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On 'Gestalt Qualities'*

[§1 Introduction: Mach on the Sensation of Melodies and Spatial Shapes(249)]

The discussions which follow have the aim of giving scientific expression to a psychological problem often noticed in philosophy but not yet, as we believe, made fully precise. Our task – already intimated in the title in the employment of an unusual and therefore only partially intelligible term – can be characterized briefly as one of explaining and defining the new concept signalled by this term and of demonstrating the existence of corresponding objects in the world of nature. The starting point for what follows is a series of remarks and indications in Mach's *Beiträge zur Analyse der Empfindungen* (1886) which, although they seem to have arisen in a quite different context, have yet brought about an important consolidation of my own views concerning the relationships here presented.

As the passages to be cited below will demonstrate, Mach made the (certainly for many somewhat paradoxically sounding) claim that we are able directly to 'sense' spatial shapes and even tone-Gestalten or melodies. Now the second, at least, of these two theses must undoubtedly appear contradictory, not merely superficially but in its content, if it is not immediately pointed out that we are not talking here of 'sensing' in the usual sense. For if we can sense only that which is *simultaneously* present to us, then a melody, which is played out *in time*, cannot serve as an object of sensation. This is of course admitted by Mach as much as by anyone

* English translation of "Über 'Gestaltqualitäten'", *Vierteljahrsschrift für wissenschaftliche Philosophie*, 14, 1890, 249–92. References are to items in the Bibliography on pp. 231–478 below. Section-headings have been supplied by the translator. The paginations given in parentheses with the section-headings are those of the original publication. Translated by B.S.

who wishes to avoid asserting what is contradictory. It becomes clear in the course of his discussions, however, that in using this perhaps not completely precise designation, Mach wished merely to give prominence to the immediacy of certain impressions and to their independence from all intellectual processing on the part of the perceiving subject. Understood in this way, his theses have a sense which is, on its own terms, free from contradiction. They are however by no means unproblematic, for it is a commonly held belief that a presentation of, say, a spatial shape, or even of a melody, does not originate from outside consciousness as something complete, but rather, if it is to enter consciousness at all, stands in need of some integration or synthesis of the relevant individual component sensations.

Here we confront an important problem of genetic psychology. Just as important however, and perhaps more pressing, would seem to be the question in descriptive psychology of what precisely the given presentational formations (spatial shapes and melodies) in themselves are.

Is a melody (i) a mere sum [*Zusammenfassung*] of elements, or (ii) something novel in relation to this sum, something that certainly goes hand in hand with, but is distinguishable from, the sum of elements?

Were we allowed to understand the term 'sensation' [*Empfindung*] as used by Mach in the normal way, then we could see already in his theses mentioned above an answer to this question, for only that which one takes to be relatively simple is commonly referred to as an *Empfindung*. And if, by using this term for spatial and tone-Gestalten, Mach had been wishing to affirm their simplicity, then it is clear that he thereby commits himself to alternative (ii), that is that he conceived the given 'Gestalten' not as mere sums of elements, but as something new (in respect to the elements on which they rest) and as something possessing a certain degree of independence. That such a conclusion is correctly to be drawn from the author's expressions of his views cannot be established with certainty. The following passages do however seem to speak in its favour:

The tree, with its hard, rough, grey trunk, its many branches swayed by the wind, its smooth, soft, shining leaves, appears to us at first a single indivisible whole (p. 40; Eng. trans. repr. 1959, p. 102).

If two series of tones be begun at two different points on the scale, but be made to maintain throughout the same ratios of vibration, we recognize in both the same melody, by an act of sensation, just as directly as we recognize in two geometrically similar figures, similarly situated, the same shape (p. 125; 285).

In melodic as well as in harmonic combinations, notes whose rates of vibration bear to one another some simple ratio are distinguished (1) by their agreeableness, and (2) by a sensation characteristic of this ratio (p. 130; 287).

These and similar passages are, in their context, perhaps even more conclusive than here, where they have been separated from the whole. Whatever the reflections from which they may have sprung, I hope to be able to show in what follows that they open the way to a solution of the problem indicated. This problem ought therefore to be stated in the precisest possible form.

[§2 The Presentation of a Melody. The Thesis of Gestalt Qualities (251)]

It is clear that, in order to apprehend a melody, it is not sufficient to have in one's consciousness at each stage the impression of the note that is then sounding. Rather – leaving aside the initial tone – the impression of at least some of the preceding tones must also be given in memory. Otherwise the concluding impression of all melodies having an identical final note would be the same. Following this thought through, however, one soon recognizes that in order to apprehend a melody of (say) 12 tones it will not be sufficient to hold in memory the impression of (say) the three immediately preceding tones, but that what is required is an impression of the whole series of tones. We affirm this deliberately only of an impression and not of, say, a phantasy-image of the complete tone-series.

For if, for example, each perceived step from note to note caused in us a characteristic sensation (or feeling) belonging not to the sense of sound but to some other sphere (perhaps involving nervous or muscular sensations), and if our memory for such sensations or feelings were to be more adequate than it is in relation to tonal memory-images, then the job of apprehending and differentiating melodies could be effected through this other sphere. Indeed, things do seem to proceed in this manner. For the testimony of inner perception speaks against the idea that, with the dying away of a melody apprehended completely (something that can occur even in relation to a relatively long piece of music), there is in consciousness a memory-image of every single one of its notes. Our purely aural memory yields much rather only certain relatively short

tone-Gestalten, which stand out against an unanalysed yet still determinate background of feeling. If however we now restrict the proposition above to these purely aurally apprehended Gestalten, then we can substitute the latter for 'impression of the tone-series' and affirm that, in order to apprehend a melody purely aurally it is necessary to possess, with its dying away, a memory-image of every one of its notes.

It is then indubitable that the presentation of a melody presupposes a complex of presentations – presupposes a sum of presentations of successive single tones with distinct and mutually exclusive temporal determinations. We can therefore more precisely express the question advanced above, as it relates specifically to the region of tonal presentations, as follows:

Let us suppose, on the one hand, that the series of tones $t_1, t_2, t_3, \dots, t_n$, on being sounded, is apprehended by a conscious subject S as a tonal Gestalt (so that the memory-images of all the tones are simultaneously present to him); and let us suppose also that the sum of these n tones, each with its particular temporal determination, is brought to presentation by n unities of consciousness in such a way that each of these n individuals has in his consciousness only one single tone-presentation. Then the question arises whether the consciousness S , in apprehending the melody, brings more to his presentation than the n distinct individuals taken together.

An analogous question can clearly be raised also in regard to spatial shapes. Indeed, because in this case all the constituent parts of the presentational complex forming the basis of the perceived shape are given simultaneously, matters are here considerably simpler (if, that is to say, they are not clouded, or at least complicated, by the various different theories concerning the genesis of our presentation of space). Yet even the proponents of the most extreme views would at least agree in this, that the presentations of the various parts of a seen figure are brought about through different sensations (however much they might differ concerning the nature of these sensations). Supposing the latter on the one hand to be collected together in a single consciousness, and on the other hand to be distributed amongst n distinct consciousnesses, then as before in relation to the melody, so here we can ask whether the spatial figure be more than the sum of the individual local determinations, whether the consciousness which apprehends the figure in question brings to presentation something *more* than the n individuals taken together.

The first court of appeal to which we are disposed to turn in the solution of problems of this nature – the evidence relating to the phenomena in

question that is provided, obliquely, by inner perception – can here be called in aid only with difficulty. For anyone who, in dealing with such relatively subtle distinctions, is able to glean conviction from this source will normally find himself incapable of transmitting this conviction to those who are of other opinions. And he will come up against the fact that many will believe themselves constrained to reject one or other of the alternatives from the very start as absurd.

[§3 Some Objections to the Thesis (253)]

How, so the argument runs, can the mere fact that several presentations or sensations are to be found unified in a single consciousness, of itself provide a sufficient reason for postulating that something new is added to this sum, something not contained in the component elements? Is not such an assertion of as little value as, say, the idea that through the collision of two atoms a third, additional atom could be formed?

Before dealing with this objection it is necessary to stress that it anticipates a solution of the problem in genetic psychology mentioned already at the beginning of this essay. For only someone who is, with Mach, of the opinion that presentations of spatial and aural Gestalten come into being without assistance on our part, without any activity of the mind directed specifically towards them, could object to the idea that the unification of certain elements in consciousness should bring with it the appearance of something new. We can however circumvent the need to take a stand on this genetic issue here, since the objection will be seen to lack demonstrative force even if we accept Mach's surreptitiously imported presupposition. The objection transfers, by appeal to an unjustified analogy, a principle valid only in the physical sphere – that of the conservation of matter – to the sphere of the psychical. Were it the case that presentations were properly to be regarded as equivalent to atoms, and were it true that all psychic life consisted exclusively in the transfer of ready-made presentational contents from one consciousness to another, then the idea that a new presentational element should arise in a consciousness through the unification of several such elements could reasonably give rise to consternation (even though no definite contradiction can be detected within it: indeed the law of the conservation of matter is itself not conceptually self-evident but rests on

empirical evidence). But of course psychic life is indubitably of a quite different order. It is not necessary, in order to show the acceptability of the view here defended, to appeal to the possibility of psychical excitation, i.e. of a causal chain among purely psychical events set in motion by the physiological part of the process of sensation. This view is perfectly compatible even with the assumption of universal direct dependence of all psychical processes upon events in the physiological sphere. Given our lack of knowledge concerning the make-up of the latter, all that can be insisted upon is the indication of the possibility, wherever a difference of psychical constituents can be detected, of some corresponding difference in physical processes. But such a difference, as will now become clear, is implied from the start in the assumption [of universal direct dependence].

Let us compare, on the one hand the single consciousness S , taken together with the sum of the presentational contents t_1, t_2, \dots, t_n (or rather with the corresponding hypothetically assumed 'tone-Gestalt'), with the *sum* of consciousnesses s_1, s_2, \dots, s_n , on the other hand, each having as its content the corresponding member of the series t_1, t_2, \dots, t_n . Let us now call the physiological processes corresponding to these psychical contents r_1, r_2, \dots, r_n , respectively. Then we shall require for consciousness s_1 process r_1 , for consciousness s_2 process r_2 , etc. Similarly we shall require the processes r_1, r_2, \dots, r_n also for the consciousness S . Clearly, however, we are not yet done. For if the same physiological processes r_1, r_2, \dots, r_n , are going to have as a consequence the appearance of the psychic contents t_1, t_2, \dots, t_n on one occasion in n individuals and on another occasion in a single individual, then a physiological foundation of some kind must be given for this also. As we are not yet in a position to make even a surmise concerning the nature of the physical foundation that would determine the number of psychic individuals involved in any given case, we shall merely select the simplest possibility and assume, merely in order to fix our ideas, that the physiological stimulations (motor processes) r_1, r_2, \dots, r_n give rise to psychic contents t_1, t_2, \dots, t_n in one single consciousness when they take place within determinate spatial limits; in more than one consciousness when their spatial separation oversteps these limits. This already yields a specification of the necessary difference of physiological foundation. Six motor processes within, say, a cubic centimetre, are something different from six exactly similar processes separated from each other by distances of one meter. But now if such a concentration of physiological processes in space were indeed able to counteract the

dividing wall between six separate individualities and to set in their place a single encompassing consciousness, then it could equally well serve at the same time as the condition for the appearance of a new psychic element: for example, the melody. And whilst no one will want to assert that the separation of psychic individualities is really determined by so crude a condition, the crucial element in this train of thought for our present argument is clearly completely independent of the precise nature of the initial concrete assumption. That component part of the physiological precondition of a manifold of presentations which determines that the presentations occur *in a single consciousness* can also serve as the precondition for the appearance of a new element as it were hovering over the given complex of presentations. Thus the objection considered is indeed revealed as merely an unjustified transposition of intuitions derived from physics to the psychic sphere, and it does not stand up even to the most materialistic conception of psychic events.

There is however another point of view from which one might wish to question the possibility of the existence of 'Gestalt qualities' (the concept has by now been sufficiently explained to come forward under its new title). It is clear that, were it always the case that the presence of any two presentational elements in a single consciousness were to bring about the presence of a third, distinct element, then this would imply an infinite complication of conscious life. For if the two elements e_1 and e_2 give rise to the element e_3 , then e_1 and e_3 must similarly give rise to e_4 , e_2 and e_3 to e_5 ; and e_4 , e_5 , etc., would then give rise to yet further elements, so that the continually self-multiplying demands could not be met within the limits of the finite.

It is however clear that such an objection taken strictly cannot be brought forward against our thesis but only against an arbitrary extrapolation of it. For first of all it, too, presupposes that the Gestalt quality is given already with its underlying complex of presentations, i.e. without any additional activity on our part. And secondly, he who accepts the existence of Gestalt qualities is by no means committed to the view that all distinguishable presentational elements provide a foundation for such qualities and he certainly does not affirm that the co-existence of the Gestalt qualities themselves with their elements must give rise to yet further qualities. Only under this presupposition however is there any threat of infinite complication, and since we have no intention of extending our thoughts in the given direction, we can therefore dismiss the objection out of hand. But even independently of this, the train of

thought that underlies it does not seem to carry force. For a wholly analogous argument could be used to impugn the possibility of presentations that we do in fact possess – namely presentations of continua, and above all of the spatial continuum.

It is wholly impossible to specify the number of spatial determinations constituting our presentation of, say, a coloured surface. Every part of the latter can, as is well known, be further decomposed into parts, and even though the limitation of our attention sets limits upon the practicability of this process, it can still by no means be maintained that the smallest part of a surface discriminable in attention possesses only a single spatial determination. Much rather does it possess more than one, and then, as must now be readily concluded, it possesses infinitely many. If however infinite complexities in a conscious content were impossible, then so too would be presentations of plane surfaces, and we do in fact possess such presentations.

Whichever way is adopted to avoid this consequence – whether one wants to assume that a difference is psychically present only where our attention is actually able to discriminate a plurality (with the consequence that the presentational content relating to, for example, our total visual field when looking at a street map should be an undifferentiated unity whenever our attention is diverted in, say, inner reflection); or whether one prefers to regard as sophistry the conceptual difficulties advanced against the existence of infinite pluralities; or whether one disputes that the categories of unity and plurality are at all applicable to what in fact exists – one or other solution to the dilemma must conform to the truth, and whatever the nature of this solution it will also lead us out of the labyrinth of the infinite complication of Gestalt qualities. For if what is psychically given should here also admit in principle the possibility of infinite division, then our attention will as a matter of fact meet its limits just as soon as, perhaps even sooner than, in the case of the spatial continuum. So much, then, towards meeting an objection which, as was said, rests from the start upon an arbitrary exaggeration of the assumption.

[§4 Proof of the Existence of Gestalt Qualities (258)]

Our question is, then, not one which we can expect to answer by appeal either to generally recognized laws of nature or to conceptual inconsistencies. But proof of the existence of Gestalt qualities is provided, at least in the sphere of visual and aural presentations, by the similarity-relations (stressed by Mach in the passages cited above) which obtain between melodies and figures having totally different tonal or positional foundations. This circumstance, as we shall now argue, cannot be brought into conformity with the conception of tonal and spatial Gestalten as mere sums of tonal or spatial determinations.

For it can be seen that different complexes of elements, which in themselves amount to nothing other than the sums of those elements, must be the more similar, the greater the similarity between their respective elements. The inadequacy of this requirement in the case of melodies and spatial shapes can easily be demonstrated by means of examples. Consider, say, the first line of the folk tune

Muss i denn, muss i denn zum Städtle hinaus...

Played in C major this contains the notes *c* to *a*; *e* and *g*, each played thrice; *f* twice; and finally *c*, *d* and *a*. If one now plays this tune in F sharp major, then it does not contain a single one of the notes which it contained when played in C major. Nevertheless, their similarity is, to anyone even halfway musically inclined, immediate and capable of being recognized without reflection (via 'sensation', according to Mach). Now play this melody once more in C major, and follow it, in an identical rhythm, with the series: E, G, F, A, G, G, F, E, C, E, D. This contains the same notes—3E's, 3G's, 2F's, C, D, and A—as our original melody. Yet here (leaving aside the question of rhythm) a similarity will no longer occur to anyone who has not been led to compare the two complexes in reflection and to add up the individual tones on this side and that. Thus we have on the one hand two complexes of tone presentations, made up of wholly different components, which nevertheless yield a similar (or, as one normally says: *the same*) melody, and on the other hand two complexes made up of exactly the same elements which yield entirely different melodies. From this it necessarily follows that the melody or tonal Gestalt is something other than the sum of the individual tones on the basis of which it is constituted. (And it does no good to argue that the essential constituents of the melody are not the individual tones but rather the intervals or passages from one tone to the next. For the greatest variety of different

melodies can be constructed by rearrangement from any given sum of intervals. And if one wishes to exclude this possibility by determining that it be the passages between successive tones in precisely the stipulated order which are to make up the melody, then this is to be committed to something other than the sum of the relevant tones, and indeed one has in effect accepted what we call the tonal Gestalt, merely assigning it a different name.)

Analogous examples can naturally be brought forward also from the sphere of spatial presentations. If spatial Gestalten are nothing other than collections of determinations of place [*Ortsbestimmungen*], then (since determinations of place of course depend exclusively upon position in the visual field) every displacement of the order of such a Gestalt would lead to an essential alteration in the relevant similarity relations. Thus it would have to be the case in, say, the grouping of letters *ABA*, that the first *A* bears greater similarity to the *B* than to the second *A*, since it lies nearer to the former and is thus made up of components which are individually more similar to its elements than to the elements of the final *A*. In the constellation *AAB*, on the other hand, the first *A* would it is true have to be more similar to the second *A* than to the *B*, but the second *A* would bear an equal degree of similarity to the *B* as to the *A*. Thus there can be no doubt that the similarity-relations of spatial and tonal Gestalten must rest on something different than the similarities between those elementary constituents with whose unification in consciousness they make their appearance. Thus the given Gestalten must also *be* something other than the sums of these elements. The cogency of this argument appears to us to be inescapable.

But it can always be of advantage to have a truth illuminated from a number of different sides. The phenomena which are of interest to us here will therefore be considered also from another point of view.

Mach, in his already cited work (p.129;286), mentions in relation to a special example a method recommended to his students by P. Cornelius for the recognition of tone intervals. Concentrating on the simpler case of the reproduction of intervals, we can specify the method as follows. Anyone whose musical sense is not so developed that he is capable of singing, immediately and on demand, (say) an upwardly ascending fourth, should employ the technique of noting to himself a melody which begins with such a sequence (e.g. the beginning of the Overture to *Tannhäuser*). He will then find that if he takes upon himself no more than simply singing the melody, then he shall accomplish the task which has

been set as it were automatically and without difficulty. A friend with whom I have discussed this example informs me that he has for long been using similar methods in order to reproduce absolute pitches. Without assistance of the given sort he was able to give the pitch C with far less certainty than via the presentation of (say) the Prelude to the *Meistersinger*, where the image of C major would impress itself upon him, normally correctly. Similarly, D sharp major would impress itself with the Valhalla theme, and so on. It is possible that musical works such as the Wagnerian, with an exceptionally strong harmonic character, are particularly suited for the fixing in memory of the various keys. In general one can say that most persons are able to retain melodies in their memory; a smaller number are able (without instrumental aids) to retain specific intervals; and it is a small minority of persons who possess absolute pitch. How could this be explained if melodies or individual intervals consisted of nothing other than a sum of tone-presentations? Even if one wished to assume – though it stands in conflict with so many of our experiences – that it is easier to reproduce a sum of individual items all at once than it is to reproduce the memory of a single item, still it could thereby be explained only why the melody has some advantage over separate intervals. What would be left unexplained would be the fact that both have an advantage over absolute pitches. Further, if (as is usually the case) someone remembers a melody in a key different from that in which it was originally heard, then he does not reproduce at all the sum of his earlier individual presentations, but a quite different complex which possesses only the property that its members stand to each other in a relation analogous to that of the earlier complex. 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 presentations of the individual tones). If a positive element of this kind is indeed given in presentation, then association presents no further difficulties. If, on the other hand, it is absent, then it would remain unintelligible how our memory should contrive to reproduce elements standing to one another in a relation precisely analogous to the earlier established relation. One would have to assume a new psychic mechanism, constructed specifically for this purpose, but such a mechanism appears completely superfluous once we have acknowledged that someone remembering a melody is remembering not a complex of separate tone-presentations, but

something quite different from this, namely a tonal Gestalt, a presentational element so constituted that under certain circumstances the absolute pitch in which it was first heard can, but need not, become associated with it. And indeed the first of the two examples given teaches us that the Gestalten that are most easily fixed in the memory are not the simplest, but rather those whose organization has a certain multiplicity in comparison with that of the simple intervals.

Something analogous holds of spatial Gestalten and of the elements of the underlying complexes. Here, too, memory does not at all cling to the data of spatial position given in perception.

We would thus claim to have demonstrated the existence of Gestalt qualities in the given sensory regions. The reader will perhaps have noticed a slight departure from the plan of investigation announced at the beginning of the essay, in that a rigorous definition of the concept introduced has not yet been provided. Such a definition, which would have been unintelligible in advance of the explanations given above, can now be presented as follows:

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.

It is now necessary to provide a survey of the manifold of Gestalt qualities and of their significance in our psychic life.

[§5 Types of Gestalt Quality (263)]

Consideration of melodies and visually perceived spatial figures, the two kinds of Gestalt quality so far encountered, and of other examples still to be considered, could suggest a division of such qualities into spatial and temporal. It is easily seen, however, that these two categories would not be mutually exclusive. In presentations of movement we possess after all numberless examples of Gestalt qualities which involve spatial and temporal differences. The same kinds of considerations we came up against in relation to melodies and spatial figures – similarity and reproducibility of the phenomena in spite of total difference of the elements of their foundation – can be applied also to the various different types of motion (falling, climbing, rotating, etc.).

We can however exhaustively partition all possible Gestalt qualities into the two non-overlapping categories of temporal and non-temporal, if the latter category is understood to comprehend not, say, those Gestalt qualities whose perception requires no time, nor those whose appearance in consciousness necessarily requires a simultaneous grasp of all elements of their foundation (indeed the latter condition applies to all Gestalt qualities, the former to none), but rather, those for whose foundation distinct temporal determinations of the separate objects of presentation are not required. The category of temporal Gestalt qualities therefore comprises the qualities whose elements are distinctly located in time. *Non-temporal* Gestalt qualities are qualities whose foundation can be given completely in perceptual presentation (called by many 'sensation'). In the case of *temporal* Gestalt qualities at most *one* element can be given in perceptual presentation, the remainder being present via memory-images (or images in expectation relating to the future).

We shall consider first of all the simpler case of *non-temporal Gestalt qualities*. Neither here, nor in the discussion of temporal qualities that follows, shall we provide specific demonstrations of the existence of the individual types. These are in every case a matter of applying an identical method and thus are left, with the following general indication, to the reader. If a presentational complex *C* is given in consciousness, and if the question arises whether a simultaneous presentational content *V* is to be regarded as identical with the first or as a Gestalt quality founded on it, then one considers whether it is possible to change the elements of *C*, preserving their mutual relations, in such a way that *V* remains totally or almost totally unchanged, where more trivial but irregular transformations of the elements of *C* (or of part of *C*) would destroy the character of *V* totally. If this should be the case, then *V* is not identical with *C*, but is a Gestalt quality belonging to *C*. It can be taken as an indicator of the existence of such a relationship if the reproduction of *V* in memory comes easier than that of the elements of *C*.

[§6 Non-Temporal Gestalt Qualities (264)]

Considered in this way, *spatial Gestalten*, not only of the *visual* but also of the *tactile sense*, in conjunction with the so-called *sensations of motion* [*Bewegungsempfindungen*], are revealed as Gestalt qualities.

The *spatial data* provided by the *other senses* are so indeterminate that it is difficult to fix spatial Gestalten with their aid. Yet everything suggests that the fundamental relations are there no different than in the case of touch and vision.

The spatial data of the *sense of sound* are still a disputed issue, yet it can by no means be denied that the sense of hearing yields the non-temporal Gestalt qualities of harmony and timbre – the first of these accordingly being designated by Mach in the passage cited earlier (p.130;287)¹ as a sensation. Everything that was established above concerning melody – independence of specific pitch, reproducibility in memory even where the capacity to retain absolute pitch is lacking – holds also of harmony and timbre, which are therefore to be conceived as Gestalt qualities. Here however the Gestalt quality may sometimes force itself into the foreground, i.e. may make demands on our attention to such an extent that it is difficult to resolve its foundation into elements. This applies particularly in relation to timbre, though often also in the case of those tonal complexes that we normally designate as chords. These two phenomena resemble each other not only in that they issue from the same physical cause, but also psychically, and indeed there is no sharp boundary line between them but rather a continuous merging of one into the other. Important, though premature given the fact that the problem of tonal space is still totally unresolved, is the question of whether different simultaneously perceived tones give rise, like colours, to specific spatial determinations, whether therefore chords and tonal compounds stand in need of a specific spatial breadth, or whether strictly speaking tones sound ‘inside each other’. In the first case the non-temporal spatial Gestalt quality determined by the fact that the tones are perceived as alongside each other in space would of course have to be distinguished from the likewise non-temporal tonal Gestalt qualities of harmony or timbre, even though they would constitute two parts of a single concrete intuition.

This leads on to two further points: firstly, it will be clear that a process of abstraction can be carried out in relation to Gestalt qualities; and secondly the question arises whether Gestalt qualities in addition to the spatial are given in the realm of the *visual sense*.

In relation to the latter we must first of all accept that, wherever there is the simultaneous (though not spatially coincident) givenness of different colours and light-intensities, a sufficient foundation for Gestalt qualities would seem to be to hand which would constitute an analogy with the

cases of harmony and timbre. Certainly we receive from the simultaneous juxtaposition of different colours an impression whose affinity to harmony is indeed registered linguistically in talk of 'colour harmony'. We cannot however produce a rigorous demonstration, in accordance with the principles set forth above, that such phenomena are anything more than mere complexes of colour-presentations bound up with impressions deriving from other sensory realms (e.g. the so-called nervous feelings). This is because we are not able to produce clearly identical harmonious impressions on the basis of complexes of different elements as we can, analogously, in the region of sounds. It is clear however that this lack of a demonstration of existence cannot be interpreted as a demonstration of the contrary. For it does not lie in the nature of Gestalt qualities that it must be possible in every sensory sphere to effect transpositions of identical Gestalten on the basis of different foundations, just as little as it lies in the concept of intensity that it must be capable of variation while quality remains constant. What is characteristic of intensity is much rather that, where we cannot speak of identity then it is not merely possible to assert relations of similarity and difference, but the relation of *Steigerung* [of more and less] is given. Characteristic of Gestalt qualities is that they constitute a presentational content dependent upon yet distinguishable from their foundation. Thus, just as (contrary to other opinions) we regard the opposition of light and shade as a matter of differences in intensity, as a relation based on *Steigerung*, even though it involves variations in quality, so also – relying on direct comparisons with analogous phenomena in the region of sounds – we believe that we can regard colour harmonies and disharmonies as Gestalt qualities, even though they may change totally with the transposition of their foundations. This should not however be taken to imply that such colour Gestalt qualities lie side by side with and thus in separation from spatial Gestalten of the visual sense. Rather both are, in conjunction with their foundations, bound up in a single intuitive whole in which they may be distinguished only through the process of abstraction.

Like the spatial Gestalten of the visual sense, so also those of the *remaining senses* appear to us to be abstractly isolated parts of the relevant Gestalt qualities given in intuition, in which specific determinations emanating from the senses of touch, temperature, taste, etc., can always be distinguished. Still, a rigorous demonstration is in this sphere, so little penetrated by our attention, difficult to provide.

We see here on the other hand a new problem rise up before us. For the intimate fusion of touch, temperature and sometimes also taste and smell sensations into a single unified total impression raises the question of whether we do not have here Gestalt qualities which are built up upon a foundation belonging to *several sensory regions*. As can easily be recognized, it is just as possible that a complex of, say, touch and temperature sensations should provide the foundation for a Gestalt quality as should a complex of sound sensations. Indeed no *a priori* objection can be raised even against the idea that there should exist sound-colour-Gestalten spanning the data of the senses of sound and vision as something like a bridge – even though we do not believe that we can detect anything of this sort in sensation. Things seem to be quite different however with respect to the relations amongst the other senses. Examples such as the presentation of wetness, in which both the senses of pressure and of temperature seem to be equally involved, or those total impressions which we imprecisely designate as the tastes of the respective dishes but which clearly involve also sensations of pressure, temperature and smell, as well as other, similar examples, indicate that if we are to recognize Gestalt qualities at all in these spheres, then, in virtue of the high degree of unity of the given presentational complexes, we must also accept the possibility of Gestalt qualities comprehending complexes of elements of different categories.²

[§7 Temporal Gestalt Qualities (268)]

Without supposing that we have dealt completely with all the possible ways in which non-temporal Gestalt qualities can be given in consciousness, we wish now to direct our attention to the *temporal Gestalt qualities*. Here it should above all be stressed that every change of any kind in a presentational complex, providing it proceeds in some definite direction, has as its consequence a temporal Gestalt quality. This is true whether that which suffers the change is an element or is itself a complex serving as the basis for some non-temporal Gestalt quality. This can be seen in the fact that – as already the linguistic expression indicates – every change in a specific direction can be grasped as something unified (whether it is an ascent, a blushing, a cooling down, or what have you – and only very seldom does language provide us with a corresponding

word). If this is to be so, however, then the criterion we have adopted for the existence of Gestalt qualities will have to be fulfilled. If we designate a series of distinct states of the changing presentational content, separated by finite intervals of time, as z_1, z_2, z_3, \dots , then, if the change is as assumed a continuous one, it can be supposed that all states falling between z_1 and z_2 are different from each other, likewise all states between z_2 and z_3 , etc. If in spite of this the change from z_1 through z_2 to z_3 reveals a unified character, so that we have (or could have) a name to designate it, then, according to the by now familiar argument, it follows that a Gestalt quality is given in it. Only in relation to changes that are themselves so subject to variation that they can never be grasped as progressing in a definite direction may it remain doubtful whether a Gestalt quality is given in them. Yet even here the analogy with and the possibility of transformation into a change that is continuous requires that we do not deny Gestalt qualities, but rather speak of a constant variation of such qualities themselves.

From what has been said we can see what a vast array of temporal Gestalt qualities comes to realization in our psychic life. It was first of all in the realms of *visual sense* and of visual imagination that we learned to recognize spatial and colour Gestalten of all kinds bound up in concrete intuition. If we now imagine these Gestalt qualities themselves as subject to change, then we obtain a limitless array of temporal Gestalten of whose wealth we would have not even the remotest conception had we to rely on the parsimonious linguistic designations for phenomena of this kind. The two moments of change of colour and of place (including concomitant changes of shape) form the elements which, by becoming concretely fused in the most manifold ways, constitute the qualities given in intuition. There is in our language no single unified designation which could be applied to grasp simultaneously the two sides of this concretum. We have to make do with a few words for isolated examples from the whole range of possible colour changes (e.g. blushing, blanching, darkening, glowing, etc.). A greater (though still relatively small) number of simple expressions exists for movements, yet what is capable of being fixed in this way are bare abstracta which can become concretely realized and filled out in innumerable ways, so that it is simply impossible to provide a half-way precise account of intuitive Gestalt qualities of this kind, even with the aid of complicated constructions. Even the brush of the painter, since it is capable of picking out only one link in the chain of successive states of the object, can make up for the limitations of

language only to a modest extent. Indeed, did not the genius of poetic inspiration set in train all kinds of means enabling the transmission, if not of the phenomena themselves, still at least of their emotional effect, so that we can recreate in imagination concreta of the given kind on the basis of corresponding abstract indications, then it could hardly be explained how an art form can arise such as the epic, which rests to such a high degree on the awakening of presentations of Gestalt qualities of this kind in the mind of the reader or listener.

The vast multiplicity which confronts the visual sense already in the sphere of non-temporal Gestalt qualities seems nonetheless to set relatively narrow limits to our power to discriminate, in turn, the temporal Gestalt qualities which as it were impose a new dimension of variation upon the system of non-temporal qualities. It can be noted that hearing is far superior to sight at least in the synthesis of temporal segments of changes into a single total image. Thus if a dancer performs a series of movements in time with a melody, movements which are not repeated from bar to bar, as is normally the case with dance-steps, but rather exhibit an articulation and a multiplicity analogous to that of the melody itself, then while many will find it relatively easy to reproduce the melody, even after a single hearing, almost no one will be in a position to reproduce the simultaneously executed motions of the dancer. This striking difference in our powers of memory in relation to temporal Gestalten of the senses of vision and of hearing undoubtedly derives from an equivalent disparity in our powers of apprehension. In the case of, say, a man walking, we are ready to state fairly precisely the extent to which we grasp clearly the spatio-temporal Gestalt quality which is his movement as given to us by the visual sense. That is, we always suppose that we are *seeing* the most recently occurring part – i.e., at normal walking-speeds, the last step – and in a quite different way merely *remembering* the preceding steps. In fact however this supposition cannot be correct. What can be given in sensation, i.e. be *seen* in the strict sense of this word, is only what is present, i.e. in every case only some specific disposition of the legs. Wherever we suppose that we can see motion, our memory has already been brought into play. It seems that this illusion has come about in virtue of the fact that we have given in memory only the complete continuum of the leg-positions belonging to the very last step, and thus are able to achieve a total intuitive grasp only of this temporal Gestalt quality. In relation to the previous steps we possess only an incomplete impression. At all events, our powers of

apprehension in this matter extend approximately just as far as the sensible appearance of the movement (if special aids do not enter in, such as the fixation of the track of the moving body by surrounding spatial constraints, which can be apprehended as a non-temporal Gestalt quality in advance of being used in the presentation of the temporal). How much further our powers of apprehension extend in the region of the aural sense can easily be seen in the fact that the temporal duration of a normal step coincides with the length of a single beat in the tempo of *andante*, and yet there exist melodies grasped as unities that extend across several bars, each one of which consists of three or four such temporal segments. (It can also be observed that the transition from sensibly intuitive to non-intuitive memory in the region of the aural sense is much more gradual than in the case of visual presentations.) Still less developed than in the case of motion is our power of apprehending those temporal Gestalt qualities which rest on changes in light and colour, something that probably explains why they have so far been used for aesthetic purposes only sporadically (say with stage sunsets, the transformations of Bengal lights, and the like).

There is little more of a general nature that can be said concerning temporal Gestalt qualities of the sense of hearing. Any spatial determinations they may exhibit recede wholly into the background of our attentions. Thus by 'movement of sound' [*Tonbewegung*] we understand not a spatial dislocation, but a change in sound *quality*. While the sense of hearing far surpasses the visual sense in power of apprehending temporal qualities, it is far behind in multiplicity of apprehended non-temporal Gestalt qualities (indeed, as already suggested, the latter circumstance may be the cause of the former). The multiplicity of tones simultaneously heard in a chord cannot even begin to compete with the multiplicity of pictorial forms and colours capable of being grasped in a single glance. Beside the musical temporal qualities already considered we have to recognize also such noise or resonance Gestalten as, say, thundering, exploding, rustling, splashing, etc. Every spoken word is, in its sensible part, a specific temporal sound-Gestalt of this kind.

Extremely rich in comparison with the meagre range of linguistic designations is the class of temporal Gestalt qualities yielded by the *remaining senses*. What was said of the fusion of sense impressions in relation to the non-temporal holds just as much of the temporal Gestalt qualities. But the abundance that is provided here of combinations and of

new psychic elements founded thereon should not be allowed to take us by surprise. Certainly anyone who is accustomed to testing psychological theories by the evidence of inner perception will have experienced doubts whether, from the scanty inventory of elementary qualities yielded by the skin, muscular and nervous senses, the limitless class of phenomena localized in these spheres is capable of being explained at all. The theory of the cumulative process of formation of Gestalt qualities is however able to offer a simple explanation, though we are prevented from going into details here, above all because of the inadequacy of the linguistic machinery at our disposal.

One might suppose that we have by now gained a comprehensive view of the range of possible temporal Gestalt qualities, but the region of *inner perception* has not yet been brought into consideration. Whether non-temporal Gestalt qualities are capable of being distinguished here may be left undecided. What is certainly true, however, is that changes such as the waxing or waning of a desire, a pain, an expectation, if they become the objects of an inner presentation are peculiar temporal Gestalt qualities, intertwining themselves with the remaining data of perception and analogous to a crescendo or diminuendo in the tonal sphere. It is clearly Gestalt qualities of this kind that serve to a large extent as the basis of aesthetic effects and poetic creations.

But it is not only change in all that is presentable, also its remaining the same, the *duration* of states and circumstances, determines peculiar temporal Gestalt qualities which are to be considered as borderline cases in relation to what has been dealt with so far. The sustaining of a note unchanged, e.g. on an organ pipe, is just as capable of awakening in the hearer a specific presentation as is a transition of tones; merely that we are less accustomed to reflecting upon duration-Gestalten such as this. Already the fact that a change can become transformed into a state of rest shows that specific Gestalt qualities are present in the latter.

[§8 Relations of Comparison and of Incompatibility (273)]

Before concluding our brief survey of the Gestalt qualities appearing in psychic life we have still to turn our attention to the crucial phenomenon of *relations*. For, according to the definition given at the end of §4 above, the relation, too, falls under the concept of Gestalt quality, since it also

(say, the presentation of the similarity of red and orange) is bound up with the givenness in consciousness of a presentational complex (here: red and orange), whose elements can be presented in separation from each other. It will not do, however, to identify the relation with any of the Gestalt qualities so far considered and to assert, for example, that a melody is nothing other than the sum of the similarities and differences of its individual tones, the square nothing other than the sum of the spatial similarities and differences of its components. The melody can be heard, the square seen, not however any similarity and difference of two tones or two spatial determinations. And there is a further respect in which the relation is distinguished from other Gestalt qualities: it cannot come into existence without some contribution on our part, without the specific activity of comparison. We are in agreement with Lotze and at least not in conflict with Meinong (whom we have to thank for the most penetrating discussion of the problem of relations³) in conceiving the relation as a 'movement [*Wandern*] of the mind's eye' from one compared fundament to the other. A movement of this sort is nothing other than a transference of the attention from one object to another, i.e. it is a change which, when it is presented in a memory-image, can serve like any other change as the foundation for a temporal Gestalt quality. And in fact it seems that it is as such a quality that the relation (or, in Meinong's terminology, the comparative relation) presents itself. A precise determination would however presuppose the analysis of the phenomenon of attention, and this is a problem into which we cannot enter here.

There is yet another phenomenon of the highest importance which can be understood as a Gestalt quality, namely *incompatibility* [*Widerspruch*]. Meinong, in his investigations of this phenomenon (op.cit., p.89), concludes that there is no single presentational quality characteristic of all incompatibilities, but rather that when we assert of two presentational contents that they are incompatible we always have in our minds some reference to a corresponding evident judgment ruling out universally the co-existence of the two contents – as fulfilled or executed [*ausgeführt*] rather than merely empty intended – at the same point in space (or, in the case of psychic states, in the same consciousness). We can make this clear by means of an example. *Roundness* and *squareness* are, according to Meinong, incompatible concepts because the universal negative judgment – 'there is no fulfilled presentation *round square*' – possesses evidence. The restriction in accordance with which the evident negative judgment need relate only to

intuitive or concretely executed combinations of incompatible contents can be explained by the fact that in an unintuitive or merely intended connection all conceivable presentational contents can become united. If I am to deny the existence of a round square, then I must be in a position to think this round square, i.e. to combine the two determinations *roundness* and *squareness* in some way or other. Failure arises merely in the attempt to combine these presentational contents in intuition, and thereby occasions the negative judgment cited above.

There is no doubt that the extension of the concept thus defined coincides with that of incompatibility. It seems, however, to be questionable whether the content of the concept of incompatibility is precisely captured, whether incompatibility is capable of being explained only by reference to the evident negative judgment. If all and only incompatibilities are capable of being universally denied in an act of evident judgment, should we not suppose that already in their presentation some general characteristic is contained that would call forth this act of evident judgment? We shall seek to track down such a characteristic, first of all by inspecting the difference between the merely empty intended or unintuitive and the executed or intuitive in the realm of presentation. Meinong, in the work cited, does not define this distinction more precisely, though it seems to us that he has pointed out the way in which this could be done. This is in his explanation of 'indirect presentation' (op.cit., p.86ff.), for it is as a special case of this that the empty intended combination of two or more characteristics can be interpreted. If, for example, I form the unintuitive presentation of a round square, then what serves as my starting point is the combination of some two characters, e.g. of rectangularity and rectilinearity, in an intuitive presentation. I then conceive the round square indirectly as a thing in which the characters of roundness and rectilinearity occur similarly combined, as in a rectangle, for example, we have combined the characters of rectangularity and rectilinearity or whiteness and rectilinearity. The nature of the latter combinations is given to me immediately in intuition. The relation here transmitted to me in indirect presentation is that of equality (analogous to the case where it is that of similarity, as when, for example, I imagine a person on the basis of the intuition of a portrait). The two fundamenta (corresponding in the latter case to the presentational complex awakened by the portrait, on the one hand, and the indirectly imagined person on the other) are here the intuitively given combination of rectangularity and rectilinearity or

whiteness and rectilinearity, on the one hand, and the combination of roundness and rectilinearity demanded by the indirectly presented object, on the other.⁴ This clarification of non-intuitive presentational combinations can now be further utilized in an elucidation of the nature of the presentational element *incompatibility*. It will first of all be clear that not only incompatible but also compatible characters can be thought in emptily intended combinations. This indeed takes place very often, as a result of that parsimony which nature always brings to bear in the achievement of her aims. Unintuitive presentation demands much less expenditure of effort than the intuitive, and thereby goes proxy for the latter in very many cases. Thus anyone confronted with, say, a complicated description of a work of architecture will first of all form a merely indirect presentation of it, which will then be rounded out by gradual execution or fulfilment of the various merely intended components, to yield an intuitive total picture. But this process of formation of the intuitive presentation directly from the indirect presentation is something that happens, a process of change, which serves as the foundation for a specific temporal Gestalt quality. Our language possesses no name for this quality, and thus we cannot give a more precise designation of it but must merely indicate, as has been done here, how it is produced, and encourage the reader to execute for himself a series of such processes of making intuitive in order to achieve a presentation of what all such cases have in common. Once one has become conscious of this, it requires only one step more to provide an explanation of incompatibility. For if one now attempts to bring to the state of executed combination an empty intention of incompatible determinations such as *round* and *square*, as was done before with compatible characteristics (such as, say, *having eight points, star-shaped, made of white marble on a black base*, etc.), then the process thereby set in motion is initially wholly analogous to this earlier case, until suddenly there comes into play a certain moment, not more precisely describable, in which (speaking metaphorically) the determinations resist becoming unified, as if one were to try to force two bodies into a container that had been constructed to take only one of them. And whilst in the earlier case the intuitive presentation came into being with a precision comparable to the insertion of a spring-lock in its housing, the formation-process now falters at the half-way point in an unmistakable way – not precisely characterizable by means of comparisons – which we call ‘*incompatibility*’.

Thus we conceive incompatibility as a peculiar type of presentational element, as a temporal Gestalt quality with some characteristic point (like, for example, the presentation of the impact of two moving bodies in space) which determines the conviction of the non-existence of those objects in whose attempted formation in intuitive presentation it has arisen.

If, with this establishment of incompatibility as a determinate element in presentation, we have revealed in its object a reason for the arising of evident negative judgments, then the question is raised whether we cannot discern in this peculiarity a content adequate to the concept of evidence itself, so that we could avoid the need to seek for a peculiar quality corresponding to evidence in the *act* of judgment. In fact all evident negative judgments do seem to be directed toward incompatibilities, all evident affirmative judgments to come about only because one has attempted to make a contradictorily opposite negative judgment and the attempt has foundered on an incompatibility. The detailed working out of this suggestion would however go beyond the limits of our present investigation.

[§9 Gestalt Qualities of Higher Order (278)]

Returning, now, to our principal concern, there arises a problem, already hinted at in another context, of whether any of the Gestalt qualities so far considered can provide the foundation for new Gestalt qualities *of a higher order*. If our interpretation of the comparison relation has been accepted, then this question must in a sense undoubtedly be answered in the affirmative. For it is clear that, like everything presentable in consciousness, Gestalt qualities too can be compared with each other, and the presentation of a relation thereby constituted, if it is a Gestalt quality at all, is necessarily to be considered as one of a higher order. But this does not yet solve the problem, for there may be other conceivable ways in which Gestalt qualities of a higher order may be given to consciousness. Before considering this question however, we wish to pay brief consideration to the *comparison of Gestalt qualities*.

That Gestalt qualities can exhibit similarity is obvious. Thus temporal Gestalt qualities can be compared with each other from the point of view of rhythm (whether this is marked by variation in sound-intensity, by

movement in the visual field, by pressure, or by some other means). In this case similarity can be reduced to the identity of a feature isolated by abstraction. But even where, given the nature of the things involved, the isolation of such a feature is impossible, or where it still transcends the limits of our powers of abstraction, there are numerous cases where the existence of similarity must be granted. Thus we recognize the composer of a melody through its similarity with other, familiar melodies, though without our being in a position to specify more precisely in what this similarity consists. We recognize the relatives in a family in a resemblance manifested in their whole physical nature and bearing [*Habitus*], a resemblance which often stubbornly resists analysis into relations of identity between individual constituent parts. Similarities of this kind between supervening structures (between the Gestalt qualities built upon the sum of all individual particularities) are little suited to exact conceptual formulation because of the difficulty of precisely specifying and classifying the almost boundless range of possible Gestalt qualities involved. Science has nevertheless recognized that it is necessary to give such similarities priority over the much more easily comprehended relations of identity between individual determinations, since it has proved that natural objects ordered according to *Habitus*, i.e. according to Gestalt qualities, stand in closer kinship relations to each other than those classified according to precisely delimitable particularities (as for example in the preference shown for the natural over the Linnaean system of classifying plants). Certainly one still strives – as a reflection of the wholly justifiable requirements of exactitude – to delineate precisely the groupings obtained on the basis of *Habitus* by isolating identical particularities. This is not in every case successful, however, and for the practical purposes of delineation one often remains with the *Habitus*, thereby achieving one's goal incomparably more quickly than via the investigation of often not easily accessible individual characteristics. Not only the similarity of kindred products of nature but also that of the products of human creation rests in large part, when considered from the standpoint of their stylistic affinity, upon Gestalt qualities. What we call a feeling for style in a given province of art almost certainly consists principally in nothing other than the capacity to grasp and to compare Gestalt qualities of the relevant category. Indeed a number of analogies (e.g. between a crescendo, the burgeoning of light at dawn, the rising of an expectation⁵) suggest the question whether Gestalt qualities of distinct, apparently disparate presentational regions do not exhibit a

direct similarity which, while going beyond the identity of specific features they may have in common (here, say, the feature [*unfolding in time*]), still has its locus in the phenomena themselves – not, say, in the associated feelings. However things may stand precisely here, it cannot be disputed that a wealth of similarities is to be encountered amongst Gestalt qualities, and that, in the making of comparisons between these qualities, Gestalt qualities of a higher order are generated in the presentations of the relations thereby arising.

As already intimated, however, this is not the only way in which we can conceive the actualization of Gestalt qualities of higher order. For consider the question whether, in a way analogous to that in which a number of tones may, without any activity of comparison, form a melody, so also a complex of melodies, sounding either simultaneously (in polyphonic phrases) or in succession, or indeed whether a complex of melody and visible movement may not yield Gestalt qualities of a higher order. This question is to be distinguished from that raised earlier [at the end of §6] as to whether visual and aural presentations may together yield the foundation for one and the same first-order Gestalt quality, and requires a separate treatment. One will justifiably mistrust the testimony of introspection in so unfamiliar a sphere. And since also the other means of testing for Gestalt qualities abstractly specified above cannot be put into service because of the difficulty of apprehending the relevant phenomena, the question would have to be left completely undecided, were it not for one single circumstance which yields at least the probability that it is to be answered in the positive. This is the intimate unity with which we combine presentational contents of physical and psychical occurrences – contents of the most conceivably different kinds – into integral concepts. Examples of this can be provided in profusion. Already the general concepts of voluntary human action or of action in general contain precisely such a union of the physical and the psychical, as do all the specifications of these concepts, whether expressed by means of common nouns (kindness, service, rivalry, marriage, theft, war, etc.) or verbs (entreat, complain, help, rob, avenge, etc.). If one now considers further that all designations of human individuals or groups of whatever kind (Hans and Paul, priests, manual workers, Scotsmen, rogues, etc.), as well as most designations for human corporations and institutions (state, authority, the insurance market, etc.), all names of places and territories, and equally all names of animal species, delineate a union of the physical and the psychical, then one comes to the conviction that

certainly a considerable proportion, probably indeed more than half of all the concepts employed in everyday life belong to the given category. But now we operate unhesitatingly with these concepts as with unified elements. Would this be possible, if each corresponded merely to some aggregate of presentations, lacking any embracing, unifying bond – a Gestalt quality of a higher order?

[§10 Apprehension and Creation of Gestalt Qualities (281)]

We now conclude the second part of our investigation – the enumeration of the various different categories of Gestalt quality – with a brief indication of their great significance in our psychic life. If, after all that has been said, this should still be called into doubt, then it suffices to recall our remark at the end of the foregoing section, to the effect that the larger part of both our everyday and our scientific vocabulary designates Gestalt qualities. For even if one disputes the existence of such higher order qualities spanning the physical and the psychical, ascribing to concepts such as requesting, complaining, etc., not a unified but merely an associational linkage of different elements, that amongst these elements Gestalt qualities are to be found is something that cannot be denied. The concepts of change and duration are obtained only via abstraction from temporal Gestalt qualities. And every specification of these concepts, and thus every *verb* in the strict sense (with the partial exception only of ‘to be’ and ‘to have’ and of certain words signifying conditions conceived of as being temporally punctual), designates a Gestalt quality of some type or other, as does every noun and adjective having reference to more than a single presentational element. Thus Gestalt qualities comprise the greater part of the concepts with which we operate. As already emphasized in relation to the sphere of tonal and other sound phenomena, and as can easily be demonstrated in relation to the visual and other senses, Gestalt qualities stick in our memory much more securely than do determinations of simple elements. The greater part of our associations proceed according to Gestalt qualities. Indeed, if it is a fact that similarity cannot universally be understood as partial identity, and that therefore in the law of association according to the principle of similarity there is involved something different than in that according to the principle of temporal contiguity, then one should be able

to go so far as to affirm that the former would have validity only in relation to Gestalt qualities. Thus, no one will have observed that he associates (say) a presentation of cherry red with a presentation of purple or of some other adjacent colour-hue, or that, given the presentation of C, he associates with it that of C sharp, and so on. On the other hand, a melody may certainly remind us of a similar melody, or a face recall another, similar face, and cases such as this are to be counted as amongst the most familiar phenomena of psychic life. However, then, one may wish to treat the law of association via similarity, it is certain that a fundamental difference of Gestalt qualities from other psychic elements reveals itself in it. Now just consider the significance of this law and of the presentational contents which underlie it!

Gestalt qualities are essentially distinguished from elementary presentations not only in relation to memory, but also in the fact of their free generation by the creative activity of imagination. In the field of elementary presentations there obtains, as is well known, the Humean thesis restricting imagination to 'impressions' (sensation and inner perception) – with minor exceptions, namely that where a series of presentational contents given to us through 'impressions' can be filled out to form a continuum of qualities, then even without prior 'impressions' it is possible to generate in presentations of intuitive imagination intermediate stages between those members of the continuum that are to hand, perhaps also members which lie on the continuum extended in a determinate direction beyond that which is to hand. On the other hand, imagination is quite generally awarded the capacity of freely combining the elements given in sensation and in inner perception. Given our understanding of the essence of Gestalt qualities it can now no longer be subject to doubt that this freedom enshrines a creative power of the highest rank. For with the combinations of the given elements there is generated an inconceivable array of positive psychical qualities of the greatest significance. The mind that organizes psychical elements into new combinations does more than merely displace the component elements amongst themselves: he creates something new. And even if we must accept that this process of creation is not wholly free from laws and constraints,⁶ this is not to say that we have any means of specifying the limits which may be set to us in this regard. Even if a law similar to that stated above with respect to elementary qualities should hold (with similar exceptions) also for the imaginative creation of Gestalten, this could hardly be verified, given the present state of our knowledge, since it

presupposes the construction of continua of qualities. And if we reflect that, simply in order to establish a continuum of all possible colours, it is necessary to bring into play all three spatial dimensions, then we shall shrink from the task of constructing (say) a melody-continuum, of such a kind that every conceivable melody would correspond to some definite coordinate point within it, as a problem still far exceeding our human powers of combination. So long, however, as the array of conceivable Gestalt qualities of a given category has not been brought within a definite system, it will remain impossible to answer with certainty the question whether a Gestalt quality generated in imagination constitutes an intermediate case between two already known qualities, or an extrapolation of the continuum in a given direction, or neither of the two. Such a law, if it were put forward, would therefore, given the cognitive means at our disposal, hardly be capable of being demonstrated. There are, on the other hand, considerations that can be marshalled against its obtaining which, while they do not have the force of absolute certainty, can nevertheless be counted as having a high degree of probability. Thus compare the Gestalt qualities produced by human imagination in the realms of ornamental art, architecture and music, with those offered by nature in bodies and in noise Gestalten. It will hardly be possible to believe that the human mind has here created only interpolations between already existing members of a continuum or extrapolations in an already determined direction beyond the given endpoint of the continuum. In the light of the examples mentioned it seems to us to be indubitable that an essentially greater freedom of movement lies open to our imagination in the realm of Gestalt qualities than on the level of elementary presentations. It is, however, by no means to be assumed that the process of invention of new Gestalten is without constraints (is, as it were, a freely running process). Here, too, there is required a not inconsiderable strength if one is to emancipate oneself from the familiar and bring forward something truly novel and unique. What we call artistic genius almost certainly has its roots to no small part in such creative strength.

The problem of the invention of Gestalt qualities brings us once more to the issue deferred at the outset of these investigations, as to whether Gestalt qualities arise immediately or mediately and as a result of some activity on our part upon confrontation with the relevant complex of elements. Mach, as already mentioned, propounds the view that spatial shapes and melodies exist without any contribution of the intellect,

without the need for application of mental activity: he holds that such Gestalten are objects of 'sensation' just as soon as their respective foundations are given to consciousness. In support of this view he points to the phenomena themselves: to the seeing of a figure, the hearing of a melody. And indeed it cannot be denied that in a whole host of such cases we can become conscious of no activity on our part. But let us now formulate the hypothesis with strict generality as a proposition to the effect that 'wherever a complex which can serve as the foundation for a Gestalt quality is present in consciousness, this quality is itself *eo ipso* and without any contribution on our part also given in consciousness'. Many of us, recalling some occasion when exertion was applied in the apprehension of a spatial figure or melody, will believe that we must raise objections to so general a proposition. Are not the cases in which someone sees the colours but not the picture, the trees but not the wood, the notes but not the music, so numerous as to be proverbial? In any event, such real or apparent counterinstances must be subjected to closer consideration. One means of defusing them which has found employment in many analogous cases might initially suggest itself. If we are in a position to say nothing concerning any presentation of a shape or of a melody, nor to apply our intellect to it in any way, this need not at all imply that we do not possess such a presentation. It might perfectly well be present in our consciousness, but in such a way that we are not able to direct our attention towards it, and set it loose from its surroundings. This expedient, so temptingly misappropriated, has become almost unavoidable in psychology. Here however it can be of no avail, for it could at best succeed in establishing only the bare existence of Gestalt qualities, not the fact of their universal givenness in consciousness with their foundations. It can however be clearly recognized in individual cases that the exertion we seem to require in order to grasp a shape or a melody on the basis of a foundation already presented, is much rather applied to the filling out of that foundation itself. This is perhaps most easily seen in the contemplation of a painting. What is given to us in sensation here is not at all the visual presentation which the painter had sought to transmit in his picture, but rather only a mean skeleton, about which the given presentation has to be built up through the activity of imagination. A significant exercise of our capacities is required in order to utilize in our presentation the slight distinctions in light and colour and the foreshortenings in the perspective plane as associative tokens enabling the realization of the total luminosity and three-dimensionality

of the painting. In addition, in the case of all larger paintings our gaze must wander over the picture-surface and by a kind of illusion fix in the indirectly seen parts of the whole the particularities read off in this wandering. Only when this has been done is there in consciousness that presentational complex which serves as the foundation for the total Gestalt quality communicated in the painting. And only in the case of someone who has executed this task can aesthetic appreciation find a home. This yields a very simple explanation of the variation in aesthetic evaluation. But in regard to the question that here concerns us, it will now scarcely be possible to claim that someone who has in this way developed in his consciousness the foundation of the Gestalt quality will still find it necessary to generate this quality itself in a further act: the quality is, as it were, given of itself. A task similar to that involved in the perception of a picture is involved also in the apprehension of Gestalten of objects in the plastic arts. As in the former case, so here, in relation to each given aspect a movement of one's gaze is indispensable. But then also, in order to achieve a truly plastic apprehension of a Gestalt, the impression of one single side – as of a painting – is not sufficient; there must rather be generated an image of the whole body based on a many-sided view. In the case of melodies it is not sufficient, as already mentioned, merely to hear the tones just now sounding. In order to bring the foundation of the temporal tone-Gestalt within consciousness it is necessary to recall the tones that have sounded previously, perhaps far back in time. That this can often not come about without a certain amount of effort is now clear, just as it will be recognized that here, too, anyone who has in this way collected together in his imagination the foundation of a melody must also, without any further contribution on his part, possess the presentation of the melody – that a new, active process of apprehension is not required in order to achieve this. We can therefore affirm that in many cases of perception of Gestalt qualities we experience nothing at all of an activity of mind, and that in other cases such activity reveals itself as completion of the foundation of the Gestalt quality and not as a process of generation of the Gestalt. Given the important role that is played by Gestalt qualities in our psychic life, however, it does not seem reasonable that this latter activity, if it is necessary at all, should have evaded our attention.

Thus we can conclude that Gestalt qualities are given in consciousness simultaneously with their foundations, without any activity of mind specifically directed towards them.

One matter still remains to be considered, best expressed by means of a concrete example. Let us suppose that our visual field contains only a white square on a black background. Then it follows from the above that the presentations of the Gestalten involved (the square, on the one hand, and the black oval form of the visual field with its four-sided internal boundary, on the other) are *eo ipso* contained in consciousness. But one can now conceive the square partitioned by a diagonal into two triangles, by two diagonals into four triangles; one can think every conceivable figure inscribed in every one of these triangles or at any conceivable point in the surrounding area of blackness. All of the given Gestalten possess for their foundation nothing that would not be already contained in the original black field with its white square. If, therefore, the proposition holds, that with every foundation the Gestalt quality belonging thereto is given in consciousness, then it would seem that with the presentation of the smallest plane continuum there is given the infinite array of all conceivable two-dimensional shapes. And even he who does not shrink from this consequence would still have the problem of explaining why, from out of this infinite array, it is precisely these determinate Gestalten (the square and its background) which step forward as primary, why just they should have what is, in effect, a privileged status. Clearly this turns upon the fact that the square, in our example, projects from its background in virtue of its distinct colouring. As soon as this fact is mentioned, however, one sees that it is superfluous to postulate the remaining Gestalt qualities and that the general thesis above is accordingly to be restricted as follows: that for a given complex of presentational contents given in consciousness only those Gestalt qualities are present whose foundations stand out noticeably from their surroundings. And one can accordingly observe that wherever one makes the effort to grasp the white square as, say, a pair of white triangles, or to conceive a circle inscribed within the square, then one has constructed in imagination lines (or, more precisely, coloured bands) within the uniformly coloured surface, and that these lines constitute the colour boundary that is required. Thus it is well known that one can grasp a succession of beats of equal intensity and periodicity arbitrarily as constituting a 3-, 4- or 6-beat rhythm, according to whether one imagines every third, fourth or sixth beat as stronger than the rest. Here it only seems that there are given in consciousness identical presentational contents which could serve as the foundations for quite different Gestalt qualities. In fact, with the same foundation there is always bound up the

same Gestalt quality. The illusion-forming powers of imagination can however succeed, on the basis of identical external sensory stimuli, in varying the foundations themselves, and thus also indirectly the corresponding Gestalt qualities.

[\$11 Epilogue (289)]

If we have succeeded in sketching a picture, however broad in outline, of the role and significance of the phenomena considered in psychic life, then it might now be pointed out that the theory of Gestalt qualities would perhaps be qualified to bridge the gulf between the various sensory regions, and indeed between the various categories of the presentable in general. The theory makes possible the unification, within a single framework, of what are superficially the most disparate of phenomena.

J. S. Mill, in his inductive logic, has shown that there are natural limits to our striving towards unity in the explanation of nature in virtue of the ineluctable multiplicity of psychical qualities not further reducible one to another. And—once this irreducibility has been accepted—it will scarcely be possible to contradict Mill's thesis. For even on the supposition that the ideal of natural science had been attained, and that all physical occurrences had been reduced to the mechanics of atoms, a complete explanation of nature, comprehending also psychical reality, would have the additional task of specifying in what way psychical appearances are bound up with physical events. Let us suppose that this demand had been fulfilled e.g. with respect to the presentation of sound. An oscillation of given specific form, period and amplitude in certain segments of the brain would correspond (say) to the presentation of a simple tone of given pitch and intensity, presentations of higher and lower, more or less intense tones, corresponding in lawlike analogy to oscillations of a greater or lesser period and amplitude. One can imagine that this relationship has been made precise: its expression would constitute a law of nature. In similar fashion it would be possible to determine the relationship of all the remaining psychical qualities to mechanical occurrences in the brain. Clearly as many new, mutually independent laws of nature would here be required as there are mutually irreducible psychical categories: for the relationship between tone-presentations and motion in the brain would establish nothing concerning the relation between (e.g.) colour

presentations and mechanical brain-occurrences. And since it is not possible to derive the one from the other, we should possess at least as many ultimate laws of nature as there are distinct psychological qualities. Thus it is of great value to have in view even the possibility of deriving that which is apparently incommensurable from common foundations.

Let us consider first of all the sphere of sound presentations. In general it can no longer be doubted that all sound presentations, including presentations of noise or resonance phenomena of all kinds, if they are not themselves presentations of simple tones, can be generated by combinations of the latter in presentation (cf. Mach, p.117f., 266f.). Musical tone-combinations, both harmonious and discordant, are distinguished from unmusical noises in the fact that in the former case we are capable, at least to a certain degree, of analysing the impressions involved, i.e. of separating foundation and Gestalt quality from each other and of distinguishing various parts of the foundation, where in the latter case foundation and Gestalt quality are fused into a whole in relation to which our attention is inadequate to discriminate the parts. This inadequacy is not however subject to any strict and absolute limit. Where an unpractised ear frequently hears a chord as a single sound, the practised ear is able at one and the same time to discriminate the partial tones and to hear them as a chord, and it is perfectly conceivable that someone could reach the point where he was able to decompose in attention every noise into its component parts. But if something so apparently simple as the crack of a pistol is in fact made up of a manifold of elements, what is to guarantee that this is not also true of the so-called simple tones – i.e. of those presentational constituents not yet decomposed by us? Is it not conceivable that each tone is likewise the fusion of a sum of still more primitive elements with the Gestalt qualities bound up therewith? No hard and fast argument against this possibility is forthcoming. But if we can conceive the tones as generated through the unification of gradations of some common proto-quality, then we must admit the same possibility in relation to colours, smells, tastes, and so on; or, in short, in relation to all presentable categories. And 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. If one compares, say, the sound of an aeolian harp with the retort of a rifle

and reflects how relatively simply these two impressions can be exhibited as fusions of homogeneous elements, then 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.

It could perhaps be objected that we ourselves have affirmed that there is an essential distinction between Gestalt qualities and simple sensory qualities in our treatment [in §10] of the law of association, where we restricted the validity of this law, according to the principle of similarity, to Gestalten only. But it suffices, in order to make sense of such a distinction, to point to the undeniable fact that where, in the case of Gestalt qualities, we are able to separate Gestalten from their foundations, this is not the case in relation to the simple psychological elements.

However dubious the idea might seem, I can find no cogent reason why the reduction it postulates should be impossible, even if no one will be so bold as to suppose that the acuity of mankind will one day bring it to realization. It would have as its consequence our liberation from all striving toward cognitive order. Since our knowledge of reality can never go beyond the totality of the presentable, it follows that the derivation of all contents of presentation from a common proto-element would yield the possibility of comprehending the whole of the known world under a single mathematical formula.

One can detect in this striving for unity made possible by our theory a counterweight to individualistic tendencies to which – though in an altogether different direction – the theory also indubitably lends support. For whoever has truly become convinced that something new is created through the combination of psychic elements will award the latter an incomparably higher significance than he who sees in psychic life only the continual displacement of eternally recurring components. Psychic combinations never repeat themselves with complete exactness. Every temporal instant of every one of the numberless unities of consciousness therefore possesses its own peculiar quality, its individuality, which sinks, unrepeatable and irreplaceable, into the bosom of the past, while at the same time the new creations of the present step in to take its place.

Notes

- ¹ Cf. also pp. 114; 119; 131f.; 263; 268ff.; 288f. Polemic against the view of Helmholtz.
- ² These reflections were provoked by the lectures of Professor F. Brentano, whose not yet published theory of sensation – which would of course elucidate the relationships discussed – I do not wish to anticipate.
- ³ “Hume-Studien II. Zur Relationstheorie” (p. 43), where the relevant passages from Lotze are also cited.
- ⁴ Meinong’s attempted definition (“Phantasie-Vorstellungen und Phantasie”, p. 213) reads as follows: “A complex presentation is intuitive in so far as it is free of incompatibility”. It seems to me to be unacceptable, since the concept of incompatibility can itself only be understood in terms of the distinction between empty and executed presentational combinations, which Meinong (p. 209) identifies with unintuitive and intuitive, respectively. Thus the definition presupposes precisely the concept which it sets out to define.
- ⁵ Consider, e.g., the orchestral passage accompanying the sunset in the Prelude to the *Götterdämmerung* of Wagner, whose works in general, because of the parallelism which is developed in them between musical and theatrical occurrences, provide an inestimable wealth of material for the comparison of Gestalt qualities of all kinds.
- ⁶ Cf. the valuable discussion of spontaneity in Meinong’s “Phantasie-Vorstellung und Phantasie”, part IV, which however does not take into account the possibility that it is possible to detect more in composite presentational formations than mere sums or “*Komplexionen*”.