comes to psychophysical states and the explanation of mental states is found in Searle J.R. 1994, 197-226.

However, the deviation from Helmholtz's definition of a sensation/sign is still negligible. It is enough to establish a correlation between certain events outside the organism and some event inside and this is done with sophisticated philosophical strategies.

The semantic model makes it possible for scientists to start to treat physical events as tokens in a formal system. The perceptual mechanisms and the detailed story of how signs/tokens are formed stay outside the analysis. A neuron firing every time a certain stimuli occurs means 'Yes something with the property X is present'. Notice that the 'yes' signal and its functional connection to the world can have a purely physiological description, just like all brain events. However, this physiological description is not necessarily the same for different ways of representing the 'yes' signal. Basically, there is no difference between the 'yes' signal in the synapse and a 'yes' representation in another language; their logic is the same.

The virtue of representations is that we actually do not need red ink to represent red. Accordingly, it is the semantic content given to the *sign* and not the material aspects of it that is in the centre of a representational model of perception.

The representational model allows us to conceptualize theories about cognition and perception without knowing the exact causal story about the nervous system. 'The cognitive revolution' contributed to the development of psychology in this way. The semantic formula made it possible to define brain functions and construct computational models without knowing the detailed story of how the functions were established. A certain air of conceptual rigor was brought into psychology at the same time as a certain ontological confusion entered into the science.

The problem is that two different systems functioning by distinct and dissimilar principles may nevertheless be identical from a computational point of view. The computational approach does not distinguish between real biological perceptual systems and systems that behave similarly to real biological systems on a computational level. The argument is well known and is also the chief argument for the anti-reductionist stance of representational theories of mind²³. It is the semantic level that is important, not the material realization of the sign. It is enough to specify just a few loosely defined functional properties of the human perceptual system and define the information processing in the system. In this way, there is an actual risk that the perceptual system is abstracted away in the semantic maneuver. The semantic formula creates an abstraction that allows auxiliary explain-away strategies to enter into the explanation. Actually, no specified material or phenomenal properties are needed in the analysis. There is no real need to go below the functional black-box analysis of the brain; there is no real need to understand *how* the function is performed; there is no need to get a grasp the nature of the real processes that develop in the nervous system. In weather forecasts, mathematical models are used to predict the weather. No one should dream of arguing that weather consists of rules of information processing

²³ Here, for instance, Dennett and others use a verificationist argument: if you cannot distinguish a difference in behavior (on some vague descriptive level of a thought experiment) then there are no differences.

rather than material states – the actual properties of the system define the weather, not the abstract description. Minds are supposed to be a different story thanks to the semantic formula of representational theories. We are told an extremely vague and general causal/functional story of how computational states might represent semantic properties of the world. However, one could turn the ‘ink-argument’ around: the semantic content of a sign is not directly related to the material constituents of the sign. Hence, there are dangers involved for psychology to use the semantic relation as a model for understanding the perceptual state. The *homunculus-fallacy* is turned into a *multiply realizable-fallacy*.

After half a century of philosophical ‘thought experiment’ involving computing machines as androids the practical consequence of *multiply realizable*-thesis is proven: The computer metaphor and the ‘information processing paradigm’ has, to a large extent, failed to produce empirical theories that reach beyond the computational abstractions and the large scale behavioral level²⁴. The fact is that the computational models often lack neural plausibility, or rather the level of analysis leaves questions of neural implementation out of focus. In this way a large part of the research has had its footing in computer science rather than in neuroscience. In this way one can suspect that the philosophical stance, the representational theory of mind, is actually leading to an unintended stop line. When our questions concern the neurobiological scale and mental states as natural phenomena the *multiply realizable*-thesis puts representational theories of mind out of work.

The whole approach based on the representational theory of mind obviously clashes with the psychophysical intuition and the assumption that the material properties of nervous systems and minds form a close unity.

The fundamental claim behind the Gestalt theory of the Berlin school is that it is the intrinsic properties of the ‘sign’ (i.e. the psychophysical state) that matter. It is the nature of the ink that counts so to speak. Thus, if we want to make sense of a perceptual theory and understand how psychophysical systems interact with their environment, we need to understand the concrete relationship between two epistemological realms: physical nature and conscious experience as such.

* * * * *

²⁴ No one could deny that the information processing approach has been useful and developed many fields of psychology. Set aside that the computer metaphor has brought quite a misguided ‘context free’ and ‘step-wise’ conception of how functions relate and are regulated in biological perceptual systems, one has to acknowledge that the computational models in general bring an air of clarity and conceptual rigor to cognitive and perceptual theory. This conceptual rigor, by itself, has brought our understanding forward. Flowcharts and computer simulations have certainly also brought forward new research and new findings in cognitive psychology and neuropsychology. Naturally, as a first step, it is important to know what kind of functions are performed by a perceiving biological system before one tries to understand the genesis of the functions. Finally, one of the major contributions of the computational level of analysis is Marr’s perceptual theory, which tremendously developed our understanding of the extreme complexity of the task to perceive ecologically relevant environmental features (Marr 1982).

Zusammenfassung

Das Konzept der Gestalttheorie ist ein Wegweiser an der Weggabelung zwischen Ontologie and Metaphysik. An dieser Weggabelung geht es um die Natur der Erklärung in der Psychologie – um die Auseinandersetzung zwischen den traditionsreichen erkenntnistheoretischen Positionen des Rationalismus und des Empirismus. Der Weg des Rationalismus führt zum Konzept der Intentionalität und zu zeitgenössischen Theorien der mentalen Repräsentation, während die Gestalttheorie den Weg der Empiriker wählt.

Im vorliegenden ersten von drei Teilen dieses Artikels, der diese Weggabelung untersucht, versuche ich die Bedeutung einiger philosophischer Aspekte der rationalistischen Perspektive für die Psychologie herauszuarbeiten. Ich begründe darin meine Auffassung, dass die rationalistische Geisteshaltung, wie sie Von Helmholtz, Wundt, Husserl und andere vertraten, diesen in ontologischer Hinsicht die Augen verbunden hat. Fragen von der Art, wie sie die Gestalttheorie und auch die moderne Hirnforschung stellen, können aus dieser Perspektive nicht beantwortet werden. Die Wahrnehmungs- und Kognitions-Modelle der rationalistischen Theorien bauen typischerweise auf einem Dualismus von physikalischem Zustand und der „Bedeutung“ dieses Zustandes auf. Dementsprechend ist bei ihnen auch von „innerer Repräsentation“ und von Gehirnprozessen als „Informationsverarbeitung“ die Rede. Die damit verbundene Beschreibungsebene erfasst nicht die Feinheiten der tatsächlichen bio-organischen Prozesse, sondern tendiert dazu, die materiellen Eigenheiten des Nervensystems als unwichtig abzutun: Die spezifischen psychophysischen Zustände werden bloß als Zeichen behandelt; auf diese Weise können alle materiellen und phänomenologischen Aspekte aus der Analyse und aus der bewussten Erfahrung weg-abstrahiert werden – etwa die Dynamik der Figur-Grund-Organisation – und die biodynamische Organisation des Nervensystems kann als völlig irrelevant behandelt werden.

Summary

The concept of Gestalt is a signpost on an ontological/metaphysical crossroads. This crossroads concerns the nature of explanation in psychology and reflects traditional rationalist/empiricist stances in epistemology. The rationalist road led to the concept of intentionality and to contemporary representational theories of mind, whereas the empiricist road was taken by Gestalt theory. In this first of three articles exploring the outline of the crossroads, I try to pinpoint some philosophical aspects of the rationalist perspective on psychology. I argue that the rationalist perspective of mind — a perspective expressed by Helmholtz, Wundt and Husserl among others — is ontologically blindfolded. Thus, this perspective cannot answer the type of questions Gestalt theory and modern brain science aim to resolve. Rationalist theories typically base their models of perception and cognition on a duality between the physical state and the meaning or ‘aboutness’ of the state. The distinction allows us to talk about ‘inner representations’ and of brain events as ‘information processing’. This level of description is not on a fine grained bioorganic process level since it tends to dismiss the material properties of the nervous system as unimportant: every specific psychophysical state is treated as just a sign; in this way all material and phenomenal aspects can be abstracted away from the analysis and conscious experience – the dynamics of the figure-ground organization for instance – and the biodynamic organization of the nervous system are thus considered completely irrelevant.

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