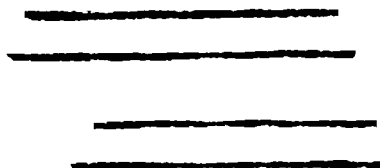


**THE GESTALT THEORY
AND THE PROBLEM OF
CONFIGURATION**



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THE GESTALT THEORY AND
THE PROBLEM OF
CONFIGURATION



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**THE GESTALT THEORY AND
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BRUNO PETERMANN



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INTRODUCTION

THE PROBLEM OF CONFIGURATION AND THE GESTALT THEORY

§ I. *Contemporary psychology and the problem of configuration. Purpose of the present investigation*

Psychology at the present time finds itself in a state of the most widespread conflict over its principles.

During the course of the past decade and a half the conceptions of the problems to be dealt with by psychology, and consequently of its scientific tasks, have changed so much, that one could, and still can, speak of a crisis in psychological research.

The conflict of opinions in psychology has probably never before been as vigorous as it is now. When one considers the individual standpoints at which different investigators arrive in their systematic expositions, one might in actual fact be misled to the conclusion that psychology as a science—in the sense of a system of established knowledge—has no existence. At every turn one opinion stands opposed to another opinion, one statement to another statement, and principle to principle.

Nowhere is this discord within psychology so distinctly evident as in the prominent controversy now current concerning the problem of gestalt¹; but on the other hand, nothing reveals more clearly the circumstances out of which such discord was bound to emerge in the present stage of psychology. Here it appears quite definitely as the expression of a decisive phase in its evolution, which every young science has to pass through at one time or another. It signifies nothing less than the endeavour of psychology "to come to itself", than the struggle to achieve a fundamental orientation which would be adequate to the peculiar nature of psychological data, and which would do justice to the specific methodological and theoretical peculiarity of this field of scientific research.

¹ [We propose to use the term "gestalt" throughout the sequel in preference to "configuration", since it has by now gained universal currency.—Trans.]

The beginnings of the gestalt controversy are, as a matter of fact, still concerned with nothing further than questions of detail. Mach in 1861, G. E. Müller in 1890, Husserl in 1891, von Ehrenfels in 1898 (even in so far as they take their stand, as a matter of course, independently of actual psychological work and more upon logical grounds) still have as their essential objective the further extension of our knowledge of the phenomena. Even if, as with von Ehrenfels, this phenomenological analysis might result in emphasis upon the singularity and irreducibility of the "gestalt" facts, the cardinal significance of this with regard to the systematic conceptions of the psychology of the time as yet receives no attention. The same is true even of the delicate experimental researches of Schumann in 1898, where for the first time a more thorough enquiry into certain fundamental manifestations of the gestalt problem is systematically carried out by means of careful experiments; or even of the first precisely set out theories, the "Production" theory (cf. e.g. Benussi), or the "Coherence" theory (G. E. Müller).

In its subsequent development, however, a narrowing down of the gestalt problem to questions about underlying principles ensues.

The most far-reaching claims in this direction are made by the school of Wertheimer, Koffka, and Köhler; to them *the word "gestalt" has become the symbol for a basic reorientation*. So much so, that they put forward their theory as a fundamentally "new psychology", in radical opposition to all other work which has been done in psychology.

Nevertheless, the school of gestalt theory cannot justly claim to have taken the sole, or even the first, step towards an examination of principles. In fact those very principles which are characteristic for the "Total Situation" of to-day had already been emphasized by others independently of the gestalt theory.

In this matter, for one thing, a progressive development which proceeds in succession to von Ehrenfels, through Cornelius (and Lipps) with the clarification of the concept of *Gestalt-quality*, or alternatively *Complex-quality*, up to F. Krueger and H. Volkelt, is worthy of note. Furthermore, the position which Goetz Martius had in any case

reached on the basis of his own researches and in the course of reviewing the singularity, from the point of view of scientific theory, of more recent psychological research—a position which he formulated definitively in 1912 in the demand for an “analytical” psychological discipline—is of decisive importance.

Krueger was the first to demonstrate effectually by means of concrete experimental work (1905-6) the “wholeness” characteristic of psychic phenomena; and Volkelt, in 1912, following Krueger’s formulations, published the first clear and precisely expressed description, based on principles, of the concept of “Complex-quality”, as revised in accordance with the orientation towards “wholeness”.

Martius’ relation to these problems is not generally known. It was he, in particular, who already quite definitely propounded that line of enquiry in which the probing for ultimates has since become established; and to this latter the current gestalt controversy owes its intrinsic significance. He did this with such exactness and perspicuity, that Jaensch could rightly say that no one had anticipated so early and so thoroughly as Martius the direction of development along which psychology has in the interim moved.

Goetz Martius did not subordinate his psychology to the gestalt problem in the restricted sense. He developed his basic conceptions in much more general studies, orientated by a specific method, viz. in coming to terms with the principles of Wundtian psychology.

Like Krueger, he designated Wundt’s an atomistic-synthetic psychology, and demonstrated the inadequacy of the methods borrowed from the natural sciences which he thus characterized. And while calling upon psychology to free itself from them he, in 1912 already, formulated in principle, at least, the *central point of the present gestalt controversy*, viz. the cleavage between the atomistic standpoint of the refuted theory and the characteristic closure, “wholeness,” which the phenomena of form-perception manifest.

The “atomistic” psychology, characteristically dependent as it was upon the natural sciences for its method of thinking, tried to conceive the reality of psychic life as built up of Sensations and Feelings, of conscious elements,

and set itself the task of carrying through a construction of this sort on *the basis of a study of these very elements with reference to their elementary properties and the laws of their synthesis.*

This old psychology was, of course, aware of the issue at stake in this cleavage; but the way in which a theory thus orientated can cope with such a problem, in terms of its own assumptions only, proves fallible upon critical assessment. The great problem as to how it is possible for a whole to arise out of the elements—that determinate unitariness which distinguishes every individual psychical experience as well as the continuity of experience in its entirety—this problem lies completely outside the scheme of thinking of that psychology. The conceptual equipment provided by the original tenets of this system is in any case deficient in this regard. So when one finds the gaps being closed by simply introducing new special principles, principles of Creative Synthesis, of Creative Resultants, etc., in order to explain the facts in question, one detects, in this itself, the expression of its incompetence really to solve the problem on the basis of its actual system of thought.

While Martius was thus reviewing this state of affairs, he put forward the very point in reference to which the problem of configuration at first quite specially posed, as its experimental and conceptual clarification advanced, was bound of itself to lead up to questions of principles—the point from which the problem of configuration in fact derives its basic significance.

Undoubtedly, the elucidation of fundamental issues is essentially involved in the present-day gestalt controversy—issues which concern psychology in all its lines of enquiry. Each of these issues leads to a different way of viewing the problems, and to a correspondingly different solution of them; and just in this fashion does that multiplicity and discord within psychology of which we spoke at the outset come into being.

There is only one proper way of surmounting these difficulties, under the circumstances. The more we insist that just in this very problem our concern is, at the present moment, in fact not so much with detailed psychological knowledge, but rather with the ultimate tenets of psychology itself, the sooner will that clarification of the

field of enquiry, which is so necessary for the restoration of unity within the detailed work, present itself. It is not so much the multiplication and accumulation of factual data which can lead us any further at the moment. Rather, in the present total confusion of basic concepts a far better prospect of success offers itself in the endeavour to submit the already available material, and the valuations which have been attached to it in its theoretical bearings, to a comprehensive review and elucidation. In this way, the bases of thinking and the standpoints in research which find expression in those currents, can be put to the test as to their conclusiveness and as to their tenability, methodologically and in respect of scientific theory. In this way, through a critically evaluating revision, we may arrive at secure premisses.

With this view, the present enquiry selects in particular, from the great complex of issues outlined, that theoretical solution of the gestalt problem which considers itself the most radical. An attempt is made to break the ground for a critical clarification of the gestalt problem by means of coming to terms with the "Gestalt Theory" in the narrower sense of the word, as it was developed by Wertheimer, Koffka, and Köhler.

Our reasons for particularly choosing the Wertheimer-Koffka-Köhler theory are several. Even the external effects which have accompanied the advent of this theory could decide one upon this. Through it, undoubtedly, the gestalt problem has become so urgent, that at the present time it has come to be the main topic of work in the laboratories, as well as of discussion at congresses.

Furthermore, there can be no doubt that this does represent the most radical attempt to combine the theoretical moments which inhere in the problems of gestalt into an integral system, on the basis of a quite characteristic orientation of principles. This arouses the expectation that here—as with every radical attempt at resolving newly perceived issues in research—the peculiarities of the problem might possibly, through a critical consideration, emerge with special force.

Thirdly, going by the impression one is bound to gain from the writings of the school of gestalt theory, the theoretical apparatus of this theory seems by now to be so far fixed in its outlines that one may hardly expect

any further extension of it. For we have here—as will appear from a more thorough analysis—a body of knowledge, rounded off, and rooted in certain uniform tenets, which seems wide enough to embrace the whole of psychology; and one the principles of which are, on the other hand, in their coherence so constituted as not to extend beyond their own framework.

Hence it seems possible and worth while to make an attempt at a comprehensive critical point of view directed primarily towards this theory, so as to evaluate and analyze, in respect to its scientific and theoretical structure, at least one of the paths which are being trodden for the sake of settling the conflict of principles in psychology.

BOOK ONE

THE CONCEPTUAL CONSTITUTION OF THE GESTALT THEORY, DEVELOPED IN ITS GENETIC CONTINUITY

Before we critically join issue with the system of the gestalt theory, we shall have to prefix an account of its conceptual constitution, developed in detail. For there are no works available by the representatives of the gestalt theory themselves, which give a satisfactory construction of the whole system, set forth with systematic completeness, with absolute definiteness of thought, and with clear explication of the internal connections.¹

The task of *expounding*, in this sense, the content of the gestalt theory is, however, made difficult in a peculiar fashion. It becomes complicated through the fact that an actual development, an actual shifting of standpoints has to be established within the literature of the gestalt theory.

Indeed, throughout the works of the Wertheimer-Koffka-Köhler school the beginning of the "new psychology" is again and again assigned to the year 1912. In fact, they explicitly declare that in the formulations which Wertheimer submitted in that first work of his, *Über das Sehen von Bewegungen*, the essentials in the thinking of the new psychology were already formulated with entire definiteness; and that all that has followed has, at bottom, in no way proceeded beyond the framework of what was given in 1912, as regards principles. However, when one endeavours to reach an understanding with all that has been published since that time from amongst the ranks of those who acknowledge adherence to the gestalt theory, with the aim of establishing and elaborating this theory, one will soon, nevertheless, have to admit to oneself that it by no means represents

¹ Even the latest account by Koffka, in Dessoir's *Lehrbuch der Philosophie*, which suggests itself most readily here, cannot satisfy these conditions.

a permanent body of thought that has remained essentially unaltered and uniform. The literature of the gestalt theory is by no means *homogeneous in its thought*.

Moreover, it cannot be maintained either that in any quite definite place—relatively independent of the previous discussions—the finally conclusive conceptions are to be discovered determinately stated, so that there would be a definitive form upon which, as the most forcible of available formulations, our enquiry could be based. Much rather, the special points in its thinking, which characteristically distinguish the later from the earlier parts, are, in fact, only to be understood in regard to their peculiar significance within the theory, when they are considered *in connection with the historical whole*.

In consequence, the manner of presenting the gestalt theory appropriate for us—in so far as it is planned with an eye to a critical scrutiny—is *the genetic one*. In accordance with this we develop the main conceptions of the theory by following out the process of its internal development, as it emerges in the publications.

Here the singular nature of this development immediately leads to a further peculiarity in our treatment.

We must, it is true, hold to the principle that in an *empirical science* such as psychology indubitably ought to be, the main stress should be placed upon the elaboration of the empirical groundwork and upon the promotion of an understanding of the conceptual generalizations which can be directly derived from the empirical work. Nevertheless, in our genetic study it will be just the doctrinal part which we shall place in the foreground. We shall attempt to build up the contents and the progress of thought from one stage of the theory to the next in as clear-cut a manner as possible. For the way the gestalt theory has developed forces such a *genetic consideration of concepts* upon us, instead of a treatment empirically orientated. We are only adapting ourselves to the special nature of our material when we thus here, in the expository section (and so also later, in the critical part especially) give the *doctrinal content of the theory* the central position.

When we examine the entire literature of the gestalt theory from this point of view, a natural articulation of the material reveals itself to us.

The first writings can merely be regarded, with reference to what is to-day comprehended under the rubric of the "new psychology", as preliminary steps.¹

Wertheimer's notion of the ϕ -function lies at the basis of these; but this as we shall very soon show, does not yet deserve to be entitled an expression of the actual gestalt theory's way of thinking.

In a work of Koffka's, 1914, a reorientation of *principles* first comes to clear expression.

The theoretical movement thus inaugurated now proceeds to show transformations, in themselves gradual, but very characteristic. It advances in two ways, which are isolated from each other.

The impulse which found expression in 1914 in Koffka's work was concerned essentially with *formal* moments basic to the theoretical standpoint. The work of the succeeding years, until about 1922, serves to give a *material shape* to the formal methods of thinking which had thus been achieved, inasmuch as the interpretation of known facts—and indeed, even the advancing experimental research as well—is gradually *becoming ever more definitely centred upon the gestalt problem itself*, more especially in the study of perception.²

Side by side with these, other efforts occur which, adhering to Wertheimer's basic propositions, have as their object the achievement of *physiological theories*. Such efforts definitively find original expression in the indubitably ambitious study of Köhler, *Über physische Gestalten in Ruhe und im stationären Zustand* (1920). This—frankly emancipated, in its line of approach, from the original endeavour of Wertheimer—for the first time *presents a physiological superstructure really adequate to the formal orientation of 1914*; and this, at the same time, within the framework of that great epistemological enlargement which permits the scope of the gestalt theory to extend beyond the psycho-physical and into the sphere of the physical.

Both lines of thought—they were already constantly intercrossing, while in process of development—eventually merge (this has, of course, occasionally been

¹ Wertheimer, 1912; Köhler, 1913; Koffka, 1913.

² As this receives a conclusive formulation of a sort in Koffka's "Perception", 1922.

accomplished before, as e.g. by Köhler in 1920) in the last step in its thinking which is still wanting for the construction of a finished gestalt theory. *The notion of gestalt becomes a genuine "principle for a system"*, when the point is reached where *characteristic and specific "Gestalt laws"* are erected (Wertheimer, 1923; Köhler 1920; Koffka 1922).

Thus there emerges the *final form* of the gestalt theory, as this has received a more or less conclusive exposition as the "new psychology" by Wertheimer in 1925 in his Kant lecture, as well as by Koffka in his textbook account. We shall pursue this line in more exact detail, with the object of grasping as adequately as possible the content of the theory.¹

CHAPTER I

THE THEORY OF THE ϕ -PROCESS—SIMPLY A PRELIMINARY STEP TO THE ACTUAL GESTALT THEORY

We must commence our study with Wertheimer's work of 1912, to which the inception of the development of the gestalt theory's thinking is traced. Through this work, *Über das Sehen von Bewegungen*, there runs in a characteristic fashion a duality of problems, side by side. The first, the *theory of the seeing of movement*, which, in consonance with his theme, occupies the central place in the work, is followed to a certain degree as a special matter, by the consideration of that theoretical problem which actually concerns us here, *the theory of the seeing of gestalt*. Correspondingly, we shall, to begin with, develop the various crucial points which are linked together in the theory of the seeing of movement, in Wertheimer's work.

¹ We thus by no means, be it noted, intend to give anything in the way of a complete *history of the conceptions propounded in regard to the gestalt problem in general*, or even to the particular theory we are concerned with. To that end, cf. e.g. Krueger, *Neue Psychol. Stud.* I, Introduction, 1926.

§ 2. *The seeing of movement: The thesis of the sensation-equivalence of the seeing of movement, and the theory of the directed ϕ -process*

The central point in Wertheimer's treatment of the problem of movement is to be found in his definition of *the general character of the experiences of movement*, which forms the basis, from the phenomenological side, for Wertheimer's further ideas.

This is summarized in a sentence which we set down here as the *thesis of the sensation-equivalence of the experience of movement*: "When two optical stimuli succeed each other, then, within a certain range of the speed of sequence (viz. in the range of the so-called Optimal Interval) the experience of uniform movement is bound to them in just as *ordered* and (*physically*) *immediate* a manner, as a corresponding sensation to the action of a single stimulus." (Wertheimer, 1912, p. 136.)

The equivalence of the experience of movement to the sensory process, which is expressed in this sentence, appears more closely defined in two directions: According to the formulation of the sentence, it consists, in the first place, in the *ordered*, i.e. relatively *unequivocal determination by the stimulus*, in exactly the sense in which this was always postulated in the theory of sensation (in accordance with the formula, "the stimulus decides the sensation"); and secondly, it is defined by the *denial* of any *psychical mediation* of whatever nature—i.e. in a positive way, by the assumption of an *immediate co-ordination between phenomenon and physiological correlate*.

In these two conceptions, the notion of the unequivocal determination by the stimulus and the notion of the immediacy of the physiological correlate, the substance of the thesis of the sensation-equivalence of the seeing of movement is fully comprised. And in fact, these two definitions are interdependent in a quite specific way: The idea of the immediacy of the physiological correlate is a special form of the idea of the unequivocal determination by the stimulus, but does not as a matter of course necessarily involve it; while conversely, from the unequivocal determination by the stimulus would follow the immediacy of the physiological correlate.

In this connection the notion of the determination by

the stimulus stands in the forefront for Wertheimer. Or, to put it otherwise, the finer logical distinctions we have just raised play no part in 1912. This appears quite clearly from the sentence quoted above, as well as from the whole tendency of Wertheimer's work, its general orientation in terms of correspondence to stimulus.¹

This is confirmed, too, by the way in which, starting with the generalized formal presentation of the framework for the formation of concepts set out in the above fundamental statement, the development of the ideas proceeds; how the concrete, detailed statements which constitute the positive contribution of the "Wertheimer theory" of 1912, the statements toward the *closer definition of the required physiological correlate*, are achieved.

Formally the process of thought is of the nature of a simple inference by analogy. "When a sensation comes into existence as a result of the action of a single "stimulus", this occurs because of a mode of excitation within the sensorium corresponding to, and characteristic of, the sensation. However, according to the thesis mentioned above, the experienced phenomenon of movement depends in quite corresponding fashion upon the stimulus-sequence, comes into existence on account of it; so, quite correspondingly, an excitation is assigned to this occurrence of the impression of movement, which is specifically co-ordinated with, and peculiar to, the experience of movement.

This *requirement of an unequivocal physiological process co-ordinated with, and characteristic of, the experience of movement, the ϕ -phenomenon*, was already in its fundamentals doctrinally embodied in the thesis of the equivalence to sensation. It finds its factual realization in Wertheimer's construction of a somatic process of this nature on the basis of the objective stimulus-conditions present in his experiments.

The theorem for the construction of this so-called *ϕ -process* reads as follows: "Given, are certain conditions of interdependence (by Thesis I, regular and unequivocal) between variations of stimulus-complexes; required, is

¹ Wertheimer's standpoint of 1912, as we are reconstructing it here, finds clear and cogent expression in Koffka's (1913) "Introduction" to the *Beiträge zur Psychologie des Gestalt und Bewegungssehens*, which he issued in continuation of Wertheimer's investigation.

an occurrence in the brain, so constituted that these regular facts should be inferrable from it." ¹

The solution to this problem is achieved by means of two postulates about somatic functioning in general, namely, the postulate of the action of the field, and the postulate of the short circuit.

The assumption is that the somatic processes in the nervous apparatus *do not* consist in "single excitations" which are exactly circumscribed, and spatio-temporally directly co-ordinated with the place and duration of the action of the stimuli in a *detailed fashion, but that*

(1) To every *single stimulus*, besides the geometrically consequent direct excitation, there corresponds in addition a *field-action*, which proceeds from that basic excitation and spreads over the surrounding parts, at the same time waxing and waning as a temporal process; and it is assumed that

(2) When *two stimuli* at two places (*a* and *b*) *succeed each other*, because of this, something novel in nature appears, which takes form as a *resultant* based on the field-excitations, "a kind of physiological short-circuit from *a* to *b*."

This physiological concatenation in the seeing of movement is expressed more precisely as follows:—

One may conceive that "in the space between the two places (*a* and *b*) a specific transition of excitation is occurring. If the intensity of the field-action of *a*, for example, has reached the maximum point of its curve of development, and if now field-action arises from *b*, then excitation will flow over—a physiologically specific event the direction of which will be determined by the fact that *a*, and the field-action about *a*, is first present there".

Thus, the fact of the spatially and temporally interposed " ϕ -phenomenon" "between" the sensations *a* and *b* (Wertheimer's schema *a* ϕ *b*) is physiologically represented by the "*between*" *process*; and the fact of the sequence-condition in the movement-transition from *a* to *b*, finds expression in the assertion that the "*between*" process arrived at on the basis of the above-mentioned postulates is a "*directed*" one. The somatic basis of the ϕ -phenomenon, the " ϕ -function", is affirmed to be a *directed physiological short-circuit*.

¹ Koffka, 1919, p. 257.

§ 3. *The seeing of "gestalt": Its derivation from the seeing of movement, and the theory of the simultaneous ϕ -process*

The theory of the "physiological short-circuit" is concerned, to begin with, only with manifestations of the *experience of movement*. However, further characteristic experimental findings lead beyond this to an analogous treatment of the seeing of *simultaneous gestalten*.

According to Wertheimer's findings, it is possible, under the very same conditions of stimulation and merely by means of varying the speed of succession, to bring about the appearance of the new impression of a stationary identical object, of a simultaneous configuration in fact, instead of the impression of movement: The "optimum interval" changes into the "simultaneous interval".

These observations upon the relation between optimum interval and simultaneous interval¹ find theoretical application in the further course of the train of reasoning, in a manner which we reduce to a definite formula as the *thesis of the equivalence of seeing gestalt and seeing movement*.

The seen *gestalt* of the simultaneous interval is the psychical correlate of the same physiological processes which serve to explain the *movement* seen in the successive interval, and indeed in such a way that the peculiar nature of this simultaneous impression must be deducible in a direct manner from the purely quantitative changes in the stimulus event.

If this thesis is applied to the physiological schema offered, there emerges the starting-point of Wertheimer's line of thought towards his concrete *theory of the perception of configuration*.

If the interval between the stimuli becomes smaller and smaller with reference to the stimuli, then, of course, the field-actions and short circuit processes accompanying them would by no means entirely vanish as a result of this. They now, in fact, appear as a simple sort of "physiological connectedness, indeed, as a *unitary total process resulting, as a whole, out of the single excitations*",² upon the elimination of the time factor.

¹ Which, we may note, Linke had already (1912) published, though indeed in a different terminology.

² Koffka, 1913, p. 288. The meaning of this conception can perhaps be made clear by comparing it with the more familiar concept of an interference process in physics.

Thus arises the concept of the *simultaneous ϕ -process*, upon which Wertheimer's *gestalt* theory of 1912 takes its stand, a concept which, of course, subsumes all the defining statements which we were able to set forth when we discussed the *successive ϕ -process*.

When we recapitulate these defining statements, the following emerge as established :—

(1) The fundamental idea of Wertheimer's *gestalt* theory of 1912 is that of the unequivocal determination of the *gestalt* experience by the stimulus—corresponding exactly to the relation “stimulus—sensation” at that time still held by Wertheimer to be thoroughly unequivocal.

(2) The physiological process “ ϕ ”, which can in accordance with this be deduced from the stimulus conditions, and which in addition expresses the peculiar character of the *gestalt* experience, is developed (*vide* accompanying diagram) :—

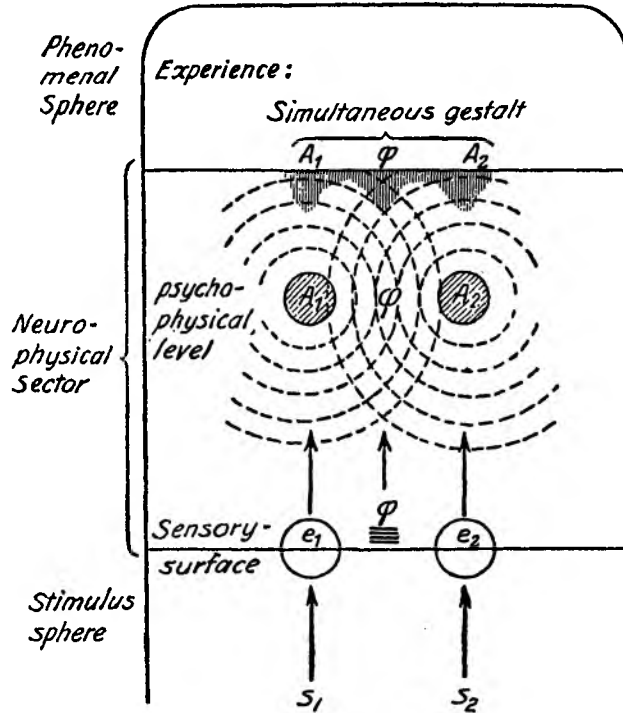


Fig. 1.

(a) On the foundation of the *individual excitations* e_1e_2 evoked by the stimuli S_1S_2 .

(b) Through the occurrence of a peculiar *concatenation of action* assumed "between" these, which

(a) "Results from" the single excitations—*being made possible as a concatenation* by the occurrence of the *field-actions* of those single excitations in a common *intermediate area* (cross-process)—and which

(β) is specifically characterized as the *short circuit process*.

§ 4. *The principles inherent in Wertheimer's contentions of 1912, and the actual gestalt theory*

In accordance with our thesis that Wertheimer's theory of 1912 is to be regarded merely as a preliminary step to the later actual gestalt theory, it becomes necessary, in the first place, to enquire whether in those formulations a far-reaching general transformation of thinking, in contrast to the then customary ways of thinking, is really given positive expression. The question is whether it emerges definitely and clearly therefrom that the formulations concerned ought to be looked upon as the expression of a "fundamental reorientation", or whether such wide claims cannot be admitted within the framework of what was then at hand.

To this end it is necessary to analyze the conceptual material of the Wertheimer theory presented in the foregoing exposition, with reference to the *principles inherent in it*.

In this connection it will, of course, not serve us sufficiently to keep to the words themselves, but the sense of these words can only be deemed to be satisfactorily defined, when we carefully take into consideration the context of thought in which they appear.¹

But when we take our stand upon such a criterion, the frequently advanced claim (especially by Koffka) that here already, in 1912, a decisive turning point is revealed, appears to be by no means incontestable. The basis

¹ Thus we lay down a standard such as Wertheimer himself, in subsequent controversy, emphasizes as essential, when he says, in 1922: One ought to examine not so much the "general doctrines", but how a person uses them; how the argument is carried on in concrete problems, and what concrete positive significance lies behind the terms applied (Wertheimer, p. 51, 1922).

provided by Wertheimer's work for this claim lies in the term "total process" which also occurs instead of "simultaneous ϕ -process".

But what does this term represent in the thought context of Wertheimer's work?

When we analyze how the genesis of this "total process" is conceived, an unequivocal discovery emerges.

These "total processes" are as a matter of fact not considered, as their nature requires, in themselves, in detachment from the elementalist standpoint; they are derived from the single excitations which lie behind them, from which they *result* by the "short circuiting" of the "field-actions".

Hence, the criterion which the later gestalt theory is wont to proclaim as decisive for its new orientation, namely its emancipation from the elementalist standpoint, is by no means satisfied by these concepts of Wertheimer, in 1912.

In fact, Wertheimer, while explicitly distinguishing between the actual "reception of stimulus" and the "unitary transition process" arising besides this, states that the "specific cross-functions" are only "built up (!) in a characteristic fashion upon the foundation of the single excitations (!)". Here the description of the process as "unitary" clearly has only the significance of an elucidatory epithet for just that remarkable "transition of excitation"—in contrast to the "directedness" in the case of the seeing of movement.

This interpretation of Wertheimer's formulations finds welcome support in the fact that twenty years before Wertheimer exactly the same trends of thought and formulations already occur with Exner—in his case, however, with explicit reference to the true logical import of such views. Exner, writing in 1894, says (p. 201):—

"The total impression produced by a picture which flashes across the retina is compounded of the excitations of innumerable and functionally dissimilar fibres. That we, in spite of this, receive a unitary impression, in which the partial sensations are wont to go unrecognized, is due to what I would call the principle of *Central Confluence*."

A number of excitations passing up to the cortex "flow together" to a unity whose constituents we can

separate only with uncertainty and after practice, or even not at all. A "total impression" then results; and this for the reason that a sum of excitations in the cortex, involving a variety of paths, acts like a unitary "excitation process".

Here then Wertheimer's "total process" is anticipated in the "unitary excitation process" of Exner, and his principle of the "short circuit" in the "confluence principle". Their methods of arriving at these concepts are in no way different, hardly even in terminology.

At the same time, however, Exner makes a further statement as to the conceptual import of this singular "unitary excitation process". He explicitly affirms that this unitary excitation process—corresponding to the principle of confluence which is fundamental to his deductions—in spite of its "unitariness" is still "for all that *determined* in its character by the *single* excitations of the fibres".

Exner thus explicitly draws attention, with apt emphasis on the special assumptions underlying his formulation of concepts, to the "synthetic character" of these concepts. It is incomprehensible, therefore, how anyone in complete agreement with their conceptual structure, should be able to extract anything so different from Wertheimer's conceptions.

Originally, indeed, nothing more than this was read into Wertheimer's conclusions of 1912, as appears plainly from the account Koffka gave of them, in the "Introduction" to *Beiträge zur Psychologie des Sehens von Bewegungen*, which he issued in continuation of Wertheimer's research.

In this exposition Koffka attempts to formulate the upshot of Wertheimer's research programmatically. His aim is to elaborate the particular reading of the problem which would define the scope of the succeeding individual contributions. It is, accordingly, entirely designed to present what the author, orientating himself concretely by Wertheimer (and surely in agreement with Wertheimer's own interpretation) at that time considered to be essential in that investigation.

From Koffka's exposition this, at any rate, is plainly evident: That at that time (1913) the material content of the physiological theory propounded was regarded as the *essential* point, and not, perchance, any more

far-reaching, more general conception of principles as to an orientation in formulating psychological theories in general.

This seems to demonstrate effectually that the achievement of the actual gestalt-theoretical orientation can certainly not be wholly referred back to Wertheimer's work of 1912. This is borne out when the relation of the Wertheimer gestalt theory of 1912 to the treatment of the gestalt problem before then is examined.

One observes immediately that, conceptually, Wertheimer's point of view does not, in its general purport—that is, setting aside its physiological vestment—in any way directly transcend the standpoint which von Ehrenfels, in *his* attempt at solving it, had already taken up with the first and more rigorous formulation of the gestalt problem. The basic notion in Ehrenfels' interpretation, the hypothesis of special "gestalt qualities" which accrue to the "sensations", has been entirely retained. In fact it is perhaps put forward in a more substantial manner; for one finds that with Wertheimer these new qualities have been given their own correlate on the physiological side, in the form of definite "cross-functions" and "short circuit processes" corresponding to them.

Really this is nothing but a translation of Ehrenfels' line of thought into physiological terms with this single peculiarity: that—in virtue of the facilities for more detailed derivation afforded by the physiological mechanism hypothetically introduced—this additional total process itself permits of being built up, in a definite way, "out of the single excitations."¹

On the whole then, one can only conclude that at that time there existed very few definite statements going towards the establishment of the present gestalt-theoretical orientation. To resume them positively, once more: They would seem to be fully comprehended in the fundamental

¹ In accordance with this, the polemical alignment, as it was at that time vigorously adopted, in adherence to Wertheimer, e.g. in Koffka's *Beiträge*, towards Benussi's theory (derived in the last resort from von Ehrenfels through Meinong), refers only to one definite aspect of the scheme of thought. This was the presentation of von Ehrenfels' conceptions in the form of the distinction between founding and founded contents, which, as exemplar of a so-called "psychological theory", naturally must conflict with the notion of an unmediated physiological correlate.

tendency towards a *physiological theory*, which is already avowed in the theorem of sensation-equivalence, and in the thesis of the *correspondence of the seeing of gestalt and the seeing of movement*. Moreover—and this, too, is not inessential for appraising the situation of that time—in the investigation as a whole, the gestalt problem does not by any means yet become particularly prominent.

In fact, as far as the actual conceptual scope of the theoretical construction drawn up for it is concerned, it is by no means even clearly enough posed as a problem. Ultimately, only the theory of the optimal interval is fully worked out physiologically. As for the simultaneous interval, the gestalt phenomenon, the question is really obscured. The singularity of the phenomenal experience present in this case, the unitariness, is believed to be indicated in that a "total process" is referred to on the physiological side; and this concept is thought to include, somehow, an analogous definition, which is supposed to correspond directly to that phenomenal unitariness (see p. 60 below).

Before these circumstances are cleared up, there is still a long way to go, and the goal is only gradually reached—through altogether different considerations, freed from the bondage of the physiological theory, and in the framework of a revision of principles arising out of the general doctrine of perception.

CHAPTER II

THE ACHIEVEMENT OF THE ORIENTATION IN THE PROBLEM, WHICH IS CHARACTERISTIC OF THE ACTUAL "GESTALT THEORY"

I. THE PROPOSAL TO TRANSFORM THE STANDPOINT OF PSYCHOLOGICAL THINKING IN ITS PRINCIPLES

The proposal for a revision of principles, in the direction of the modern gestalt-theoretical way of regarding the problems of psychology, definitely occurs for the first time with Koffka, 1914.

Indeed, Köhler had already, in 1913, prepared the way for this noteworthy line of thought—through a keen

critique of certain habits of thinking of the refuted psychological theory, in his treatise *Über unbemerkte Empfindungen und Urteilstauschungen*. In 1914, however, in Koffka's "Report on Research" (*Forschungsbericht*) "Psychologie der Wahrnehmung," there is added a definite indication of positive points of view in regard to a reorientation.

In connection with this, Köhler's submissions are to be valued merely as a critical preliminary, but, as such, they are of great significance; the more so since they are still made use of in the same spirit, e.g. in Koffka's exposition of 1925.

§ 5. *The first critical considerations opposing the "old" psychology: Köhler, 1913*

Köhler's criticism of the refuted way of thinking in psychology makes a central issue of impugning a basic assumption which serves, to a certain extent, as a "limiting-law" in the traditional psychology—the so-called *Constancy Hypothesis*. This is the notion of the "rigorous determination of our sensations by the stimulus". To compress it into a brief statement, it affirms that to a definite stimulus there corresponds one and only one quite definite sensation, which is always the same, and remains identical throughout different instances, as well as under varying circumstances, in accordance with the theorem: "The stimulus decides what is given in sensation."

The aim of Köhler's discussion is to demonstrate the untenability of this point of view.

Köhler orientates his animadversions by the view that this doctrine is irrefutable as a principle, but at the same time, naturally, also unprovable¹ as a principle.

He accordingly sees only a single standpoint from which a fruitful discussion is possible in this connection: The doctrine of sensation must be appraised *according to its "applicability in scientific technique"*—and, moreover, according to its *characteristic and unavoidable auxiliary assumptions*.

¹ In this he follows Stumpf, who had already previously, in his attempt to defend the sensation theory, taken up the standpoint that it should rank as a *working hypothesis*—and certainly of immeasurable value as such, according to Stumpf.

Köhler endeavours, very acutely, to dissect these auxiliary assumptions out. He comes to the following conclusions, after an analysis of what may be called the "*meaning theory*":—

"(1) Besides the sensations about which we make statements, there are also sensations for which this is in principle impossible, which are on an entirely equal footing with the others as regards their reality, but which remain 'unnoticed'.

"(2) Even when we are concerned with observed sensations, these are not the direct point of departure of the investigation, but really only the judgment uttered about them; and this (the effect of a special 'meaning' factor) has to be strictly distinguished from the sensations. This judgment may be false, may involve an illusion as to the true character of the sensation.

"(3) Since in many cases nothing can be established either in regard to a judgment, or in regard to a sensation to which it might refer, this leads to the amplification that there are also 'unconscious judgments' and also judgments of this sort about 'unconscious sensations'."¹

The consequence to which a test of the applicability of these assumptions in scientific technique leads, is very definitely of a negative order:—

"The two auxiliary assumptions of the unobserved sensations and unobserved illusions of judgment prove, from the nature of the matter, to be general and also irrefutable in the majority of concrete instances. This is the first reason for which these assumptions do not commend themselves from the point of view of scientific technique; and I do not hesitate to say that it is a sort of scientific instinct which seems to forbid me to make assumptions about which nothing can be determinately stated. Secondly, for a particular instance there proves to exist no independent criteria as to when one has to have recourse to these assumptions, and further, when one must admit an observation which represents an exception from the basic hypothesis (that of the rigorous determination of our sensations by the stimulus). This opens the door to arbitrariness. Thirdly, there proves to be an imminent danger that, in virtue of these assumptions, entire groups of phenomena may be debarred from

¹ Quoted from Koffka's account (1914, p. 712).

research, and opportunities for progress thus left unutilized; and finally, it appears that the auxiliary assumptions, in accordance with their nature, undermine our reliance upon observation, and consequently, upon the facts of psychology, and therefore cripple the pleasure in observation, the impulse towards progress."

These are weighty *negative contentions* among which the *demand for fundamental determinability* is pre-eminently germane.

Köhler is not content with this only. He indicates a quite definite remedy, and therefore also enunciates the *positive standpoint he then held* (loc. cit., p. 79). He says:—

"In accordance with the observations, we . . . assume that, in general, in the genesis of sensory data, besides the stimuli and the hitherto known peripheral conditions, an additional *set of factors*, above all of a *central kind*, is of essential importance; that those very simple relationships between stimulus and sensation, which the basic hypothesis sets up as absolute in the highest degree, represent extreme instances, achieved by means of isolation. In these cases, the influence of the stimuli and of the peripheral conditions can be entirely decisive, because the remaining factors, which otherwise have effect upon processes of sensation, either fall away or are invariable, and hence become relatively indifferent as far as these laws are concerned."

(See attached diagram in which I have summarized these ideas.)

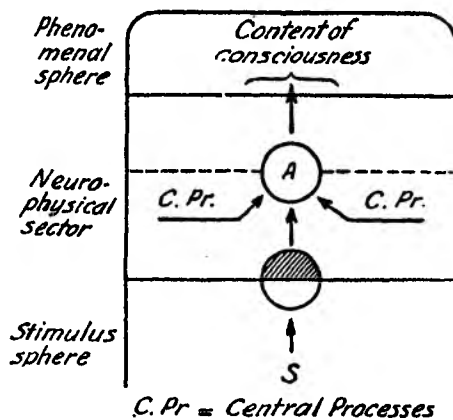


Fig. 2.