Gestalt theory in 20th-century history

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During the century from the 1890 publication of Ehrenfels's proposition on *Gestaltqualitäten* to the 1989 dissolution of the European states governed by Marxist orthodoxy, Gestalt theory was drawn into the political fray in several ways. It was grotesquely misappropriated during the Nazi regime in support of race, territorial expansion, and war aims. On the other side, because it was seen as having a subjectivist taint, the Gestalt approach was anathema where dialectical materialist dogma reigned. In contrast, close reading of the seminal 1912 Wertheimer paper and the 1920 Köhler book reveals that the Gestalt founders' views accord well with current Gestalt research.

Introduction

How we acquire knowledge of the outside world, an abiding question throughout the history of philosophy, came into the realm of scientific inquiry when psychology became an experimental science 150 years ago. At first the approach was to relate human responses to isolated stimuli. The ability of tracing signals through the sensory apparatus, encouraged by Pavlovian conditioning reflex findings, engendered optimism that psychology was on track to be a rigorous cause-and-effect discipline. But, a small band of young psychologists in Berlin and Frankfurt am Main around the time of World War I recognized that target-by-target stimulus/response analysis would not suffice to account for perceptual phenomena; there was a stage of grouping, or forming into configurations (in German, *Gestalten*), and the foremost research task in this area was discovering rules and mechanisms governing the emergence of Gestalten. In their hands, Gestalt psychology provided a cohesive theoretical and experimental approach to perception and soon was taken up in more general areas of social science and even therapy.

Gestalt as a concept went back much further. An important link in the chain was Christian von Ehrenfels (1859–1932), an Austrian baron who relinquished running his estates to take up psychology and philosophy, ultimately becoming professor of philosophy in Prague. In his 1890 essay *Über Gestaltqualitäten* (Ehrenfels, 1890), he picked up and gave more explicit formulation to the concept of Gestalt as it had been put forward by Ernst Mach (1838–1916) in his *Beiträge zur Analyse der Empfindungen* (Mach, 1886):

> If we allow two tone sequences with identical frequency relations to proceed starting from different tones, we immediately recognize the same melody in both just as well as we recognize the same Gestalt in two identical and identically situated geometrical structures.[1]

Actually, Mach had said the same 20 years earlier (Mach, 1865), also using the word *Gestalt* in the meaning that had an even more august provenance. Searching for the right word that connotes an essential commonality within individual diversity when classifying plants, Goethe (1750–1832) said (Goethe, 1817):

> For the complex of the existence of a real entity the German has the word Gestalt. With this expression he abstracts from the changeable, he assumes that something has been established that is coherent, closed and fixed in its character.

Gestalt theory and Nazi ideology

Sketching the development of Gestalt theory to that time, Wolfgang Metzger (1899–1979), in the Introduction to his 1936 book, *Gesetze des Sehens*, limited mention to only one name, v. Ehrenfels. By the time of Metzger's writing, Gestalt psychology had developed into an influential trend, with its leaders Max Wertheimer (1880–1943), Wolfgang Köhler (1887–1967), Kurt Koffka (1887–1941), and Kurt Lewin (1890–1947) being widely recognized as original and innovative (Wagemans, 2014). No one was more aware of this than Metzger himself, having been Wertheimer's PhD student and close colleague. But, readers of Metzger's book in 1936 were kept in the dark on these developments. The reason, of course, is that this was 3 years after the National Socialist rise to power, and the principals whose names are missing from this narrative

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had either been forced into exile or had sufficient moral integrity to leave voluntarily (Köhler). Not, however, Metzger, whose requisite four "Aryan" grandparents allowed him to keep his position in Frankfurt and, moreover, with the exodus of the Jewish faculty, be promoted to acting department head. The elision—we would now call it canceling—of his erstwhile colleagues from a historical account of Gestalt theory cannot be interpreted other than politically motivated, although there are mixed signs in the rest of the book. A Gestalt psychologist cannot write without mention of Rubin's vase/face figure/ground illustration. Metzger finessed this by citing these authors not in references but in figure legends. It is difficult to judge whether even that minimal bow to scientific decorum constituted an act of courage; at any rate, it would have been offset by the crowd scene giving the Nazi salute in Metzger's Figure 140 or the bizarre claim that the ornate German Gothic typeface, favored in the Nazi press, was more legible than the Roman font, because baroquely ornamented letters make for a good Gestalt (Metzger, 1936, p. 23).

Were this the extent of Metzger's collaboration with the Nazi regime, his post-war exoneration and retention as head of psychology at the University of Münster could be understood.[2] Metzger's willingness to subscribe to the programs and later even to the war aims of the Hitler government, however, went much further, as he joined the Storm Troopers in 1933 and became a Nazi party member in 1937 (Ash, 1995, p. 489). He wrote on educational matters in brownshirt publications, and, in a curious twist of 20th century history, he claimed that Gestalt theory, whose originators had been forced out of Germany, validated the Third Reich's racial and territorial expansion policies. In an article in the Nazi cultural magazine *Volk im Werden* (Becoming a Nation) he explained (Metzger, 1942):

> Of the Gestaltfactors, … among the most elementary are the factors of similarity and contiguity. The concordance cannot be more exact than with the development of the teaching that the conditions for a durable society are the principle of race and the principle of closed settlement territory.

He went on to counterpose psychologies based on "rationalistic–Bolshevistic" concepts of Pavlovian innate and conditioned reflexes or on unordered associations favored by British empiricists, with a society in which the will of the Whole determines the freedom of the individual (Metzger, 1942):

> The will of the Whole is meaningfully incorporated in that single individual, in whom the image of the Whole lives most vividly in its full breadth and richness, and who therefore best sees its needs. Insofar as he possesses that ability, the Führer is also, and particularly, the "servant" of the Whole. It is not by accident that this description was coined by a great German and really understood by none of our enemies.

In case there is any doubt of where his sympathies lay, there is more about how the flood from the South and West would have decimated the white, Nordic carriers of Europe's destiny if their influx had not been impeded.

Metzger's method of smuggling pre-1933 psychological theory into the fascist ideology took a course different from the situation in mathematics and physics, where there had already been a strong push toward a "German (i.e., non-Jewish) physics" and "German mathematics" which, after 1933, became officially sanctioned. But, because the tenets of mathematics and the laws of physics could not be as fluidly reinterpreted to represent Nazi ideology as Metzger did with the Gestalt factors, there were pushback attempts by German scientists of international stature. In the end, because these tenets and laws could not be circumvented, they were silently kept in use.

It is difficult to imagine a more grotesque perversion of a scientific teaching than, while Max Wertheimer was eking out a living as a refugee and dying young in New York, his former PhD student interpreting his dictum "… the properties of any of the parts are determined by the intrinsic structural laws of the whole" (Wertheimer, 1924) to explain a state in which the Führer, embodying the "will of the people," can "determine the freedom of the individual"—not to speak of claiming concordance of racial exclusion and territorial expansionism with the Gestalt principles of similarity and contiguity.

There is a subtext, however, in Metzger's highlighting Ehrenfels, and only him, as he goes about inserting Gestalt theory into the Third Reich ideology. It is to be found in the obsessive concern in German intellectual circles with the knowability of a real object world. As the problem enters Gestalt theory, it revolves around the question: When a particular Gestalt experience is reported (e.g., a few simple visual elements appear grouped as a single configuration rather than a loose assembly), is this the result of the mind creating something de novo or of the operation of physiological or physical stages?

Mach does not distinguish between the two views, but Ehrenfels digging more deeply now asks: Given the concept of a Gestalt, what might be the properties defining it? Let r_1, r_2, r_3, …, r_n be an array of individual stimuli (e.g., tones), and let t_1, t_2, t_3, …, t_n be the conscious experiences associated with each of the tones when they are presented individually. Now consider two conditions, the first when the tones are sounded separately one at a time and the second when they are sounded in a sequence, forming a melody (Ehrenfels, 1890):

> When the emergence of t_1, t_2, t_3, …, t_n causes, on the one hand, n separate conscious experiences, and, on the other, a single individual one, then this must have a physiological basis. Since we haven't as yet the slightest idea of the nature of the physical basis of the conditions which determine the number of mental experiences, we shall regard, for purposes of visualization, the simplest possibility: assume that the physiological stimuli r_1, r_2, r_3, …, r_n release their mental content t_1, t_2, t_3, …, t_n in a single conscious experience when they are contained within certain spatial boundaries, and in several conscious experiences when they exceed these boundaries.

One could point to Ehrenfels' phrases "physiological basis of conscious experience" and even further "we were *as yet* ignorant about the physical basis of … mental experiences" as hints of the trend of his opinion. But, a closer reading of the rest of his essay clearly reveals his leaning in a mentalist direction (Ehrenfels, 1890):

> The mind, which produces new combination of psychic elements, alters more than just combinations: it creates something new.

This subjectivist view of Gestalt phenomena meshes with Metzger's own negative opinion on the productivity of physiological inquiry: "Knowledge of physiology has again and again obstructed and diverted the discovery and recognition of the actual laws of seeing" (Metzger, 2006, p. 188). It is interesting to ponder how direct the path is from such a purely mentalist approach to Gestalt theory to its being pressed into service for political purposes.

The other side

Gestalt theory also became a controversial topic at the other end of the political spectrum: Marxism and its intellectual/philosophical arm, dialectical materialism. To find the reason for this, one needs to examine the class of answers sought to the fundamental question: What kind of processing should one look for that generates the experience of a Gestalt rather than that of an assembly of individual elements? The fit to Nazi ideology hinges on the idealist, non-rationalist reading, which disqualifies inclusion in any category of materialism.

The combative anti-Gestalt view of the circles governed by dialectical materialist dogma is more difficult to explain. It can no doubt be traced back to Lenin's spirited attack on Mach and followers (Lenin, 1908), but the immediate arguments were centered on the concept of consciousness and the role it plays in Gestalt theory (Hiebsch, 1964, p. 453):

> The epistemological-philosophical critique [of Gestalt Theory] is predominantly directed against the assertion of the priority of the phenomenological, with its own laws, i.e., against the immanent epistemological idealism of Gestalt Psychology, because Gestalt Psychology stands in direct opposition to the mirror-reflection theory of consciousness as it is understood in dialectical-materialist philosophy.

According to the *Abbildungs* theory of dialectical materialism, conscious experience (whose existence is not denied) is the mirror reflection of the real outside world. Anything we report as seeing also exists in the real world; hence, it is not only useless but conceptually wrong to look to the brain (let alone to a conjectured "mind") for Gestalt-generating operations.

However, a close reading of Wertheimer (1912) and Köhler (1920) shows that this was exactly what these early Gestaltists were doing. Wertheimer, having satisfied himself of the distinction between the *presentation* of two separate and discrete albeit asynchronous targets and the *unitary appearance* of the phi movement, was not looking to the mind as Ehrenfels was prone to a generation earlier. He envisaged robust physiological processes involving centrally located (i.e., brain) cells (Wertheimer, 1912, p. 91):

> Basic here is the assumption that what is solely essential are not the excitatory processes in the excited cells themselves or the sum of these individual excitations, but rather that an important role, decisive in the extraction of psychological factors, has to be assigned to cross- and ensemble processes (*Quer- und Ganzprozesse*) acting as specific wholes which result from the excitations at individual or receptor locations.

> … a relatively simple cause is likely: a cross-function between excited locations (a central action between two temporally determined excitations), a kind of physiological short-circuit, which would correspond to the subjectively experienced phi-phenomenon.

Here, in the very first paper, the fundamental program of the early Gestalt enterprise is laid out: Forming of configurations reported by the conscious observers has its counterpart in ("are extracted from") brain ensembles processing of individual local excitations.

Köhler went into details. In 1920 he published a 300-page book examining physical states which he assumed exist in the brain whenever categorical differences would be expected, depending on whether the input consisted of a single simple stimulus or an ensemble. Most of the book is devoted to the application of electromagnetic and physicochemical laws to volumes of substances that are much less differentiated than nerve tissue. To Köhler, the manifestation of eigenstates under specific input and boundary conditions that are not simple and immediate representations of the stimulating situation

provided evidence (or at least hints) of how Gestalt percept might emerge. Köhler was aware that the real brain was made up of nerve cells and fibers connecting them, but he was nevertheless optimistic about an approach to perception via *Physische Gestalten* (Köhler, 1920 p. 193):[3]

> In principle, a brain observation is conceivable, which would recognize similarities in Gestalt- and therefore in the most essential properties by physical means with what the subject experiences phenomenally.

Koffka, perhaps the least physiological of the Gestalt psychologists, assured his readers that when Köhler put forward the notion of *isomorphism* he meant that the structural properties of the conscious experience of a Gestalt are akin to those of the atoms and molecules of the brain and acknowledges the support of this view by v. Frey, the physiologist specializing in touch, when v. Frey wrote that the "… somatic processes which are coordinated to Gestalten must have a structure similar to them" (Koffka, 1935, p. 62).

Ultimately, looking to physiology, clearly expressed as part of the Gestalt program, was evidently not sufficient to align it with dialectical materialism as it became mid-20th century dogma, but at least the topic was open to discussion, contributions were fully acknowledged, and sources were cited.

In the Soviet Union, there was an initial period in which the release from the Tsarist restrictions allowed some openings to modern European trends in the arts and social sciences, including some experimental steps in Gestalt theory and even psychoanalysis (Scheerer, 1980). But, when the discord between Gestalt theory and the regime's philosophical teaching was realized, it ceased being a component in Soviet psychological research.

The situation in the Deutsche Demokratische Republik (DDR), the East German Soviet satellite state, is of particular interest, because it generated rich documentation of the movement's history and party-theoretical writing, and it was as well for 40 years the site of the state-supported institution for perception research in the place where it all began. A window into that workshop is available to us in a detailed study on visual space perception by Friedhardt Klix, the most prominent East German researcher in his discipline (Klix, 1962). He reported on psychophysical experiments, competently executed, covering much the same ground in the areas of brightness, contrast, position, and depth thresholds as the contemporaneous American volume edited by Graham (1965). Klix discussed Gestalt theory at length, displaying a full understanding of its history and aims; yet, taking his cue from the party line, he ultimately denied it a possible role in providing a framework for the larger body of findings in which traditional psychophysical stimulus–response methodology was inadequate. Instead, he proposed a program which, although pursuing the same goal and also taking recourse to conscious experience ("das Phänomenale," "das anschauliche Angetroffene"), makes even the most general Gestalt formulations appear crisp by comparison (Klix, 1962, p. 280):

> The approach to classical psychophysics is extended by no longer asking about the relationship between stimulus and sensation, but by seeking and formulating the relationship between the invariance system generated by the stimulus topography and the associated structural framework of the phenomenal. Whenever it can be demonstrated that what is actually seen is more similar to the condition of the surround that induce it than to the immediate stimulus conditions at the receptor, one talks of a process of tracing back which arises from the invariances and is of the nature of a transformation from the originating conditions into the dimensionality that accords with its origin. Experiments must decide whether or not this is the case.

Looking back on the 20th century

Gestalt questions in perception are ultimately scientific: an understanding of the mechanisms through which Gestalten emerge and the way in which the bundling of elementary sensations into Wholes contributes to object recognition. Hence, what matters is the extent to which Gestalt theory's being pulled into political discourse and state-sanctioned policies impacted the progress of science.

The word *Gestalt* has entered the vocabulary, transcending its original German and referring to the entity when individual separable component elements have been subsumed by a configuration with properties of its own. The notion was translated into an organizing concept as well as an experimental program, first in perception and then in a wider context of psychology and the social sciences. Because the data were mainly derived from and motivated by reports of what an aware observer sees and hears, it is at the nexus of the most fundamental questions of how we inquire into the source of human knowledge and where to look. Hence, Gestalt theory could not from the outset avoid entanglement with philosophy and, inevitably, politics. It figured in the intellectual propositions of the two extreme political movements which played a significant role in 20th-century history, although in opposite ways.

The Third Reich lasted a scant 12 years, half at war during which little fundamental work might be expected and any long-term effect of the state ideological mentalist bias would not have become manifest. It has been claimed that a significant aspect of the ejection from German cultural and academic life of the principal Gestalt figures in 1933 has been not so much their relocation to the United States

with a somewhat diminished influence, but rather the transition of the discourse from German to English. It is true that many of the preliminaries took place in the framework of 19th-century German philosophy and psychology and that the writings of Ehrenfels and the early Wertheimer and Köhler used idiomatic subtleties of German academic style that often defy accurate rendering into English. But, when it comes to Gestalt factors in perception, the fundamental questions and their answers are only marginally, if at all, linguistic. It has to be admitted, however, that with the exodus of the Gestalt principals in 1933, the mentalist bias, aligned with long-standing anti-rationalist attitudes, became dominant in Germany.

Because from Mach's days conscious experience played a role in Gestalt formulations and from Marx's days the word *consciousness* has been part of the Marxist vocabulary, interaction between these two intellectual streams was inevitable. Their quarrel is caught up in differences between the various flavors of materialism and in an outmoded view of objective reality. Had the later guardians of dialectical–materialist orthodoxy allowed it to include brain states, there would have been no conflict.

Fortunately, these political trends did not have much success in blunting or deflecting advances in the area. After capturing the imagination of psychologists as a forward-looking alternative to behaviorisms, progress was halting. The mentalist wing, staying within the original description of psychology as the study of the mind, never advanced very far in articulating Gestalt laws, in the way in which laws are understood in legal and scientific circles, as is evident by the virtual identity of the various versions between 1936 and 2006 of Metzger's *Gesetze des Sehens.*

More relevant is the prospect that, transcending disciplinary and methodological boundaries, we will witness a realization of Wertheimer's and Köhler's expectations of identifying brain states that correspond to an observer's conscious experience of Gestalten. Rejection of "physiologism" would ultimately detract from scientific progress and so would unwillingness to use conscious observations as a guide.

Neuroscience, unencumbered by politics, leaving aside philosophy, empowered by a commanding armamentarium of laboratory techniques and by detailed knowledge of structure and function of the pertinent sensory apparatus, has reframed the discourse more productively. Without necessarily dismissing the study of the mind as unsuitable or irrelevant, or gainsaying attempts at using the Gestalt concept in realms broader than perception, the focus has been reset to concentrate on what even Mach had accepted as the domain of the "physical/physiological." Where Köhler in 1920 still had to insist on the inadequacy of thinking in terms of a punctate mosaic sensory input, we now know about cross connections and quite elaborate receptive fields. And the era of instrumentation is dawning to put into practice the program envisaged by Mach in 1886, and predicted by Köhler in 1920, in which correspondence between brain states and observers' reports allows insight into the rules governing the emergence of Gestalten from their elements (Hsieh, Vul, & Kanwisher, 2010).

Inquiring into how a meaningful representation of an outside world arises from signals funneled through sensory organs is a heroic task. The original intent of the Gestalt movement was to broaden the approach from individual stimuli to consider grouping processing. Even though it was performed in an academic and cultural setting with strong mentalist leanings, the work at the outset was within the domain of natural science. Subsequent intertwining with political ideologies not only failed to advance progress but also mischanneled the discourse away from the productive directions in which current, purely science-oriented research is flourishing.

Keywords: Gestalt psychology, parts/whole processing, Max Wertheimer, Wolfgang Köhler, Wolfgang Metzger, Nazi ideology, dialectical materialism

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Footnotes

[1]This and all subsequent quotations have been rendered into English from the original German source by the author.
[2]Metzger headed the Münster psychology department until his retirement; he was well regarded by his students (Spillman, 2005) and widely admired by post-World War II European psychologists who, perhaps unaware of his collaboration with the Hitler regime, named a medal after him. In an autobiography (Metzger, 1972), he omitted any mention of his Nazi past, instead claiming that his career in the Third Reich was impeded for being friendly with Jews. And, indeed, 40 years later he expressed his admiration for Wertheimer as a scientist and humble human being, and he reported packing Wertheimer's papers ("two large crates") (Metzger, 1972, p. 201) to be forwarded to him in his emigration as well as continuing supervision of some remaining graduate and postdoctoral students, to whom the April 7, 1933, dismissal edict of Jewish faculty had yet to be applied. Metzger's adaptability to circumstances is illustrated by his concern that German autocratic school administrators prevented students from being educated for democracy (Metzger, 1972, p. 222).
[3]The German *physisch* has the meaning of corporal or material and should be distinguished from *physikalisch.*

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