

PRINCIPLES OF GESTALT PSYCHOLOGY

by Kurt KOFFKA (1935)

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Chapter 1 reproduced here.

Chapter I

Why Psychology?

AN INTRODUCTORY QUESTION

When I first conceived the plan of writing this book I guessed, though I did not know, how much effort it would cost to carry it out, and what demands it would put on a potential reader. And I doubted, not rhetorically but very honestly and sincerely, whether such labour on the part of the author and the reader was justified. I was not so much troubled by the idea of writing *another* book on psychology in addition to the many books which have appeared during the last ten years, as by the idea of writing a book on *psychology*. Writing a book for publication is a social act. Is one justified in demanding co-operation of society for such an enterprise? What good can society, or a small fraction of it, at best derive from it? I tried to give an answer to this question, and when now, after having completed the book, I return to this first chapter, I find that the answer which then gave me sufficient courage to start on my long journey, has stayed with me to the end. I believed I had found a reason why a book on psychology might do some good. Psychology has split up into so many branches and schools, either ignoring or fighting each other, that even an outsider may have the impression - surely strengthened by the publications. "Psychologies of 1925" and "Psychologies of 1930" - that the plural "psychologies" should be substituted for the singular.

Psychology has been pampered in the United States, where for many years it has enjoyed great popularity, though it seems to me that its fortunes have somewhat ebbed and may be ebbing more; in England, the land of conservative change, it found for a long time as cold a welcome as any other loud and startling innovation, but has gradually gained ground and is, in my belief, still gaining; in Germany, where experimental psychology was born and had at first a period of rapid expansion, a strong reaction set in soon afterwards which very definitely kept psychology "in its place."

I confess that today I feel much less animosity towards the active enemies of psychology - or those of them who are serious and honest - than when I was younger.

The comparison of psychology as it is today with other branches of human knowledge has raised the question in my mind what contribution psychology has made through the very extensive and intensive effort of the men and women who devote their life's work to it.

No student of philosophy need fail to get some inkling of the great and deep problems which have beset the minds of our profoundest thinkers from ancient to modern times; no student of history need remain unaware of the terrific human forces that have been consumed in the making and unmaking of empires and have combined to create the world in which we are living at this

moment; no student of physics need pass his final examination without some insight into the increasing rationalisation of our knowledge of nature nor into the inexorable exactness of experimental methods; and no student of mathematics should leave his courses without having learned what generalised thinking is and what beautiful and powerful results it can achieve. But what can we say of the student of psychology? Must he have learned to understand human nature and human actions better at the end of his course? I am not ready to answer this question in the affirmative. But before I had an answer to the question, what it is that a student of psychology should be able to gain from his general course, what it is, more generally expressed, that psychology can contribute to the imperishable possessions of our race, I did not feel justified in writing a general book on the subjects

FACTS AND THEORIES

Nobody can reproach psychology with having discovered too few facts. A psychologist who knew all the facts that have been brought to light by experimental methods would indeed know much, very much. And such knowledge is today regarded as an aim in its own right. "Find facts, facts, and again facts; when you are sure of your facts try to build theories. But your facts are more important." This slogan expresses the creed of a philosophy which is widely accepted today. And indeed it seems very plausible. On the one side are the objective facts, independent of the scientist who investigates them; on the other are his hypotheses, his theories, pure products of his mind. Naturally we should attribute more value to the former than to the latter. In psychology such a view can claim a particular justification. For this science consisted of a number of simple and comprehensive theories and few scientifically established facts before the beginning of the new era. With the advent of experiment more and more facts were discovered which played havoc with the old theories. Only when psychology determined to become a fact-finding science did it begin to become a real science. From the state in which it knew little and fancied a great deal it has progressed to a state where it knows a lot and fancies little - at least consciously and with a purpose, though unawares it contains more fancy than many psychologists are aware of. To evaluate this progress we have to examine what it means to know much. The Latin adage *multum non multa* distinguishes between two meanings of the word "much." The one which it discards in favour of the other is purely quantitative. According to the latter a person who knows twenty items knows ten times as much as the person who knows only two items. But in another sense the latter person, if he knows those two items in their intrinsic relation, so that they are no longer two but one with two parts, knows a great deal more than the former, if he knows just twenty items in pure aggregation. Although from the point of *multa* this person would be superior, he would be inferior from the point of *multum*.

Now as I look upon the growth of science it seems to me that it began to find itself and thereby entered a new epoch when at the time of the Renaissance it changed from a chase for the *multa* to a search for the *multum*. Since that time science has continually striven to reduce the number of propositions from which all known facts can be derived. In this enterprise it has been more and more successful, and has by its new method also discovered more and more facts which otherwise would never have become known; it has simultaneously discarded as fancy many a piece of knowledge which was taken as fact, and has changed the systematic status of many other facts. It is a "fact" that heavy bodies fall more quickly than light ones, as anyone can test by dropping a pencil and a sheet of paper. But it is a complex, not a simple fact, whereas the simple fact is that all bodies fall with the same velocity in a vacuum. From this scientific fact the everyday fact can be derived but not vice versa. The very concept of fact, therefore, becomes problematical.

One can look at the progress of science as a steady increase in the number of facts known. Then one arrives at a position where much knowledge means knowledge of *multa*. But a very different aspect of scientific progress is also possible: the increasing simplicity - not of course in the sense that it is more and more easy to learn, but in the sense that to him who has mastered it the system of science becomes a more and more cohesive and unitary whole. Or otherwise expressed, science is not comparable to a catalogue in which all facts are listed according to an arbitrary principle, like the books in a library in the alphabetical order of their authors; science is *rational*; the facts - and their order are one and the same; facts without order do not exist; therefore if we know one fact thoroughly we know ever so many more facts from the knowledge of this one fact. From this point of view, much knowledge is knowledge of *multum*, knowledge of the rational system, the interdependence of all facts.

SCIENCE AND THE SCIENCES

Of course science never succeeds in reaching its goal. At any one moment in its history there is a wide gap between its ideal and its accomplishment. The system is never complete, there are always facts, old and newly discovered, which defy the unity of the system. Apparent as this is within the compass of any individual science, it becomes even more manifest when we consider the variety of different sciences. They have all arisen from one common matrix. The first scientific impulse was not directed towards different special groups of topics but was universal. In our present terminology we can say that philosophy is the mother of all sciences.

Progressive specialisation has marked scientific progress, and our science, psychology, was the last to gain her independence. This separation and specialisation was necessary, but it has of necessity worked against the aim of unification of knowledge. If a number of separately established sciences have developed, then 'coherent as each one may be in itself, what is their mutual relation? How can a *multum* arise from that *multa*? That this task must be accomplished follows from the very function of science. I am the last to see the value of science in its practical applications. The explanation of the shift of spectral lines coming from stars millions of light years distant, is in my eyes a much greater triumph of science than the construction of a new bridge with a record span or the transmission of photographs across the ocean. But for all that I do not believe that science can be legitimately regarded as the game of a relatively small number of people who enjoy it and get their livelihood from it. In some sense science cannot be wholly divorced from conduct.

SCIENCE AND CONDUCT

Conduct, of course, is possible without science. Humans carried on in their daily affairs long before the first spark of science had been struck. And today there are millions of people living whose actions are not determined by anything we call science. Science, however, could not but gain an increasing influence on human behaviour. To describe this influence roughly and briefly will throw a new light on science. Exaggerating and schematising the differences, we can say: in the prescientific stage man behaves in a situation as the situation tells him to behave. To primitive man each thing says what it is and what he ought to do with it: a fruit says, "Eat me"; water says, "Drink me"; thunder says, "Fear me," and woman says, "Love me."

This world is limited, but, up to a point, manageable, knowledge is direct and quite unscientific, in many cases perfectly true, but in many others hopelessly wrong. And man slowly discovered the errors in his original world. He learned to distrust what things told him, and gradually he forgot the language of birds and stones. Instead he developed a new activity which he called thinking. And

this new activity brought him great advantages. He could think out the consequences of events and actions and thereby make himself free of past and present. By thinking he created knowledge in the sense of scientific knowledge, knowledge which was no longer a knowledge of individual things, but of universals. Knowledge thereby becomes more and more indirect, and action, to the extent that it loses its direct guidance by the world of things, more and more intellectualised. Moreover, the process of thinking had destroyed the unity of the primitive world. Thought had developed categories or classes, and each class had its own characteristics, modes of behaviour, or laws. Concrete situations which demand decisions and prompt actions do not, however, fall into only one such class. And so action, if it were to be directed by scientific knowledge, had to be subjected to a complex thought process, and often enough such a process failed to give a clear decision. In other words, whereas the world of primitive man had directly determined his conduct, had told him what was good, what bad, the scientific world proved all too often a failure when it came to answering such questions. Reason seemed to reveal truth, but a truth that would give no guidance to conduct; but the demand for such guidance remained and had to be filled. Thus arose eventually the dualism of science and religion, with its various phases of double-truth theory, bitter enmity, and sentimentalisation of science, one as unsatisfactory as the other.

THE DANGER OF SCIENCE

Is it the tragedy of the human race that for every gain it makes it has to pay a price which often seems greater than the gain? Must we pay for science by a disintegration of our life? Must we deny on week-days what we profess on Sundays? As a personal article of faith I believe that there is no such inexorable must. Science, in building rational systems of knowledge, had to select such facts as would most readily submit to such systematisation. This process of selection, in itself of the greatest significance, involves the neglecting or rejecting of a number of facts or aspects. As long as scientists know what they are doing, such procedure is fraught with little danger. But in the triumph over its success science is apt to forget that it has not absorbed all aspects of reality, and to deny the existence of those which it has neglected. Thus, instead of keeping in mind the question which gave rise to all science, "what God is, what we are . . ." it holds up such questions to ridicule, and considers the men and women who persist in asking them as atavistic survivals.

This attitude, whose historical necessity and merit I plainly discern, must be rejected, not because it is inimical to religion, but because it would, if consistently maintained, block the progress of science itself by closing to its advance the gates that lead to the most essential of all questions. In my opinion no gate should be closed to science; by this I do not mean that today's or yesterday's science is capable of answering the fundamental questions, as so many radicals, men of the best motives, seem to think. Instead I believe that science, aware of its incompleteness, should gradually attempt to broaden its base, to include more and more of the facts which it found at first necessary to exclude, and thereby become better and better equipped to answer those questions which mankind will not be denied. As long as science misunderstands its task it will always be in danger of losing its position of independence and integrity. The illegal usurper of a throne will always find illegal pretenders. The denunciation of the intellect which has assumed such tremendous proportions in some parts of our world with such far-reaching consequences, seems to me the outcome of the wrong scientific attitude, although for that reason it is no less wrong itself. I shall revert to this theme in a later chapter (Chapter IX), and shall point out only that science if it follows the path which I have briefly indicated will assume a different face. But I hope that such a science will, slowly but surely, help to re-create that original unity which it had to destroy in order to develop.

A science, therefore, gains in value and significance not by the number of individual facts it collects but by the generality and power of its theories, a conclusion which is the very opposite of the statement from which our discussion started. Such a view, however, does not look down upon facts, for theories are theories of facts and can be tested only by facts, they are not idle speculations of what might be, but *theoriai*, i.e., surveys, intuitions, of what is. Therefore in my presentation of psychology I shall emphasise the theoretical aspect; many facts will be reported, but not as a mere collection, or an exhibition of curious phenomena to be compared to Mme. Tussaud's waxworks, but as facts in a system - as far as it is humanly possible not a pet system of my own, but the system to which they intrinsically belong, i.e., as rationally understandable facts.

SCIENCE AS DISCIPLINE

Such a procedure would, however, be without value if it neglected another aspect of science, so far omitted from our discussion, viz., the greatest possible exactness in the establishment of facts. By its demand for exactness science frees itself from the personal wishes of the scientist. A theory must be demanded by facts; in its turn it demands facts, and if they fail to conform exactly to it, then the theory is either wrong or incomplete. In this sense science is discipline. We cannot do what we want, but must do what the facts demand. The success of science has tended to make us proud and conceited. But such conceit is out of place. He is the greatest master who is the greatest servant. Again and again we experience in the progress of knowledge how apt we are to halt and stumble, again and again we find how little we can make knowledge, how we must give our thoughts time to grow. Therefore the pursuit of knowledge, instead of making us proud and boastful, should make us modest and humble.

FUNCTION OF SCIENCE

To summarise: the acquisition of true knowledge should help us to reintegrate our world which has fallen to pieces; it should teach us the cogency of objective relations, independent of our wishes and prejudices, and it should indicate to us our true position in our world and give us respect and reverence for the things animate and inanimate around us.

SPECIAL FUNCTION OF PSYCHOLOGY

This is true of all sciences. What special claim can psychology make? To teach us humility, what science can do that better than astronomy and astrophysics which deal with times and distances far beyond the scope of our imagination? And what science can discipline us better than pure mathematics with its demands for absolute proofs? Could we then claim that psychology is particularly fitted for the task of integration, and give this as an answer to the question from which - we started? I think we can, for in psychology we are at the point where the three great provinces of our world intersect, the provinces which we call inanimate nature, life, and mind.

NATURE, LIFE, MIND

Psychology deals with the behaviour of living beings. Therefore, as every biological science, it is faced with the problem of the relation between animate and inanimate nature whether it is aware of and concerned with this problem or not. But to the psychologist, one special aspect of behaviour, in ordinary parlance called the mental, assumes paramount importance. This is not the place to discuss consciousness and mind as such. Later chapters will show the use we make of these concepts. But we will not reject at the outset a distinction which permeates our idiomatic

speech as much as our scientific terminology. We all understand what is meant by the proposition that a prize-fighter was knocked out and did not recover consciousness for six minutes. We know that during these fatal six minutes the pugilist did not cease to live, but that he lost one particular aspect of behaviour, Furthermore we know that consciousness in general and each specific conscious function in particular, is closely bound up with processes in our central nervous system. Thus the central nervous system becomes, as it were, the nodal point where mind, life, and inanimate nature converge. We can investigate the chemical constitution of the nervous tissue and will find no component that we have not found in inorganic nature; we can study the function of this tissue and will find that it has all the characteristics of living tissue; and finally there is this relation between the life function of the nervous system and consciousness.

Two Types of Solutions of the Problems Involved in This Relation Rejected.

Anybody who would claim to have found a complete and true solution of our problems would expose himself to the just suspicion of being either an ass or a quack. These problems have occupied the best human minds for thousands of years, and therefore it is more than unlikely that a solution can be found by any, other way than a slow and gradual approach. What I think about the mode of this approach I shall again defer to a later part of the book.

Materialism.

But here I shall reject two types of solutions that have been offered. The first is the solution of crude materialism, which gained great momentum about the middle of the last century and found its most popular expression in a book that around 1900 was a best-seller and is now practically forgotten. I mean Haeckel's *Riddle of the Universe*. I am not sure that the United States are not even now feeling the last ebbing wave of this flood which reached the shores of the New World long after its crest had passed from the Old. This materialistic solution is astonishingly simple. It says: The whole problem is illusory. There are no three kinds of substance or modes of existence, matter, life, and mind; there is only one, and that is matter, composed of blindly whirling atoms which, because of their great numbers and the long time at their disposal, form all sorts of combinations, and among them those we call animals and human beings. Thinking and feeling, why, they are just movements of atoms. Interfere with the matter of the brain and see what remains of consciousness. Although I have expressed this view very crudely, I believe that I have expressed it adequately, particularly when I add that this view is not only a scientific conviction, but as well, or even more so, a creed and a wish. It is the revolt of a generation that saw a strongly entrenched church hold on to dogmas which science, growing up like a young giant, had crushed - a generation that, by the successful applications of science to technical problems, had become vainglorious and had lost that feeling of awe which should accompany all true knowledge. just as the victorious barbarians, be they vandals or Calvinists, destroyed thoroughly and passionately the creations most dear to their vanquished enemies, so our materialists developed a hatred of those parts of human philosophy that pointed beyond the pale of their narrow conceptions. To be called a philosopher was an insult, and to be a believer was to belong among the untouchables.

Now I bear no grudge against these men, much as I see their narrow-mindedness and their smallness of stature. For I believe that *malgré tout* they have served a good purpose. They have helped to build up an intelligentsia strong enough to stand out against the unwarranted interference of a reactionary church and pursue their own way, bringing up a new generation which was unhampered by theological restrictions and therefore had no axe to grind.

As to materialism itself, it is not necessary today to refute it. I will add only this: the materialist's claim that the problems of relationship or interaction between matter, life, and mind were falsely put may turn out to be perfectly valid. The hopeless error which the materialists committed was to make an arbitrary discrimination between these three concepts with regard to their scientific dignity. They accepted one and rejected the two others - their excuse being the intrinsic and extrinsic success of science and the absurdities of the contemporary speculative philosophy - whereas each of them may, as a conception, contain as much of the ultimate truth as the others, quite apart from the stage of development which each of them may have reached at a given time.

Vitalism, Spiritualism.

The other type of solution which I want to reject here does not deny the validity of our problems; rather it attempts to solve them by establishing two or three separate realms of existence, each sharply distinguished from the other by the presence or absence of a specific factor. One can discriminate three such attempts; the first draws the dividing line between life and mind, life and inanimate nature belonging together (Descartes), and mind, a new and divine substance, separating man from the rest of creation. The second, on the other hand, throws life and mind together as directed by a power not found in inorganic nature and therefore essentially different from it (vitalism). The third sticks to the threefold division and looks for special active principles in each of the three realms (Scheler). Of these three, vitalism has gained by far the greatest importance because many thorough and highly ingenious attempts have been made to establish it as a truly scientific theory. The problem of vitalism will therefore occupy us repeatedly in the following pages. Here I only explain why I must reject this whole type of explanation at the outset. The answer is simple enough, but will, without a wider context, appear somewhat unsatisfactory. The vitalistic type of solution is no solution, but a mere renaming of the problem. By renaming it, it emphasises the problem, and is, in that respect, much superior to crude materialism. But by pretending that a new name is a solution, it might do a great deal of harm to science were it widely accepted. Characteristically, however, vitalism, not to mention the two other forms of our type, has never been popular among scientists, particularly not among those nearest concerned, the biologists. It required always a full share of personal courage to profess oneself a vitalist, and therefore let us honour the men who were willing to sacrifice their reputations and their careers in the service of a cause which they considered to be a true one.

Integration of Quantity, Order, and Meaning.

By rejecting these types of solution I have implied the kind of solution our psychology 'll have to offer. It cannot ignore the mind-body and the life-nature problem, neither can it accept these three realms of being as separated from each other by impassable chasms. It is here that the integrative quality of our psychology will become manifest. Materialism tried to achieve a simple system by using for its interpretation of the whole the contribution of one part. To be truly integrative, we must try to use the contributions of every part for the building of our system. Looking at the sciences of Nature, Life, and Mind, we may extract from each one specific and particularly important concept, viz., from the first: quantity, from the second: order, and from the third: meaning or significance (in German: *Sinn*). Our psychology, then, must have a place for all of these. Let us discuss them one by one.

QUANTITY AND QUALITY.

Modern scientific psychology was started by quantification. Mental functions were shown to be expressible in purely quantitative terms (Weber's Law), and ever since then the quantitative interest has done as much harm as good to the further development of our science. On the one side, we find those who want to measure everything, sensations, emotions, intelligence; and on the other, those who deny that true psychological problems are amenable to quantitative treatment; to them, psychology is the domain of quality, excluding quantity. In my opinion this famous antithesis of quantity and quality is not a true antithesis at all. It owes its popularity largely to a regrettable ignorance of the essence of quantity as used in physical science.

Modern science, it is true, begins with quantitative measurement. The present-day physicist devotes the greatest efforts to making his measurements finer and finer; but he will not measure anything and everything, but only such effects as in some way or other contribute to his theory. It is impossible to discuss here all the functions of quantitative measurement in physics. But it is fair to say that a mere collection of numbers is never what the physicist wants. What he is frequently interested in is the distribution of measurable characteristics in a given volume and the changes which such distributions undergo. Both types of facts he describes by means mathematical equations which may contain a few concrete numbers but in which abstract numbers are by far the most important constituents. And the mathematical formula establishes primarily a definite *relationship* between these abstract numbers. Measurement has then the role to test the validity of the equation for the process which it is meant to describe, i.e., of the relationship established. Such a relationship, however, is no longer quantitative in the simple sense in which any one concrete number is; its quantity is no longer opposed to quality. The misunderstanding arises when one considers only the individual facts with their measured quantities, overlooking the manner of their distribution. But the latter is no less factual than the former, and it indicates a property or quality of the condition or process under discussion. A simple example should clarify this point: In a soap bubble the forces of cohesion between the soap particles pull them as close together as possible. They are held in equilibrium by the air enclosed by the soap membrane, whose pressure would increase if the bubble contracted. The soap, therefore, must remain distributed over the outside boundary of an air volume, and the distribution will be such that it will occupy as little space as possible. Since of all solids the sphere is the one which has the greatest volume for a given surface or the smallest surface for a given volume, the soap will distribute itself on a spherical surface. A statement like this seems to me to be as much qualitative as quantitative; the latter, because it says of each particle that it is here and not somewhere else; the former, because it assigns a definite shape with all its peculiarities to our distribution. Once our attention has been drawn to this point we shall find it difficult in a great many cases to decide whether a statement is quantitative or qualitative. A body moves with constant velocity; truly quantitative, but equally truly qualitative, and the same is true whatever kind of velocity we attribute to the body. Thus when the velocity varies with the sine or cosine of time, the body executes a periodic movement which is qualitatively quite different from a mere translatory movement.

We conclude from these examples: the quantitative, mathematical description of physical science, far from being opposed to quality, is but a particularly accurate way of representing quality. I will, without proof, add that a description may be quantitative without being at the same time the most adequate one. Of the two analytic equations of the circle: $x^2 + y^2 = r^2$, and $r = \text{constant}$, the second expresses the specific quality of the circle more directly and hence more adequately than the first.

And we can now draw a lesson for our psychology: it may be perfectly quantitative without losing its character as a qualitative science, and on the other hand, and at the present moment even

more important, it may be unblushingly qualitative, knowing that if its qualitative descriptions are correct, it will some time be possible to translate them into quantitative terms.

ORDER.

Let us now turn to "order," the concept derived from the sciences of life. Can we give a satisfactory definition of this concept? We speak of an orderly arrangement of objects when every object is in a place which is determined by its relation to all others. Thus the arrangement of objects thrown at random into a lumber room is not orderly, while that of our drawing room furniture is. Similarly we speak of an orderly march of events (Head) when each part event occurs at its particular time, in its particular place, and in its particular way, because all the other part events occur at their particular times, in their particular places, and in their particular ways. An orderly march of events is, e.g., the movement of the piano keys when a practised player plays a tune; a mere sequence of events without any order takes place when the keys are pressed down by a dog running over the keyboard.

"ORDER NOT AN OBJECTIVE CATEGORY."

Both examples may give rise to a particular objection or may lead to a special theory of order. Let us take up the objection first: "Why," so an opponent, whom for the sake of convenience we shall call Mr. P, might ask, "do you call the motions of the piano keys in the second case less orderly than the first? I can," so he continues, "find only one reason, and that is that you like the first better than the second. But this subjective feeling of preference is surely not a sufficient reason for introducing a distinction allegedly fundamental, and for deriving from this distinction a new scientific category. And the same is true of your first example. You happen to like your drawing room, but I can well imagine a person, say a stranger from another planet, who would feel happier in your storeroom. Look at your two cases without any personal bias; then you will find that each object, whether in the drawing room or in the loft, is where it is because, according to mechanical laws, it could not be anywhere else; and just so is each key set into motion according to the stern laws of mechanics whether it be Paderewski's fingers or a frightened dog which run over the keyboard. But if the ordinary old mechanical laws explain these events, why introduce a Dew concept, order, which confuses the issue by creating an artificial difference between processes which from the point of view of mechanics are essentially similar?"

REFUTATION OF THIS VIEW BY VITALISM.

To this argument another person (we will call him Mr. V) might reply as follows: "My dear fellow, it is very generous of you to disregard your own feelings in the matter, for I know how sensitive you are to badly furnished rooms and how fastidious your taste is with regard to piano music. I shall therefore exclude from my answer the person who is merely supposed to look at or live in one of our two rooms and to listen to the two sequences of tones, just as you said one should. But even so there remains a difference between the two alternatives in each of the two examples, and this difference is decisive, since it refers to the way in which the arrangement and the sequence have been brought about. In my ideal lumber room, each piece has been deposited as it happened to come without regard to any other. And since, as you pointed out yourself, every object in this loft is where it is according to strict mechanical laws, this lumber room is an excellent example of what mechanical forces will do if left to themselves. Compare this with our drawing room. Here, careful planning has preceded the actual moving of the furniture, and each piece receives a place that makes it subservient to the impression of the whole. What does it matter whether a table has at

first been pushed too far to the left? Somebody who knows the plan, or who has a direct feeling for the intended effect, will push it back into its proper place: just so a picture hung awry will be straightened out; vases with proper flowers will be well distributed, all of course with the help of mechanical forces, but nothing by these mechanical forces alone. I need not repeat my argument for the two tone sequences, the application is too obvious. But my conclusion is this: in inorganic nature you find nothing but the interplay of blind mechanical forces, but when you come to life you find order, and that means a new agency that directs the workings of inorganic nature, giving aim and direction and thereby order to its blind impulses." And so Mr. V, in trying to answer Mr. P's argument, has developed the theory which I referred to at the beginning of this discussion. Remembering our previous discussion of nature and life, one will recognise this theory as a vitalistic one. As a matter of fact the strongest arguments for vitalism have been based on the distinction of orderly processes and blind sequences.

SOLUTION OF THE POSITIVIST - VITALIST DILEMMA.

But let us return to the argument between Messrs. P and V. We have already pledged our psychology to a rejection of vitalism. But can we disregard V's answer to P's argument, his defence of the distinction between orderly and orderless arrangements and events? We can not. And that lands us in a quandary: we accept order but we reject a special factor that produces it. For the first we shall be despised by Mr. P and his followers; for the second we shall incur the wrath of Mr. V. Both reactions would be justified if our attitude were truly eclectic; we should then appear to accept two propositions that are incompatible with each other. Therefore the task of our system is clearly defined: we must attempt to reconcile our acceptance and our rejection, we must develop a category of order which is free from vitalism. The concept of order in its modern form is derived from the observation of living beings. But that does not mean that its application is restricted to life. Should it be possible to demonstrate order as a characteristic of *natural* events and therefore within the domain of physics, then we could accept it in the science of life without introducing a special vital force responsible for the creation of order. And that is exactly the solution which Gestalt theory has offered and tried to elaborate. How that has been done we shall learn in the course of this book. But it is meet to point out the integrative function of the Gestalt solution. Life and nature are brought together not by a denial of one of the most outstanding characteristics of the former but by the proof that this feature belongs to the latter also. And by this kind of integration Gestalt theory contributes to that value of knowledge which we have called reverence for things animate and inanimate. Materialism accomplished the integration by robbing life of its order and thereby making us look down on life as just a curious combination of orderless events; if life is as blind as inorganic nature we must have as little respect for the one as for the other. But if inanimate nature shares with life the aspect of order, then the respect which we feel directly and unreflectively for life will spread over to inanimate nature also.

SIGNIFICANCE, VALUE.

We turn to the last of our categories: significance. What we mean by that is harder to explain than the two previous concepts, and yet here lies one of the deepest roots of Gestalt theory, one which has been least openly brought before the English-speaking public. The reason for this is easy to understand. There is such a thing as an intellectual climate, and the intellectual climate, just as the meteorological, varies from country to country.

And just as the growth of a Plant depends upon the physical climate, so does the growth of an idea depend upon the intellectual climate. There can be no doubt that the intellectual climates of

Germany and the United States are widely different. The idealistic tradition of Germany is more than an affair of philosophic schools; it pervades the German mind and appears most openly in the writings and teachings of the representatives of "*Geisteswissenschaften*," the moral sciences. The *meaning* of a personality prominent in history, art, or literature seems to the German mind more important than the pure historical facts which make up his life and works; the historian is often more interested in the relation of a great man to the plan of the universe than in his relations to the events on the planet. Contrariwise, in America the climate is chiefly practical; the here and now, the immediate present with its needs, holds the centre of the stage, thereby relegating the problems essential to German mentality to the realm of the useless and non-existing. In science this attitude makes for positivism, an overvaluation of mere facts and an undervaluation of very abstract speculations, a high regard for science, accurate and earthbound, and an aversion, sometimes bordering on contempt, for metaphysics that tries to escape from the welter of mere facts into a loftier realm of ideas and ideals.

Therefore when the first attempts were made to introduce Gestalt theory to the American public, that side which would most readily appeal to the type of German mentality which I have tried to sketch was kept in the background, and those aspects which had a direct bearing on science were emphasised. Had the procedure been different, we might have incurred the danger of biasing our readers against our ideas. Living in a different intellectual climate they might have taken this aspect of Gestalt theory for pure mysticism and decided not to have anything to do with the whole theory before they had had a chance of becoming acquainted with its scientific relevance.

At the present moment, however, when Gestalt theory has been taken up as a main topic of discussion, it seems only fair to lift the old restriction and expose all its aspects.

THE DILEMMA OF GERMAN PSYCHOLOGY OUT OF WHICH GESTALT THEORY AROSE.

To do this I shall revert for a moment to the origins of our theory and to the leading ideas of its first founder, Max Wertheimer. What I said about the German intellectual climate does not apply to German experimental psychology. Rather, experimental psychology had carried on a feud with speculative psychologists and philosophers who, not without reason, belittled its achievements and claimed that mind in its truest aspects could never be investigated by scientific methods, i.e., by methods derived from the natural sciences.¹ How could, so the argument would run, the laws of sensation and association, which then composed the bulk of scientific psychology, ever explain the creation or enjoyment of a work of art, the discovery of truth, or the development of a great cultural movement like that of the Reformation? The facts to which these opponents of scientific psychology pointed and the facts which the experimental psychologists investigated were indeed so far apart that they seemed to belong to different universes, and no attempt was made by experimental psychology to incorporate the larger facts in their system which was erected on the smaller ones, at least no attempt which did justice to the larger.

Weighing this situation in retrospect we are forced to take an attitude similar to that which we took with regard to the materialism-vitalism controversy. We must admit that the criticism of the philosophers was well founded. Not only did psychology exhaust its efforts in trivial investigations, not only had it become stagnant with regard to the problems it actually worked on, but it insisted on its claim that it held the only key to those problems which the philosophers emphasised. Thus the historian was right when he insisted that no laws of sensation, association or feeling - pleasure and displeasure - could explain a decision like that of Caesar's to cross the Rubicon with its momentous consequences; that, generally speaking, it would be impossible to incorporate the

data of *culture* within current psychological systems without destroying the true meaning of culture. For, so they would say, culture has not only existence but also meaning or significance, and it has value. A psychology which has no place for the concepts of meaning and value cannot be a complete psychology. At best it can give a sort of understructure, treating of the animal side of man, on which the main building, harbouring his cultural side, must be erected.

On the other hand we cannot disregard the attitude of experimental psychology. Its position was this: for ages psychology had been treated in the way which philosophers and historians claimed to be the only true one, with the result that it had never become a true science. Clever, even profound, things might have been said about men's higher activities by speculative philosophers and "understanding" historians, but all these dicta bore the stamp of their authors' personalities; they could not be verified and could not produce a scientific system. Science wants an explanation in terms of cause and effect, but the kind of psychology they opposed gave explanations in terms of motives and values. This, the experimental psychologists averred, was no explanation at all, whereas their work was concerned with true causal theories. If it failed at the moment to include the cultural aspects, it did so only because it was so very young. But a building had to be erected from the bottom and not from the roof. "*Psychologie von unten*" was their slogan. And there is much to be said for this attitude. If we believe that the sciences, natural and moral, are not merely a collection of independent human activities, some players playing one kind of game, others another, but that they are branches of one all-embracing science, then we must demand that the fundamental explanatory principles be the same in all.

The dilemma of psychology, then, was this: on the one hand it was in possession of explanatory principles in the scientific sense, but these principles did not solve the most important problems of psychology, which therefore remained outside its scope; on the other hand, it dealt with these very problems, but without scientific explanatory principles; *to understand* took the place of *to explain*.

WERTHEIMER'S SOLUTION OF THE DILEMMA.

This dilemma must have been prominent in Wertheimer's mind even when he was a student. Perceiving the merits and faults of both sides, he could not join either, but he had to try to find a solution of this acute crisis. In this solution two principles could not be sacrificed: the principles of science and of meaning. And yet these very two were the origin of the whole difficulty. Scientific progress occurs very often by a re-examination of the fundamental scientific concepts. And to such a re-examination Wertheimer devoted his efforts. And his conclusions can be stated in a few simple words, although they demand a radical change of our habits of thought, a change in our most ultimate philosophy. To explain and to understand are not different forms of dealing with knowledge but fundamentally identical. And that means: a causal connection is not a mere factual sequence to be memorised like the connection between a name and a telephone number, but is intelligible. I shall borrow a simile from Wertheimer (1925) - Suppose we entered Heaven with all our scientific curiosity and found myriads of angels engaged in making music, each playing on his own instrument. Our scientific training would tempt us to discover some law in this celestial din. We might then set out to look for regularities of such a kind that, when angel A has played *do*, angel C would play *re*, then angel M *fa*, and so on. And if we were persistent enough and had sufficient time at our disposal, we might discover a formula which would make it possible for us to determine the note played by each angel at each moment of time. Many philosophers and scientists would say that then we had explained the music of the heavens, that we had discovered its law. This law, however, would be nothing more than a factual statement; **it** would be practical,

making prediction possible, but it would be *without meaning*. On the other hand, we might try to hear the music as one great symphony; then if we had mastered *one* part, we should know a great deal about the whole, even if the part which we had mastered never recurred again in the symphony; and if eventually we knew the whole we should also be able to solve the problem which was resolved by our first attempt. But then it would be of minor significance and derivative. Provided, now, that the angels really played a symphony, our second mode of approach would be the more adequate one; it would not only tell us *what* each angel did at any particular moment but *why* he did it. The whole performance would be meaningful and so would be our knowledge of it.

Substitute the universe for Heaven and the occurrences in the universe for the playing of the angels and you have the application to our problem.

The positivistic interpretation of the world and our knowledge of it is but one possibility; there is another one. The question is: Which is really true? Meaning, significance, value, as data of our total experience give us a hint that the latter has at least as good a chance of being the true one as the former. And that means: far from being compelled to banish concepts like meaning and value from psychology and science in general, we must use these concepts for a full understanding of the mind and the world, which is at the same time a full explanation.

THE COMMON PRINCIPLE IN THE PRECEDING DISCUSSION

We have discussed quantity, order and meaning with regard to their contributions to science in general and to psychology in particular. We extracted each of our categories from a different science, but we claimed that despite their different origins, they are all universally applicable. And as a matter of fact, in our treatment of the issues involved in each of our three categories - we have found the same general principle: to integrate quantity and quality, mechanism and vitalism, explanation and comprehension or understanding, we had to abandon the treatment of a number of separate facts for the consideration of a group of facts in their specific form of connection. Only thus could quantity be qualitative, and order and meaning be saved from being either introduced into the system of science as new entities, the privileges of life and mind, or discarded as mere figments.

GENERALITY OF THE GESTALT CATEGORY

Do we then claim that all facts are contained in such interconnected groups or units that each quantification is a description of true quality, each complex and sequence of events orderly and meaningful? In short, do we claim that the universe and all events in it form one big Gestalt?

If we did we should be as dogmatic as the positivists who claim that no event is orderly or meaningful, and as those who assert that quality is essentially different from quantity. But just as the category of causality does not mean that any event is causally connected with any other, so the Gestalt category does not mean that any two states or events belong together in one Gestalt. "To apply the category of cause and effect means to find out which parts of nature stand in this relation. Similarly, to apply the Gestalt category means to find out which parts of nature belong as parts to functional wholes, to discover their position in these wholes, their degree of relative independence, and the articulation of larger wholes into sub-wholes." (Koffka, 1931.)

Science will find Gestalten of different rank in different realms, but we claim that every Gestalt has order and meaning, of however low or high a degree, and that for a Gestalt quantity and quality are the same. Now nobody would deny that of all Gestalten which we know those of the human mind are the richest; therefore it is most difficult, and in most cases still impossible, to express its quality in quantitative terms, but at the same time the aspect of meaning becomes more manifest here than in any other part of the universe.

WHY PSYCHOLOGY?

Psychology is a very unsatisfactory science. Comparing the vast body of systematised and recognised facts in physics with those in psychology one will doubt the advisability of teaching the latter to anybody who does not intend to become a professional psychologist, one might even doubt the advisability of training professional psychologists. But when one considers the potential contribution which psychology can make to our understanding of the universe, one's attitude may be changed. Science becomes easily divorced from life. The mathematician needs an escape from the thin air of his abstractions, beautiful as they are; the physicist wants to revel in sounds that are soft, mellow, and melodious, that seem to reveal mysteries which are hidden under the curtain of waves and atoms and mathematical equations; and even the biologist likes to enjoy the antics of his dog on Sundays unhampered by his weekday conviction that in reality they - are but chains of machine-like reflexes. Life becomes a flight from science, science a game. And thus science abandons its purpose of treating the whole of existence. If psychology can point the way where science and life will meet, if it can lay the foundations of a system of knowledge that will contain the behaviour of a single atom as well as that of an amoeba, a white rat, a chimpanzee, and a human being, with all the latter's curious activities which we call social conduct, music and art, literature and drama, then an acquaintance with such a psychology should be worth while and repay the time and effort spent in its acquisition.