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Gestalt Psychology

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The term ‘Gestalt’ was introduced into psychology by the Austrian philosopher Christian von Ehrenfels in an essay entitled “On ‘Gestalt-Qualities’” published in 1890. ‘Gestalt,’ in colloquial German, means roughly: ‘shape’ or ‘structure’ or ‘configuration’, and Ehrenfels demonstrates in his essay that there are certain inherently structural features of experience which need to be acknowledged in addition to simple tones, colours and other mental ‘atoms’ or ‘elements’. His essay thus initiated a reaction against the then still dominant atomism in psychology, a reaction which culminated in the work on ‘cerebral intregation’ of the so-called Berlin school of Gestalt psychology. Max Wertheimer, one of the leading members of this school, was a student of Ehrenfels in Prague. Ehrenfels himself belonged to an impressive list of original thinkers – a list which includes also Edmund Husserl, Alexius Meinong and Carl Stumpf, the founder of the Berlin school – who were students of Franz Brentano. Each of these thinkers attempted to elaborate, both ontologically and psychologically, the doctrine of intentionality put forward by Brentano. The work of Ehrenfels and of the later Gestaltists, too, may be seen as a contribution to the understanding of this mental directedness, and in particular to the understanding of the directedness of perceptual experience.

Much of our perceptual experience, it seems clear, is directed towards complex formations such as spatial figures or melodies. For Ehrenfels, exactly as for his atomist contemporaries, such complex experience involves sensations of simple spatial elements (say: lines and points). Our total experience is however something distinct from the experience of a mere sum or complex of sensory elements. This is shown also by the fact that we can apprehend *the same* shape in association with elements which, taken individually, have nothing in common: we can recognise the shape of a head, for example, either by looking at the head itself or by examining a drawing or shadow.

Ehrenfels’ proposal, now, is that wherever we have a relation of this sort, between a complex of experienced elements on the one hand and some associated unitary experience of a single invariant structure on the other, we are to conceive this latter structure as a new sort of unifying entity, what he calls a ‘Gestalt-quality’, on a level of its own. The experience not only of spatial complexity but also of temporal complexity (and in principle also of complexity of other kinds) is henceforth to be treated in this two-level fashion. Moreover, they are to be treated not as separate groups of phenomena but as a unified species, in which mental processes of the same sorts are involved in every case.

Gestalt qualities, for Ehrenfels, are not wholes embracing their fundamenta – the associated tones, colours, tastes or smells – as parts. They are additional unitary objects, existing alongside the unitary elements with which they are associated. The Gestalt quality is not a combination of elements but ‘something new in relation to these, which exists

together with [their] combination, but is distinguishable from it'. It is a special sort of structure, 'a positive content of presentation bound up in consciousness with the existence of complexes of mutually separable (i.e. independently presentable) elementary presentations.'

Varieties of Gestalt-Qualities

Sensory data from different sensory modalities may, according to Ehrenfels, combine together in such a way as to provide the foundation for mixed Gestalt qualities of specific sorts. Thus our perception of wetness is in fact the perception of a Gestalt quality founded on simultaneous sensations of pressure and temperature;[11] the phenomena of complex tastes involve an 'intimate fusion' of pure taste sensations with sensations of temperature, touch and smell, and it seems plausible to suppose that truly subtle tastes will involve in their foundations also complex memories and other data given in inner perception. Ehrenfels allows also still higher levels of Gestalt complexity, where Gestalt qualities themselves would combine together in specific ways. Having identified spatial shapes, melodies, chords and complex tastes as first-order Gestalt qualities founded on given elementary sensations, Ehrenfels recognises that these qualities, too, may combine together in such as way as to found new, second-order qualities which are themselves capable of founding third-order qualities, and so on, in principle without limit. The most complex products of the most sophisticated civilisation, including all the complex structures of language and art, are hereby comprehended within a single theory.

At the very end of his paper, Ehrenfels considers the possibility of a stratification in the contrary direction, that is to say downwards from the level of the medium-sized objects given in perception into the region of microphysics. 'Is it not conceivable,' he asks, 'that each tone is the fusion of a sum of still more primitive elements with the Gestalt qualities bound up therewith?' He goes on to conclude that,

> no conclusive argument can be brought forward even against the possibility that we may not, penetrating ever more deeply in this manner, finally arrive at a single proto-quality, or at least at a single quality-continuum, from out of which distinct contents (colours, tones, ...) are generated by the fusion of distinct combinations with the Gestalt qualities bound up therewith, [so that] one can no longer shrink from the idea that tones and colours might be exhibited as the products of a much higher degree of complication of proto-elements as yet unknown.

Ehrenfels vs. Mach

The centre-piece of Ehrenfels' essay is however a criticism of the treatment of complex presentation put forward by Ernst Mach. For Mach, all complexes, including the ego itself, are mere ideal, practical or provisional 'mental-economic unities'. The only satisfactory story of the universe and of all its parts and aspects is one which is told exclusively in terms of atoms, of absolute (phenomenal) elements. 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'.

As he puts it in the *Analyse der Empfindungen*, only the 'elements' (sensations, *Empfindungen*) are real.

How, according to Mach, do we recognise different spatial figures ('*Gestalten*') as the same? By means of an appeal to additional elementary sensations *outside* the sphere of perception, which he calls '*Muskelempfindungen*' or 'muscular sensations', sensations associated, in the case of visual sensation, with the muscles involved in the movements of the eye.

> Thus when I see a square, for example, then in addition to the perceived elements (whether these be conceived as points, lines or segments) there is also a peculiar nervous sensation which 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.

One problem with Mach's account is that it seems unable to do justice to the unity of complex experiences: why is the elementary muscular sensation not just another sensation, added to the sum of, in this case elementary visual sensations? A more pressing problem turns on the generalization of this Machian theory to complex experiences in other sensory modalities.

> Just as the same, differently coloured forms, the same muscular sensations, must occur if the forms are to be recognised as the same, so too each and every form, each and every abstraction, as one might say, must in just the same way be based upon presentations of a quite particular quality. This holds true for space and shape, as well as for time, rhythm, pitch, the form of melodies, intensity, and so on. (loc.cit., Eng. p. 391f.)

Mach assumes, that is to say, that it is possible to generalise the theory of muscular sensations to encompass all sensory dimensions. More, that it is in principle possible to extrapolate from this theory in such a way as to encompass our apparent presentation of all '*Abstraktionen*' from what is given.

As Ehrenfels saw, however, such addition sensations can at best explain our apparent perception of what is complex only in relation to what is capable of being presented instantaneously, i.e. simple spatial figures, simple smells, simple musical chords. There is no way in which an appeal to extra elementary (and thus instantaneous) sensations alone can solve the ontological problem raised by our (apparent) perception of temporally extended, unitary complexes such as those of melody and rhythm, and in general of all Gestalten involving change and motion. For there is clearly no answer to the question as to *when* a single elementary feeling-sensation – putatively associated with a plurality of elementary perceptions spread out in time – could become associated with this plurality in the relevant way.

The elementary innervation (or what have you) can do service for the perception of what is complex only if it is somehow associated with *all* relevant perceptions. This

association can come about, however, only if these perceptions are already *collected together*, e.g. through the operations of memory, to form a single and instantaneous composite perception. But the appeal to such a composite perception clearly signifies a departure from the atomistic perspective. Moreover, once such composites have been accepted, it is difficult to see what explanatory role could remain for any associated muscular innervations.

The theory of *Muskelempfindungen* of 1865 is not simply abandoned by Mach in his later writings. Many of the same ideas are at work also in the *Analyse der Empfindungen*, though now the theory of muscular sensations has been extended – legitimately or not – to embrace a taxonomy of different kinds of 'space-sensations', 'time-sensations' and in principle also muscular innervations of other sorts – illustrating Mach's faith in the 'power and variety of the human organism'.

The Austro-Italian Production Theory

We have so far left open the question of the genesis of Gestalt qualities. Is the Gestalt quality such as to exist spontaneously as an object of experience, given only that an appropriate constellation of elements is present in succession, as Ehrenfels (and Mach) believed? Or is the perception of the Gestalt quality the result of additional intellectual activity, as if it would have to be *produced* by the perceiving subject? It is above all Meinong and his followers who have taken this second line, identifying higher-order Gestalt formations as products of cognitive or intellectual processing and thereby giving birth to what has been called the 'production theory' of Gestalt perception, a theory developed above all in the work of Vittorio Benussi and of his successors in Italy, including the great phenomenological psychologist Gaetano Kanizsa.

Because for Benussi, Gestalt presentations are brought about on the basis of stimulus-presentations via additional processing, such presentations are in consequence characterised by a certain 'Gestalt-*ambiguity*' in relation to the stimulus, are underdetermined by the lower-level experiences on which they are founded. (See his 1914, e.g. p. 399) Consider for example our experience of a succession of tones. It seems that, through a little intellectual effort, we can hear the relevant sequence as divided into phrasal clusters now in this way, now in that. Or consider our experience of visual illusions such as the Necker cube, Rubin's vase/faces illusion, the duck-rabbit illusion, and so on. The same founding elements here give rise to different Gestalt-qualities under different conditions, sometimes in such a way that the qualities produced alternate in a manner over which the subject has no control. This 'Gestalt-switch' phenomenon is perhaps the one concern most generally associated with the Gestalt tradition, though it is less commonly recognised that it was Benussi who was the first to subject it to detailed treatment, both theoretically and experimentally (and indeed that the notion of Gestalt ambiguity is at the very centre of the Graz production theory).

Benussi himself gradually adopted a different and more subtle view on complex perception, according to which presentational experiences can no longer be divided sharply into sensory and non-sensory. Rather, we have a spectrum which extends from cases of perception in which the influence of non-sensory factors ('central conditions') is very

strong, to cases of high influence of 'peripheral conditions' in which such influence is negligible.

Benussi established a tradition of experimental psychology in Italy which, through the work of Cesare Musatti, F. Metelli, Gaetano Kanizsa and others, is still alive today, producing valuable results for example in the investigation of perceived plurality, of transparency and of subjective contours. Parallel investigations have been carried out also Albert Michotte and his school in Louvain, As in the case of Kanizsa's phenomena of perceptual interpolation, so also here, the 'seeing' involved is amodal - no specific sensory stimuli are involved - yet it is nonetheless a direct perceptual experience, a matter of immediate 'encounter'. Michotte's experiments and the experiments of his followers show that such apprehension of 'causality' is not a result of cognitive processing in the standardly accepted sense, and nor is it a reflection of meanings or expectations learned through association or experience.

7. From Graz to Berlin: Koffka vs. Benussi

The fact that our experience is structured is, according to the Austrian conception, a matter of certain special '*Gestalt qualities*' of complexes of data given in experience. Each such quality is determined by and is existentially dependent on the constituent elements of the complex with which it is associated. According to the later Berlin conception, in contrast, a collection of data (or any other psychological formation) does not *have* a Gestalt: it *is* a Gestalt, a whole whose parts are themselves determined as being such that they can exist only as parts of a whole of this given kind. The significance of this move cannot be overestimated. Indeed, the present essay may be seen as a treatment of the ramifications of the transition from the Austrian theory of Gestalt as *quality* to the Berlin theory of Gestalt as *whole*. The essay is intended also, however, as a first rough, historical survey of the wider Gestalt tradition - albeit from a somewhat specialised philosophical point of view – moving beyond the confines of the Berlin-centred approach that has hitherto prevailed.[4]

7.1 In a series of classic experiments on phenomenal motion carried out in 1912, Wertheimer discovered that when subjects – his subjects in the present case were a certain Dr K|hler and Dr Koffka – are exposed to two alternately flashing lights a short distance apart, then under certain conditions they have an experience of movement back and forth from the one to the other. That is to say, they *see* a movement: the movement is an object of perception, it is not a purely intellectual product of an act of production. Indeed in certain determinate circumstances one can experience *pure* phenomenal movement, that is movement without objects moved, what Wertheimer called the 'phi-phenomenon'.

> The *phi-phenomenon* is clearly and repeatedly observable. It is no less manifest than for example a colour or shape. Yet clearly, what is perceived is not here a matter of any discrete and independent sensory data: what one perceives is, as Wertheimer says, a certain *sui generis* dynamic character of 'across'.

Wertheimer's own initial understanding of the phi-phenomenon seems to have been neurological: phi-phenomena are to be explained in terms of certain functional connections or integrations at the cortical level, functional connections held to be sufficient to provide an explanation in and of themselves, without any appeal to an 'extra brain level' of production or of intellectual processing as on a Graz-type production theory. This idea of cerebral integration signifies a final break with the atomistic sensationalism which had still made itself felt in the work of Ehrenfels, Meinong, Benussi and their followers. Wertheimer's experiments make it clear that it is not the case that to every part of a perceived structure there corresponds one or more sensory datum which could in principle be experienced in isolation. What we perceive are, rather, complex Gestalten, only some of whose parts bear a certain analogy to the putative discrete and independent data of sense which had formed the basis of the earlier theories.

Wertheimer does not, however, express this theory in any systematic way in his paper on motion of 1912. He merely 'sketches a hypothesis' (§ 21). Nor does he exploit his theory as a starting point from which to criticise in detail other work on phenomenal motion in such a way as to set into relief the peculiarities of the new approach. It is in fact in a paper by Koffka of 1915, a paper which has been described as 'the birth piece of Gestalt theory as a psychological system' (Ash 1982, p.338), that this theoretical and critical work is first laid bare. The paper in question is an extensive critique of the views on phenomenal motion of the Graz production theory, particularly as presented in the work of Benussi, together with the presentation of the alternative theory put forward in outline by Wertheimer.

Benussi, as we have seen, holds that Gestalt perception involves sense-activity plus a special psychic operation. Different Gestalten can be founded on the basis of the same inferiora, the latter being the same both as stimulus and as conscious content.[33] But in order to counter the objection that the operations of production are not themselves manifested in conscious experience, such operations are held by Benussi to occur *automatically* with the experience in sensation of the underlying foundations.[34] To this extent however their very existence eludes introspective verification and, as Koffka argues, they threaten to become theoretically idle.

Koffka's principal challenge however relates to the putative 'purely sensory experiences' to which appeal is made in Benussi's theory. Do we really, Koffka asks, have such pure sense experiences – for example when we see merely individual points in an array of colour – in such a way that the particular order or configuration of the points would not be included in the seeing? Surely not, he argues (Koffka 1915, p.24); but from this it follows that the very idea of Gestalt ambiguity, the idea that there can be a multiplicity of Gestalten on the basis of constant sensory data, must also be rejected. For what could be the evidence that sensory data is constant, given that the sensory material is present only within the Gestalt? What could be the evidence of constant material of sensation when the supervenient Gestalt is itself allowed to change? Koffka concludes that it is a mere assumption of constancy - of the constancy hypothesis – on Benussi's part which justifies

the given claim. (*Op. cit.*, pp.25ff.) Only if the process of Gestalt formation were suppressed could one observe whether the underlying material stays constant – but then no Gestalt would have been formed.

Koffka argues further that ambiguity cannot be a criterion of Gestalt perception, as Benussi had argued. For even sensory data, e.g. a redness, can be more or less dark or light, more or less warm or cold, more or less penetrating, more or less tinged with yellow or tinged with blue, and so on, in the sense that the same observer might see it under the same external conditions now in this way, now in that. (*Op. cit.*, p.29) These are of course fine differences compared to the differences involved in Gestalt perception, but this shows only that - as Benussi himself was later to accept - the distinction between univocity and ambiguity is a gradual one. It does not mark any categorial difference between different species of experiential object.

Most important from our present point of view, however, is Koffka's analysis of the relation between stimulus and observer. Benussi, and indeed the entire Ehrenfels-Meinong tradition, had seen stimuli as something objective, an external given of psychological theory. Koffka, however, insists that that characteristic of a real object or physical process which consists in its being a stimulus is not any absolute property of the object or process as it is in itself, but rests always on its relation to the subject or sentient organism. More precisely, it rests on a specific state of readiness or mental set on the latter's part.[35] But now, if a real object is a stimulus only in relation to an organism and some specific mental set, then it will turn out that it can serve either as sensory stimulus or as Gestalt stimulus from case to case.

7.2 Benussi's own view of these matters may be represented, somewhat crudely, as follows:[36]

Diagram 1.

This diagram ignores both the underlying objects or objective conditions and also the subject or organism upon which acts of production and presentation are in every case dependent; yet it still contains much of what we need to know about the core of Benussi's theory. Thus it tells us that the act of production and the experienced Gestalt stand in a relation of mutual dependence: neither can exist without the other. The act of production is unilaterally dependent on the sensory presentations which underlie it, as the Gestalt is itself unilaterally present on the sensory data which these presentations are presentations of, presentations and data themselves being such as to stand to each other in a relation of two-sided dependence: neither can exist without the other.

In Koffka, on the other hand, we have a picture which (in a highly simplified form) might

be represented as follows:

Diagram 2.

Here there is no additional entity alongside the sensory data, to which appeal would be made in order to account for the fact that the relevant sensory presentations contribute to the experience of a structured phenomenon. For Koffka holds that the manifold of sensory data themselves, as these are reticulated together in a certain way in the given context, is itself the Gestalt. Moreover, the reticulation of these data reflects - and is a consequence of - an (isomorphic?) interdependence among the corresponding sensory presentations. In place of Benussi's extra brain level - the process of production - the Gestalt experience is here constituted by a short-circuiting, a mutual integration, on the primary level of sensory experience (here represented somewhat crudely in terms of a cumulative dependence of successive presentations), with a parallel integration on the side of the successively given data.

The interdependence of the successive presentations is, like these presentations themselves, dependent on the state of the organism in question. For the precise nature of the physiological integration that occurs in any given case will be dependent on the relevant mental set. This is itself not a bloodless abstractum but a complex of physiologically grounded states exhibiting dimensions of variation of its own. Such states will, we might suppose, reflect materially determinate knowledge and habits of mind acquired by the organism in question, which may be further dependent on social factors, institutions, authorities, language, and so on.

Of course, when dealing with the Wertheimer-Koffka position we should not speak at all of 'sensory presentations' or 'sensory data' but always rather of activity at the cortical and peripheral ends of sensory nerves. Moreover, when dealing with this position we have always to remember that there is built into the theory the possibility that all the constituent frames should become rolled into one. For the various mutually dependent factors are only abstractly distinguishable, so that we ought more properly to speak of one single physiological-perceptual total process. Certainly this process manifests contours and dividing lines within itself; but it may still be abstractly delineated into part-processes in a number of different ways. Thus we might take the state of the organism together with the organism itself as constituting one single whole, intervening between perceived data and acts of perception. One could then interpret Koffka's view as one according to which the organism is a mediator between perceptual process - an inextricable fusion of sensory and intellectual part-processes - and perceived Gestalt, in such a way that perception, organism, and percept would each be gestaltet in different but mutually complementary ways.

But what, now, is the perceived Gestalt on a theory such as this? It is, first of all, an integral whole which includes among its parts the putative sensory data experienced 'integrally' together. But this perceived Gestalt can be conceived also as including certain parts, surfaces or moments of the relevant object. Hence the latter need not be confined to the status of an optional extra beyond the domain of what can be experienced, as on the Brentano-Meinong-Benussi approach. Koffka, like Wertheimer, is indeed quite clear that perception is of real objects in the material world. The Gestalt concept belongs not to the abstract level of idealities, as on the Graz theory, but is rather a concept which, like causality, is basic to the sciences of the real:

To apply the category of cause and effect means to find out which parts of nature stand in this relation. Similarly, to apply the gestalt category means to find out which parts of nature belong as parts to functional wholes, to discover their position in these wholes, their degree of relative independence, and the articulation of larger wholes into sub-wholes. (1935, p.22)[37]

There are, then, Gestalten in reality. It had been an implication of the Graz view of produced Gestalten that everything that is complex in reality, insofar as it is non- produced (not a matter of 'objects of higher order') would be a matter of mere summative wholes or 'Und-Verbindungen'. Koffka rejects this view resoundingly. (1915, p.35) He himself is still primarily interested in Gestalt processes and structures in the physiological domain; indeed he argues that intellectual acts of production would themselves have to be processes of this sort. But then later he will recognise that there are Gestalt processes also in the realm of human action, above all in motor actions, speaking, writing, singing, sketching. These are not step-wise sums of behavioural elements, but unified Gestalt processes whose structures can be adequately understood only as such. (Op.cit., p.37)[38] The thesis that there are real Gestalten was later refined and generalised in K|hler's work on physical Gestalten of 1920, which defends in great detail the view that there are Gestalten even in the world of inanimate nature.

In summary we can say that the content of a perceptual presentation, for Koffka, is a function of various factors, including both objective (stimulus-like) and subjective (set- or Einstellung-like) factors. And 'ambiguity' for Koffka, signifies merely: dependence on many rather than on a few such factors.

7.3 It has sometimes been assumed that Koffka simply got the better of Benussi, and that his review constituted the nail in the coffin of the Graz theory. This is first of all to belie the continuing influence of Grazist ideas, as for example in the work of Heider, Michotte, B}hler and others, as well as in the work of the Italian psychologists. Secondly however there are a number of ways in which Benussi might reply to Koffka's challenge. Thus for

example Koffka criticises Benussi's theory by arguing that the idea of acts of production is a spurious one: it is not open to us simply to subtract what is yielded by the senses from what is yielded in total Gestalt perception and then baptise the not introspectively available remainder as a special, non-sensory act. Yet Benussi can point out that the acts to which he himself appeals are at least no more mystical than the hidden states of Koffka's theory. Benussi himself, it is true, cannot exhibit an act of production, since he is concerned to stress that there is no phenomenological difference between Gestalt presentations and sensory presentations (1914a, p.403): production is in effect a purely functional notion. This is not the only possible approach however. Thus acts of production involve, for example, collection, articulation, completion, comparison, and phenomena of this kind have been investigated in detail by Husserl, especially in his 6th Logical Investigation which deals with higher order intellectual operations of various sorts.

Further, as we have already seen in our discussion of Kanizsa above, the opposition between perceptual and intellectual operations which lies at the heart of Benussi's theory can still yield interesting and fruitful empirical results, and we should be no more willing to accept that running together of these two types of operation (in favour of perception) which is favoured by the Berlin theory in some of its guises, than to accept the opposite running together - the assimilation of perception to cognition - which is favoured by Helmholtz and also by modern- day proponents of a computational 'cognitive science'.

@8. From Prague to Berlin: Stumpf and Wertheimer

8.1 Wertheimer, K|hler, Koffka and Lewin, the four principal members of the Berlin school, all studied with Stumpf in Berlin, and all but Wertheimer received their doctorates for experimental work done under his direction. It has sometimes been suggested that Stumpf left his doctoral students very much to their own devices and that he therefore had a very minor part in the development of the Berlin Gestalt theory. As Ash makes clear however, Stumpf did not merely play an important institutional role in fostering the careers of his various Gestaltist students (thereby exerting a not always discrete influence on the nature and content of their work); he also provided a thorough initiation into psychological methods and a hard training which were meted out to his students always with an explicit philosophical intent. When his "Psychological Seminar" was incorrectly described by the Ministry in Berlin as a "Seminar for Experimental Psychology", Stumpf complained that

he had specifically suggested the former name... 'to avoid giving the impression that only experimental work is planned, when I am also planning to link such work to theoretical exercises in philosophy'. [Stumpf's] lectures were entitled 'simply psychology' and not 'experimental psychology' for the same reason. The narrower designation, Stumpf feared,

could keep talented students away and 'instead attract a certain sort of American, whose whole aim is to became Dr. phil. in the shortest possible time with the most mechanical work possible.' (Ash 1982, p.47)

Stumpf's attitude to experiment had been derived from his teacher Brentano and especially from the latter's insistence on the secondary status of genetic psychology in relation to the fundamental discipline of descriptive psychology. Stumpf however went much further than Brentano in the direction of Gestalt- theoretical ideas. Thus already in 1873 Stumpf had been ready to conceive individual mental acts as mere abstractions from total conscious processes, and he had from the very beginning laid great emphasis on the phenomena of fusion (insisting, for example, that simultaneous tone sensations are never mere sums, but always wholes manifesting only gradual phenomenal differences). Further, he saw the fusion that exists in the aural sphere not as the result of any deliberate act of unifying together but rather as an immanent structural relation in the tones themselves.

All of these aspects of his work cannot but have been conducive to the development of a theoretical integrationism on the part of his students. Stumpf did not, however, greet all the integrationist excesses of his students with equal enthusiasm. He insisted that his Gestaltist students tended to ignore the discursive, cognitive aspects of Gestalt perception and to concentrate too much on those cases where Gestalt perception occurs spontaneously and 'in one glance'. (1939/40, p.237) Further, he objected to the Gestaltist idea that Gestalten can have effects on their parts (an idea which had been adopted by the Gestaltists as a consequence of their principle that 'only that is real which has effects'). It is a mistake in ontology to suppose that the whole can exert a causal influence upon its parts, Stumpf insisted, and the parts, can just as little effect the whole: it is always only parts which effect parts. (Op.cit., pp.245f.)

8.2 The early development of the thinking of K|hler and Koffka has been dealt with in detail by Ash, and can therefore be passed over here. We must, however, say something about the early background of Wertheimer. This is first of all because it is he who, of all the members of the Berlin school, had the most philosophically interesting ideas. But it is also because, as already mentioned, Wertheimer constitutes an important link between Austrian philosophy and German psychology, having grown up in Prague, where he attended the lectures of Ehrenfels and also of the Brentanians Marty and Arleth. There were of course other influences on Wertheimer's early thinking, and some of these may have played a role in his development of the Gestalt idea. Prague, as is well known, has a distinguished tradition of Jewish scholarship and there is a suggestion that Wertheimer himself is descended from a line of Talmudists, including among them the Talmudic scholar Rabbi Samson R. Wertheimer (1651-1724), who was Court Factor in the Austrian Imperial court.[39] Part and parcel of Wertheimer's non-orthodox Jewish background in Prague was his youthful enthusiasm for Spinoza and, as Luchins has suggested,

some of the ideas in Spinoza's Ethics seem to be reflected in Wertheimer's writing and teaching about nonadditive wholes as well as in Wertheimer's objections to psychological theories in which will and feeling were opposed to thinking, and in which the mind was a separate entity and was opposed to the body (unpublished n.10 to Luchins 1982; see also (and more reliably) Ash 1982, p.247).

This unity of mind and body in Wertheimer's thinking is well illustrated by the following passage from Fritz Heider's autobiography, in which Heider comments on a seminar of Wertheimer's dealing with physiognomic characters, and with expression, another notion central to Spinoza: 'each person has a certain quality that Wertheimer called his radix... This quality will express itself in different ways: in his physiognomy, in his handwriting; in the way he dresses, moves about, talks, and acts; and also in the way he thinks' (1984, p.46f.).

Especially interesting is Wertheimer's 'physiognomic game...: he would play a melody, and the rest of us would try to guess which of the group his melody portrayed'. (Op.cit, p.89) For in extemporising the music which would represent the character ('radix') of a particular person, Wertheimer would take into account not merely the physiognomy of the person in question, but also the contrastive relations in which he stood to other persons in the room. The musical representation of some averagely quiet and withdrawn character which would enable one to pick him out in, say, a room full of extroverts, will be quite different from that representation which would be needed were he surrounded by people still more withdrawn than himself.

The German University in Prague could look back on a rich psychological tradition, beginning with the phenomenological work on colour vision of Purkinje and Hering and extending through Stumpf himself (who was professor in Prague from 1879 to 1884, before moving to Halle where he came into contact with Husserl).[40] Mach also belonged to this tradition, having been professor of experimental physics in Prague for 27 years to 1895. It included Ehrenfels and the orthodox Brentanians Marty, Arleth and Oskar Kraus, together also with Kafka's friends Hugo Bergmann and Emil Utitz.[41] And Einstein, too, held a chair in Prague for a time, becoming friendly with Hugo Bergmann[42] and later with Wertheimer himself, their interactions being manifested above all in Wertheimer's book Productive Thinking.

Wertheimer was caught up to a greater or lesser extent in all of these currents. There is evidence in his papers that he became interested also in the writings of Husserl, particularly of the latter's 3rd Logical Investigation on the theory of part, whole and dependence,[43] and he maintained throughout his life a characteristically Husserlian interest in the realist foundations of logic and in the relations between logical laws and the flux of actual mental events involved in thinking.[44]

There is of course another, parallel relation, no less crucial to the Berlin theory, the relation between psychological phenomena and the brain events which underlie them. K|hler, in particular, has contributed to our understanding of this relation, advancing a thesis to the effect that both psychological events and the associated physiology have structures and that there is an isomorphism between these structures. This thesis is interesting and challenging in its own right. Here, however, it is the externally directed structural relation that I should like to discuss, i.e. that relation between the geographical and the phenomenal world which is involved in veridical perception. It is above all Wertheimer who has developed this notion and who has been most sensitive to the implication that we should investigate the conditions of the field and of the perceiver that produce correspondence or non- correspondence between perceptions and segments of the world.

K|hler's hypothesis of interior isomorphism leads not to investigations of this sort, but rather to work on the identification of the structural processes in the brain that are relevant to perceptual experience.[47] Outside the specific context of his work on isomorphism, however, K|hler too manifests all the sympathies of the realist. Thus consider the following passage in which K|hler critices Kant on the grounds that:

If... certain formal principles are found to be prerequisites of science it does not follow that they belong to the structure of the mind. There remains the other possibility that, to some degree at least, they are inherent in the 'material'. The validity of Kant's theory depends altogether upon his assumption that, in the 'material', there is no basic principle of order. (1938, p.43)

K|hler's realist sympathies reveal themselves also in his treatment of the perception of causality in the Psychologische Probleme of 1933. Thus when I drink a glass of beer I experience both a characteristic taste and a characteristic feeling of enjoyment. 'Must I first of all learn that the enjoyment has something to do with the taste? That it has nothing to do with the spider on the wall?' Clearly not. I experience the enjoyment as the natural, appropriate and immediate result of the taste. Similarly, I do not need to learn that this or that action or attitude (say anger) is the natural and appropriate response to a situation of this or that kind. And now, as K|hler writes, his considerations of such relations

move close to the ideas of the 'act psychology' of Brentano, Stumpf, Husserl, and others, without however it being the case that that moment with which we are presently concerned is drawn attention to by the proponents of this psychology. It belongs to an 'act' that it has an object. This has often been repeated, but thereby it was not at all the case that there was addressed the problem of the organisation of the total field. Thus there remained at least

unformulated the idea that the immediate givenness of such a connection - of precisely this specific act with this object there, in this manner - excludes from the start an atomistic treatment of the field whole and signifies in every case quite specific articulation of the total field. The explanation for this certainly lies in the fact that one was aiming for the sharpest possible conceptual separation of all acts from all objectual material (that is to say for a classification). (1933a, p.228f.)

Gibson moved on from ideas such as this, ideas which see intentionality and truth as being themselves Gestalt relations of certain sorts, to a position which allows also the bodily behaviour of the subject to count as an irreducible factor in the structure of perception. Standing in that Gestalt relation to an object which is veridical perception is now quite explicitly a dynamic matter, a matter of our maintaining ourselves in that ecological niche which allows us to join up with the object in real relational contact.[48]

@10. Edwin Rausch: The Ontological Morphology of Gestalten
@14. Conclusion

Both the Austrian and the Berlin Gestalt psychologists distinguished themselves by a high degree of concern for the philosophical implications of their work. In the end, however, it must be accepted that this concern did not go far enough. As is seen above all from the lack of any substantial and formally fruitful logical treatment of the wealth of notions clustering around the Gestalt idea, a truly adequate mastering of the philosophical difficulties which surround this idea has never really taken place. And while the brilliance and experimental ingenuity of Wertheimer, K|hler and Koffka led to many empirical advances over the earlier work of their colleagues in Graz, even the proponents of the Berlin theory lacked a wider philosophical framework of the sort that had been provided for the Graz psychologists by Meinong and by Brentano.

Such philosophical, and above all ontological, clarification is needed, for, without an awareness of the nature and interrelations of the objects with which it deals, an empirical science is in a certain sense performing experiments in the dark. It should not, however, be supposed that considerations of the sort sketched above could have direct and immediate implications for the experimental practice of a discipline. The connection between such considerations and scientific practice is of necessity highly remote. Yet philosophy need not, for all that, be insignificant. It is too little recognised that there is something like a philosophical experimentation, a variety of experimentation that can test the strength of ideas in a way that is independent of and complementary to what takes place in the laboratory.

This notion of philosophical experimentation has been today largely forgotten, both by philosophers and by scientists, as a result of the continuing dominance of the positivist orthodoxy within the mainstream of scientific research.[77] For positivism would have it that philosophical and empirical considerations are divorced entirely from each other (that a real science is marked precisely by the fact that it has left behind 'sterile methodological debates'). From a wider perspective, however, the dominance of positivism has simply meant that all scientific ideas have been born out of one and the same philosophical stable; they have as it were undergone already in the womb the only sort of philosophical experimentation that is to be granted to them. The cut and thrust of ontological argument about the very foundations of empirical science that characterised the work of Brentano, Mach, Stumpf, James and others of their generation, has thereby all but disappeared from within the confines of science itself.

I do not claim to have provided the needed ontological clarification of the Gestalt concept here. I do however claim that it is as much as anything else in virtue of the lack of such clari-fication that the Gestalt idea has failed to establish itself securely within the mainstream of psychology.

This is a strong thesis, and it will be useful if I break it down into a number of weaker constituent theses, making it clear that I do not feel equally strongly about all of them:

- There is first of all the assumption that the Gestalt idea, in any of its variants, has in truth failed to establish itself within the mainstream of recent psychology. There was, especially in the '40s, much talk of a 'convergence' of (e.g.) behaviourism and Gestalt theory, or of the absorption of Gestalt insights by one school of psychologists or another. And it is clear that certain elements of the work of Wertheimer, K|hler, Koffka, et al., and indeed of Mach and Ehrenfels, have come to be absorbed into the science of psychology as a whole. Thus it may be correct to suppose, with Helson in his paper of 1969, that it was K|hler who first evolved a conception of psychic activity which made possible a serviceable physiological approach to the workings of the mind in the modern sense. It may be correct to suppose that workers in the Gestalt tradition such as Wertheimer, B}hler, Duncker and Selz anticipated and indeed influenced modern debates on the possibility of a computational or information- theoretic approach to psychic processing.[78] And it is certainly correct to suppose that many of the empirical facts about perception, about the perception of movement and contour and about perceptual constancy and perceptual illusions - facts we now take for granted - were discovered in the classic experiments performed by Benussi, Wertheimer, Rubin and other Gestaltists. But none of this changes the fact that the central ontological idea of Gestalt structure has all but vanished from psychology.

- Secondly, there is the claim that there is a lack of ontological clarification on the part of Gestalt psychologists of the notions they employ. Now there is, certainly, interesting philosophical work within the Gestalt tradition. The writings of Rausch, above all contain philosophical investigations of a high order, and what has been offered above is only a

sample of the wealth of ideas within his works. Rausch combines the insights of an experimental psychologist with a grasp of the techniques of modern logic, and he has succeeded in addressing many of the most pressing ontological issues surrounding the notion of Gestalt in ways that have proved also empirically fruitful. Yet Rausch has been an isolated figure, his work has remained practically unknown and entirely untranslated, a fate he has shared with the earlier Austrian writers on the ontology of Gestalt (so that it is only now, with the publication of this volume, that Ehrenfels' "U"ber 'Gestaltqualit{ten'" will appear in print in English). The work of Meinong, too, has been little read by psychologists, and Meinong is today remembered principally for his contributions to pure ontology. Stumpf, on the other hand, has suffered the opposite fate: he is treated with respect as a seminal figure in the psychology of music, yet his posthumous philosophical masterpiece on the theory of cognition remains unread.

- There is, thirdly, the assumption that, if the appropriate ontological clarifications of Gestalt were forthcoming in an accessible form, then the present unhappy state of affairs would come to be rectified and Gestalt notions would once more play a significant role in psychological inquiries. I am not sure about this at all, and not only for reasons having to do with the gratuitous and serendipitous character of scientific change. For I am not sure that such clarifications can be provided (and the present volume is little more than ground-clearing round the fringes of the problem). Moreover, it seems that even if they were provided, there may still be reasons why the nitty gritty of perceptual psychology would have to be centred around problems skew to a Gestalt-theoretical treatment.[79] There are, however, areas outside perceptual psychology - above all in linguistics and in artificial intelligence[80] - where ideas and issues similar to those found in the Gestalt tradition seem once again to be playing an important role.

- Finally, there is the thesis to the effect that the attempt to provide such clarification is worthwhile. And here I should like to insist very strongly that the ideas of Mach and Ehrenfels, of Meinong, Benussi, Witasek and B}hler, of Wertheimer, K|hler and Koffka, of Lewin, Katz and Rubin, of Musatti, Metzger, Rausch and Kanizsa, of Heider, Michotte and Thom, contain the germ of an important idea, an idea which - if it can be stripped of the exaggerated claims which were sometimes made on its behalf - can help us to achieve a deeper and more adequate understanding of both psychological and non- psychological complexity. There is, in other words, more than a merely historical reason (curiosity) for studying the works of the Gestalt psychologists, as I hope the remainder of this volume will help to demonstrate.

The Austrian Gestalt school gave rise to a considerable literature, some of which is, I believe, recorded for the first time in the Bibliography below. Its doctrines, which are related in a number of important respects to the work on formal ontology of the early Husserl, are also beginning to be rediscovered in current work in the area of cognitive

psychology, an area in which the Austrian work on the structures of cognitive and perceptual experience may have more immediate relevance than the physiologically orientated integration theories developed by Wertheimer and his associates in Berlin.

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