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SEYMOUR FELDMAN

GESTALT PSYCHOLOGY

The term 'Gestalt' was introduced into psychology by the Austrian philosopher Christian von Ehrenfels. 'Gestalt', in colloquial German, means 'shape' or 'structure'. Ehrenfels demonstrates in his essay of 1890 that there are certain inherently structural features of experience that must be acknowledged in addition to simple tones, colours and other mental 'atoms' or 'elements' if we are to do justice to the objects towards which perception, memory and abstract thinking are directed. His essay initiated a reaction against the then still dominant atomism in psychology, a reaction that led in turn to the ideas on 'cerebral integration' of the so-called Berlin school of Gestalt psychology and thence to contemporary investigations of 'neural networks' in cognitive science. Many of the

specific empirical facts discovered by the Gestaltists about the perception of movement and contour, about perceptual constancy and perceptual illusions, and about the role of 'good form' in perception and memory have been absorbed into psychology as a whole.

- 1 Ehrenfels v. Mach
- 2 The Austro-Italian production theory
- 3 The Berlin school and contemporary influence

1 Ehrenfels v. Mach

Christian von Ehrenfels belonged to an impressive list of thinkers – including also Edmund Husserl, Alexius Meinong and Carl Stumpf – who were students of Franz Brentano. One of Ehrenfels' central concerns was a criticism of the treatment of complex presentation put forward by Ernst Mach. For Mach (1886), the only satisfactory story of the universe is one told exclusively in terms of sensory atoms. All other putative entities – including not only melodies and shapes but also bodies and selves – are, he says, merely 'auxiliary aids' introduced 'for purposes of thought economy'. Only the 'elements', sensations, are real (see MACH, E.; PHENOMENALISM; SENSE-DATA).

How, then, do we account for the fact that we recognize different spatial figures as the same? By means of an appeal, Mach says, to additional elementary sensations *outside* the sphere of visual perception (1865). When I see a square, for example, then in addition to the perceived elements (the points, lines or segments) there is also a peculiar nervous or 'muscular' sensation that I have as a result of the innervations of the muscles of my eyes, a sensation that is repeated, spontaneously and without any effort on my part, whenever I see a similar figure.

But how can this account do justice to the unity of complex experiences: why is the muscular sensation not just a further item super-added to the sum of elementary visual sensations? How can Mach's account be generalized to other sensory modalities? As Ehrenfels saw, such additional sensations can at best explain our perception of what is complex only in relation to what is presented simultaneously, that is, simple spatial figures, simple smells, simple musical chords. A melody, however, is a unitary complex that is extended in time, and there is no point at which some putative associated elementary feeling-sensation could be associated with *all* the separate auditory sensations. Through these and other arguments, atomistic psychology of the sort that Mach defended was replaced in its position of dominance by the tradition of Gestalt psychology.

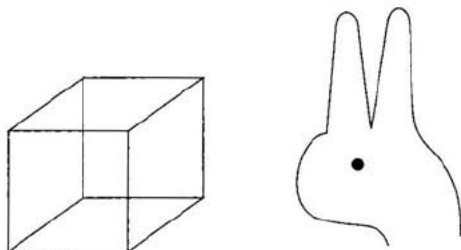
Ehrenfels (1890) pointed out that our perceptual

experience of complex objects is something distinct from the experience of a mere sum of sensory elements. This is shown also by the fact that we can apprehend the same shape in association with sensory elements that, taken individually, have nothing in common: we can recognize the shape of a head, for example, by looking at a drawing or shadow, just as we can recognize a melody that has been transposed into a different key.

Consider the relation between the successive notes in a melody and the melody itself. Ehrenfels' proposal is that wherever we have a relation of this sort, between a complex of sensory elements and a single invariant structure, we are to conceive the latter as a new sort of abstract entity that he calls a 'Gestalt quality'. A surprisingly wide variety of Gestalt qualities can be distinguished on this basis, including mixed Gestalt qualities, such as dances, marches, operas, that arise when data from different sensory modalities are combined. Ehrenfels allows also higher levels of Gestalt complexity, where Gestalt qualities themselves would be combined together in cumulative fashion.

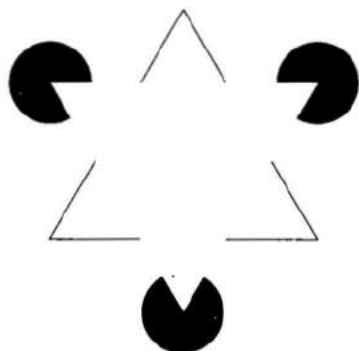
2 The Austro-Italian production theory

For Ehrenfels, the Gestalt quality exists as an object of experience if an appropriate constellation of elements is present in sensation. For MEINONG and his followers in Graz, however, the Gestalt quality is an abstract 'object of higher order' that is the product of a specific sort of cognitive processing. As Benussi (1914) saw, if Gestalt presentations are brought about on the basis of stimulus-presentations via additional cognitive processing, such presentations can display a certain 'Gestalt-ambiguity' in relation to the stimulus. Standard examples of such ambiguities are afforded by the Necker cube and the 'duck-rabbit' figure:



Benussi and his colleagues in Graz were the first to subject this 'Gestalt-switch' phenomenon (the phenomenon of 'seeing as') to detailed theoretical and experimental treatment (see also WITTGENSTEIN,

L. J. J.). Benussi went on to establish a tradition of experimental Gestalt psychology in Italy that, through the work of Kanizsa, Bozzi and others, is still alive today, producing valuable results, for example in the investigation of transparency, and of subjective contours or 'amodal' completion, as in such figures as the so-called Kanizsa triangle:



Associated investigations were carried out also by Albert Michotte and his school in Louvain, who showed on the basis of work with simple cartoon figures of moving discs and squares how, even in the absence of any specific sensory stimulus, we can enjoy a perceptual awareness of causality and of other 'functional connections'.

3 The Berlin school and contemporary influence

The Berlin school initiated in Stumpf's laboratory by Max Wertheimer, Wolfgang Köhler and Kurt Koffka also studied phenomenal motion. Wertheimer discovered that, when subjects are exposed under certain conditions to two alternately flashing lights a short distance apart, they have an experience of movement back and forth from the one to the other, what he called the 'phi-phenomenon' (the basis of cinematography). The phi-phenomenon is clearly not a matter of any discrete and independent 'elementary' sensory data: what one perceives is, as Wertheimer says, a certain *sui generis* dynamic character of 'across' (see SENSE-DATA).

From the perspective of the Berlin school, moreover, we should speak not of 'sensory presentations' or 'sensory data' but always rather of activity at the cortical and peripheral ends of sensory nerves. The perceived Gestalt, too, is not abstract on the Berlin theory but a part of nature. It is an integral whole that includes among its parts the putative sensory data experienced 'integrally' together by the perceiving subject. Later, J.J. Gibson sought to use this Gestaltist naturalism as the basis of a 'direct realist' theory

according to which acts of perception would be directed towards parts of the environment of the perceiving subject, including edges, surfaces and other 'affordances' (Katz 1987; VISION §§2-3).

Most characteristic of the Berlin school is its account of the relation between conscious phenomena and the brain events that underlie them. Köhler (1920) advanced the postulate of 'psychophysical isomorphism' according to which conscious events and brain events would be related by 'real structural properties' that they shared in common. This view has been described as the first conception of psychic activity that made possible a serviceable physiological approach to the workings of the mind in the modern sense. Yet Köhler's own variant of the isomorphism hypothesis fared badly in a number of crucial experiments in mid-century, experiments which coincided with the geographic dispersal of the Berlin school and also with the deprivation of its prior position of dominance.

While many results and concerns of the Gestaltists came to be absorbed into standard textbook psychology in mid-century, the Gestaltist label was normally dropped. Gestalt ideas have been revived of late also by cognitive scientists, for example in work on imagery, on prototypes in categorization and learning, on naïve or qualitative physics, and in the work of the so-called 'cognitive linguists' who, like the Gestaltists, see human cognition as a part of nature, and who seek an integrated account of its various facets.

See also: CONNECTIONISM; PERCEPTION

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BARRY SMITH

GETTIER PROBLEMS

The expression 'the Gettier problem' refers to one or another problem exposed by Edmund Gettier when discussing the relation between several examples that he constructed and analyses of knowing advanced by various philosophers, including Plato in the *Theaetetus*. Gettier's examples appear to run counter to these 'standard' or 'traditional' analyses. A few philosophers take this appearance to be deceptive and regard the genuine problem revealed by Gettier to be: 'How can one show that Gettier's examples are not really counterexamples to the standard analyses?' But most philosophers take seriously the problem which is the central concern of this entry: 'How can such standard analyses be altered so that Gettier's cases do not constitute counterexamples to the modified analyses (and without opening the analyses to further objections?)'.

Gettier's short paper spawned many important, ongoing projects in contemporary epistemology – for instance, attempts to add a fourth condition of knowing to the traditional analyses, attempts to replace some conditions of those analyses, such as externalist accounts of knowing or justification (causal theories and reliability theories), and revived interest in scepticism, including an investigation of the deductive closure principle. Difficulties uncovered at each stage of this research have generated an ever more sophisticated set of accounts of knowing and justification, as well as a wealth of examples useful for testing proposed analyses. In spite of the vast literature that Gettier's brief paper elicited, there is still no widespread agreement as to whether the Gettier problem has been solved, nor as to what constitutes the most promising line of research.

- 1 Gettier-type cases
- 2 Defeasibility analyses
- 3 Causal analyses and proper functioning
- 4 The role of false propositions

1 Gettier-type cases

Clarifying the Gettier problem as most philosophers have seen it ('How can the standard analyses be altered so that Gettier-type cases do not constitute counterexamples to the modified analyses, and without opening the analyses to further objections?') involves clarifying the terms 'a standard analysis' and