

# CERTAIN IMPLICATIONS IN THE CONCEPT OF GESTALT

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It is well-nigh impossible to present a new idea without arousing a great variety of misunderstandings, for the clothing of a new idea in words is like the putting of new wine into old bottles. [1] Nobody can be blamed for seeing the bottle before its contents. There are, however, certain intrinsic sources of error, two of which are mentioned here, that bear upon most scientific discussions.

First, the originator of an idea is forced to use concrete illustrations and he of course chooses them from fields in which it is easiest to establish his points, i.e. from fields in which the greatest advance has been made and in which the chance of meeting unanswerable questions is reduced to a minimum. This procedure - especially if the entire proof of the hypothesis rests upon it - is, however, likely to lead others to the conclusion that the field from which the illustrations are drawn is somehow essentially related to the idea that is being advanced. For example, some articles by KÖHLER and KOFFKA, which were concerned with facts of shape more than any other of the early studies on perception, [2] gave some people the mistaken impression that they considered shape to be of greater importance than qualitative and quantitative properties of the visual perception. [3] Since the *Gestalt* theory considers shape, quality, intensity, and quantity as interdependent and does not apply more specifically to one than to any other, arguments against the primacy of shape (of any one of them) does not affect the central idea of the *Gestalt* theory. [4]

In the second place, every new hypothesis has to be defended against other existent hypotheses. Thus in Germany *Gestalt* psychologists argued against WUNDT's hypothesis of 'creative synthesis' and also against MEINONGs and BENUSSIs 'production theory' - neither of which does justice to the importance of the objective configurational aspects of the stimuli. *Gestalt* psychologists, therefore, emphasized the importance of the objective facts. Now a reader who does not believe in the 'production theory' is easily led to the opinion that the doctrine of the *Gestalt* implies that subjective determinants are of no importance in perception. [5] Any argument against such a position does not touch in the slightest degree the central idea of the *Gestalt* theory. Similarly, *Gestalt* psychologists argued against the negation of consciousness by behaviorists, with the unexpected result that at least one non-behavioristic psychologist was led to believe that the *Gestalt* psychologists pretended to be the only, or at least the chief, investigators into consciousness. [6]

The list of misunderstandings could be greatly extended. The only purpose of mentioning them here is to explain why for the moment-and fifteen years are only a moment in the development of science-certain misunderstandings are inevitable. I mention the two above simply because the sources of error appear very clearly in them. [7] The only outcome of such misinterpretations is to learn that the original exposition was ambiguous and that under certain unexpected conditions was even positively misleading, and consequently to try another approach to the subject from a new angle. An approach, which has not as yet been tried, consists in taking some of the actual

cases in which the term *Gestalt* is used - chiefly cases where it is not used in accordance with its original meaning - and in explaining how the real concept of *Gestalt* would have applied there. An example of this method is offered in the following paragraphs.

MOGENSEN and ENGLISH had an original and happy idea of investigating the apparent warmth of colors. [8] If the warmth of colors has something to do with real warmth, they argued, it must have some influence upon the tactual perception of warmth. They exposed pairs of electrical resistances at equal temperature and covered with various brightly colored papers. The observers, without knowing that the resistances were equally warm, touched them while looking at them and then gave a judgment as to which one of a pair felt the warmer. The number of times that every one of the colors used was judged the 'warmer' was as follows: green, 416 times; blue, 405 times; orange, 380 times; yellow, 377 times; red, 371 times; and purple, 301 times. This was an unexpected result. The experimenters, and I, too, had expected exactly the opposite outcome, since green and blue have the least apparent warmth, and red and purple the highest. The experimenters were disappointed. "Although the data are slight," they say, "the conclusion seems warranted that the apparent warmth of colors is *insufficiently intrinsic to enter into a total configuration or Gestalt* in such a way as to modify the judgments of tactual warmth." [9]

Must we really give up so soon? Let us see. We are not told explicitly what kind of influence of color-warmth on tactual-warmth the experimenters expected as an effect of the formation of a *Gestalt*. We can, nevertheless, discover what they expected from what - to their disappointment - did not happen. It did not happen that the red or purple objects that *look warmer felt warmer*, that the blue or green objects that *look colder felt colder*. It must, therefore, be supposed that they expected visual warmth to enhance tactual warmth, and visual coldness to diminish it. [10] To be more explicit: it was expected that a certain amount of visual warmth (either a positive or a negative warmth) would be added to the given amount of tactual warmth, viz., that the apparent warmth underlying the judgment of the observers would be the total of the two kinds of warmth in question. In other words it was supposed that the attributes of a whole could be found by adding the attributes of its parts.

Is that to be expected of a *Gestalt*? Not at all! Such an expectation is a direct contradiction of Von EHRENFELS' negative definition of *Gestalt*. According to Von EHRENFELS no prediction can be made from a consideration of the attributes of the separate parts regarding the attributes of the whole. In color-contrast, for example, we have the paradoxical fact that when red is added to red, i.e. a red spot is put on a red background, we get not more but less red than before. In this way color-contrast shows most convincingly how 'gestalted' units behave. Such facts, in the meaning of *Gestalt* theory, are not therefore exceptions for which specially adapted nervous apparatus must be assumed, but rather illustrations of the true nature of psychic processes.

But if *Gestalten* are not the total of the part attributes then what are we to expect? Provisionally it can only be said that, as a symptom of having entered a *Gestalt*, the total of the part-attributes most probably will not be found, for the attributes of the former parts will be altered in some manner. In order to get a positive answer to this question, we have first to see where, if not in the attributes of the parts, we should seek the new attributes of the compound. This is shown by WERTHEIMERs adequate interpretation of the positive definition in 1924, [11] according to which *Gestalten* are units of such a nature that what occurs in their parts is controlled by intrinsic laws of the structure or character of the actual whole. The meaning of these laws of *Gestalt* obviously implies that only a very small number of such laws can be found which are valid in, and can be applied to, all the various kinds of wholes, for what laws are effective depends wholly upon the

special character of the particular whole that is actually given. In perceptual formations it generally depends, for the greater part, on the actual configuration of the external stimuli, from which it arises. [12] According to WERTHEIMER's definition, as is obvious, this occasioning physical configuration itself is not necessarily a *Gestalt*, as will be made clear in our further discussion.

Our first task, therefore, in the search for the attributes of the compound, is to become thoroughly acquainted with the special physical configuration in question, i.e. to analyze it exactly and wholly. But we are told that analysis is strictly prohibited in *Gestalt* psychology, that only unanalyzed wholes are allowed to be considered. We must admit that we never could understand how, in this way, any scientific results could be obtained. In fact analysis is prohibited; or rather, as *Gestalt* psychologists believe (and in many cases have found to be true), analysis does not help to discover the nature of a compound. But this concerns only a certain rather widespread kind of analysis, such as "separating a given whole into its elements, viz., into its constituent parts and considering these parts separately," as in the case which we were considering, separating the perceived warmth into its tactual element and its visual element and hoping to get the apparent warmth by putting these elements together. This kind of analysis led to no result. But there is another kind of analysis which we are not only allowed to apply, but which is wholly indispensable and, in the opinion of *Gestalt* psychologists, has never been carried far enough in older psychology. This is the minute and full description of all details of the fact in question, of all the parts, part-processes, and part-qualities of the whole, just as they look or behave at their particular place in the actual whole, and would not look or behave elsewhere, neither at another spot of the same whole nor as a part of a different whole nor as separate independent things.[13] It is not necessary to consider here the wider circumstances under which the facts observed happened, or to mention what external and internal 'factors' may have modified the result, as e.g. bad sticky air, or fatigue, or a headache, or an insufficiently concentrated attention of the observer. These also are important facts, but in most cases they are not so important by far as the structure or configuration, in space and time, of the specific external stimuli themselves.

In our example this structure was as follows. There was a warm object the surface of which was homogeneously covered, as long as the object was only looked at. But at the moment when it was touched its surface was partially covered - that is to say, optically interrupted - by the hand of the observer. At the spot covered by the hand the color and, in consequence, the visual warmth of the surface was not perceived, but only tactual warmth; on the other hand, this area in which tactual warmth was perceived was rather distinctly limited by the size of the hand and somehow, at least in two directions, *surrounded* by the still perceivable visual warmth of the uninterruptedly visible remainder of the surface. (If the authors had applied electrical resistances exactly the size of a hand, and thus wholly covered, an analogous circumstance would have resulted in *time*, as in their experiment it resulted in *space*.) These are, so far as I can see, the essential traits of the configuration of stimuli *in each member* of the exposed pairs, the configuration being independent of the colors applied. Perhaps we can find out now what kind of *Gestalt* laws are valid in such a configuration, what modifications the part-qualities will undergo, in how far *the apparent Gestalt will deviate from a mere configuration of sensations* which would exactly correspond to the configuration of physical stimuli. [14]

Since only a relatively small number of special *Gestalt* laws have at this time been definitively formulated, we are not able in every case to predict the laws actually valid from the description of the configuration. For we may possibly encounter a type of configuration not yet explored; in this case our task would be to fathom the function which is valid as between the configuration in question and the results found. This would be a contribution to the discovery of new laws. But in

the actual case we are not in such a difficult situation. Generally speaking, we have two kinds of like sensorial quality spread over a surface and clearly separated, so that the less extended of the two is, at least partially, enclosed by the other. These are just the conditions under which in all known cases, *contrast* will occur at its greatest intensity. If we consider once more the results of MOGENSEN and ENGLISH, we are not so disappointed as they are, since the rough outcome of their experiment, which the authors themselves are inclined to ascribe to mere chance and therefore to neglect, is just what was to be expected from the configuration in which the stimuli were exposed.

No doubt, the result is very slight and there are a great many insignificant and even contrary cases. But here our task is primarily to get a finer and more extended configurational analysis. We have to consider the relative size of the covered and the visible parts of the paper. We have to consider what colors were compared in each pair and how, perhaps, the positive, negative and insignificant results are correlated with certain kinds of color-configurations within the pairs. We have to consider the consequence of exposure, for it is possible that certain preceding influenced certain following colors in a direction opposite to contrast. We have to consider that the psychical state of the observer may enter the configuration, that opposite results may originate from different inner attitudes which, as is known, are the more effective the less unambiguous the configuration of the stimuli. Perhaps our conditions are not unambiguous enough for clear results, e.g. when two colors are very similar to each other there is no unambiguous color-contrast but a fluctuation between contrast and assimilation. The same thing may be possible in our experiment. That is to say, we have to consider the relative rates of the visual and tactual warmths used. Finally, we have to consider the relative sensibility of our various observers for color warmth, which naturally will modify the results. Possibly we have among them a few with a very high threshold or even total insensitive to warmth.

Starting from our assumptions, and with a refined and extended analysis, our second task is to improve the conditions, to modify them either in such a way that contrast will certainly be strengthened or, on the other hand, just as certainly will be converted into its opposite, the assimilation or mixture. In order to strengthen contrast, according to well-known rules, we have to make the covered spot smaller and more neutral in warmth, the surrounding surface larger and, if possible more brightly colored. In order to obtain assimilation or mixture (the result expected by our authors), we have to avoid interruption of a larger surface of the one kind by a smaller of the other kind; we have even wholly to avoid the possibility that the two kinds of stimulation are so situated that one is beside the other with a common boundary. Perhaps it will be suitable to create a kind of 'atmosphere' in which both kinds of warmth simultaneously contribute their share, e.g. to let the observers enter a number of small rooms which have the same temperature but are warmer or colder by the color of their walls or of their illumination. Perhaps it will even be possible to adjust the temperature of the rooms so that they will have the same apparent warmth, in spite of different temperatures.

Only by such an improvement of the experimental conditions will it be possible to prove whether the visual and tactual 'warmths' are merely configured or enter into a real *Gestalt*.

## SUMMARY

I have attempted to show that an inadequate use of the concept of *Gestalt* has led to false expectations concerning the outcome of experiment; that an adequate use of the concept would have promoted a contrary expectation; that such a contrary result was obtained but was

neglected by the experimenters in consequence of the false expectations; and, finally, that certain modifications of the experiments are suggested by the concept in order to obtain clearer and more effective results.

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### Notes

- [1] The writer wishes to acknowledge his indebtedness to Professor Max WERTHEIMER, Professor Wolfgang KÖHLER, and Dr. Kurt LEWIN of the University of Berlin, who have, during the last five years, introduced him to the theory of Gestalt. He is also greatly indebted to Miss I. G. PROBST, Miss A. MATHIESEN, and Professor C. A. RUCKMICK for their assistance in the preparation of this note.
- [2] W. KÖHLER, An aspect of Gestalt psychology, *Ped. Sem.*, 32, 1925, 691-723; K. KOFFKA, Perception: An introduction to the Gestalt-Theorie, *Psychol. Bull.*, 19, 1922, 531-585.
- [3] Harry HELSON, The psychology of Gestalt, this JOURNAL, 37, 1926, 205, 213 ff.
- [4] KÖHLER points out (op. cit., 692-702) how the perception of things and consequently the perception of shape depends on the qualitative and intensive properties of the visual field.
- [5] Cf. HELSON, op.cit., 205 ff., esp. 213; also H. R. de SILVA, An experimental investigation of the determinants of apparent visual movement, this JOURNAL, 37, 1926, 460-301; esp. the summary.
- [6] Madison BENTLEY, The major categories of psychology, *Psychol. Rev.*, 33, 1926, 87.
- [7] That I take an American instance does not imply that equally flagrant German examples could not have been selected.
- [8] M. F. MOGENSEN and H. B. ENGLISH, The apparent warmth of colors, this JOURNAL, 37, 1926, 427 f.
- [9] Op. cit., 428. Italics are mine.
- [10] As I prefer to call it, for both tactual and visual warmth are apparent warmths.
- [11] Max WERTHEIMER, *Über Gestalttheorie*, 1925.
- [12] will be discussed later
- [13] For such 'analyses' see, e.g. K. KOFFKA on Perception, etc., *Psychol. Bull.*, 19, 1922, 540, 553 ff.; W. KÖHLER, An aspect of Gestalt psychology, *Ped. Sem.*, 32, 1925, 696 ff.
- [14] A word on the meaning of the terms 'Configuration' and 'Gestalt' in German psychology. In our example, visual and tactual warmth of the papers would have been in *configuration* in any case (in such a relative situation and proportion of extent in space or time as can be stated in geometrical terms, such as being close together, one surrounded by the other, and the like). But visual and tactual warmth are in a Gestalt only if a greater or lesser mutual modification is possible. This mutual modification that results in a deviation from the 'total' is just the decisive criterion between mere configuration and the union into a real psychical Gestalt - as MOGENSEN and ENGLISH did correctly suppose but did not adequately apply to their experimental conditions.