

DEFINING THE 'FIELD AT A GIVEN TIME'¹

BY KURT LEWIN

*Iowa Child Welfare Research Station
State University of Iowa*

I. FIELD THEORY AND THE PHASE SPACE

The history of acceptance of new theories frequently shows the following steps: At first the new idea is treated as pure nonsense, not worth looking at. Then comes a time when a multitude of contradictory objections are raised, such as: the new theory is too fancy, or merely a new terminology; it is not fruitful, or simply wrong. Finally a state is reached when everyone seems to claim that he had always followed this theory. This usually marks the last state before general acceptance.

The increasing trend toward field theory in psychology is apparent in recent variations of psychoanalysis (Kardiner, Horney) and also within the theory of the conditioned reflex. This trend makes the clarification of the meaning of field theory only the more important, because, I am afraid, those psychologists who, like myself, have been in favor of field theory for many years have not been very successful in making the essence of this theory clear. The only excuse I know of is that this matter is not very simple. Physics and philosophy do not seem to have done much analytical work about the meaning of field theory that could be helpful to the psychologist. In addition, methods like field theory can really be understood and mastered only in the same way as methods in a handcraft, namely, by learning them through practice.

Hilgard and Marquis (7), in a recent publication, quote from a letter of Clark Hull the following sentence: "As I see it, the moment one expresses in any very general manner the

¹This is the third paper given at a Symposium on Psychology and Scientific Method held as part of the Sixth International Congress for the Unity of Science, University of Chicago, September, 1941. The first paper is by Egon Brunswik and the second by C. L. Hull.

various potentialities of behavior as dependent upon the simultaneous status of one or more variables, he has the substance of what is currently called field theory."

It is correct that field theory emphasizes the importance of the fact that any event is a resultant of a multitude of factors. The recognition of the necessity of a fair representation of this multitude of interdependent factors is a step in the direction toward field theory. However, this does not suffice. Field theory is something more specific.

To use an illustration: Success in a certain sport may depend upon a combination of muscular strength, velocity of movement, ability to make quick decisions, and precise perception of direction and distance. A change in any one of these five variables might alter the result to a certain degree. One can represent these variables as five dimensions of a diagram. The resultant of any possible constellation of these factors for the amount of success can be marked as a point in the diagram. The totality of these points then is a diagrammatic representation of this dependence, in other words, of an empirical law.

Physics frequently makes use of such representation of a multitude of factors influencing an event. To each of certain properties, such as temperature, pressure, time, spacial position, one dimension is coordinated. Such a representation in physics is called 'phase space.' Such a phase space may have twenty dimensions if twenty factors have to be considered. A phase space is something definitely different from that three-dimensional 'physical space' within which physical objects are moving. In the same way the psychological space, the life space or psychological field, in which psychological locomotion or structural changes take place, is something different from those diagrams where dimensions mean merely gradations of properties.

In discussing these questions with a leading theoretical physicist, we agreed that the recognition of a multitude of factors as determining an event, and even their representation as a phase space, does not presuppose field theory. In psychology, Thurstone's factor analysis deals with such relations

of various factors. Any character profile recognizes the multitude of factors. Field theorists and non-field theorists can both avail themselves of these useful devices, but not everybody who uses them is therefore a field theorist.

What is field theory? Is it a kind of very general theory? If one proceeds in physics from a special law or theory (such as the law of the free-falling body) to more general theories (such as the Newtonian laws) or still more general theories (such as the equations of Maxwell), one does *not* finally come to field theory. In other words, field theory can hardly be called a theory in the usual sense.

This fact becomes still more apparent when we consider the relation between the correctness or incorrectness of a theory and its character as a field theory. A special theory in physics or psychology may be a field theory, but nevertheless wrong. On the other hand, a description of what Hans Feigl calls an "empirical theory on the lowest level" may be correct without being field theory (although I do not believe that a theory on the higher levels of constructs can be correct in psychology without being field theory).

Field theory, therefore, can hardly be called correct or incorrect in the same way as a theory in the usual sense of the term. *Field theory is probably best characterized as a method: namely, a method of analyzing causal relations and of building scientific constructs.* This method of analyzing causal relations can be expressed in the form of certain general statements about the 'nature' of the conditions of change. To what degree such a statement has an 'analytical' (logical, *a priori*) and to what degree it has an 'empirical' character do not need to be discussed here.

II. THE PRINCIPLE OF CONTEMPORANEITY AND THE EFFECT OF PAST AND FUTURE

One of the basic statements of psychological field theory can be formulated as follows: Any behavior or any other change in a psychological field depends only upon the psychological field *at that time*.

This principle has been stressed by the field theorists from the beginning. It has been frequently misunderstood and interpreted to mean that field theorists are not interested in historical problems or in the effect of previous experiences. Nothing can be more mistaken. In fact, field theorists are most interested in developmental and historical problems and have certainly done their share to enlarge the temporal scope of the psychological experiment from that of the classical reaction-time experiment, which lasts only a few seconds, to experimental situations, which contain a systematically created history through hours or weeks.

If a clarification of the field theoretical principle of contemporaneity could be achieved, it would, I feel, be most helpful for an understanding among the various schools in psychology.

The meaning of this far-reaching principle can be expressed rather easily by referring to its application in classical physics.

A change at the point x in the physical world is customarily characterized as $\frac{dx}{dt}$; that is to say, as a differential change in the position of x during a differential time-period dt . Field theory states that the change $\frac{dx}{dt}$ at the time t depends only on the situation S^t at that time t (Figure 1).

$$(1) \quad \frac{dx}{dt} = F(S^t)$$

It does not depend, in addition, on past or future situations. In other words, the formula (1) is correct, but not the formula (1a).

$$(1a) \quad dx = F(S^t) + F^1(S^{t-1}) + \dots + F^2(S^{t+1}) + \dots$$

Of course, there are cases in physics where one can state the relation between a change and a past situation S^{t-n} (where $t-n$ is a time not immediately preceding t ; $|t-n| > dt$). In other words, there are occasions where it is technically possible to write:

$$(2) \quad \frac{dx}{dt} = F(S^{t-n})$$

However, that is possible only if it is known how the later situation S^t depends on the previous situation S^{t-n} ; in other words, if the function F in the equation

$$(3) \quad S^t = F(S^{t-n})$$

is known. Such knowledge presupposes usually (a) that both situations are 'closed systems' which are genidentic (II); (b) that the laws are known which deal with the change of all points of the previous situation S^{t-n} and also the laws dealing with the changes in the situations between the previous situation S^{t-n} and the later situation S .

The meaning of linking a change to a past situation by formula (2) might be clarified best by pointing out that it is possible in a similar way to link a present change to a future situation S^{t+n} and to write:

$$(2a) \quad \frac{dx}{dt} = F(S^{t+n})$$

This is possible whenever we have to deal with a 'closed system' during the time-period t until $t + n$, and if the laws of the on-going changes during this period are known.

The possibility of writing this functional equation does not mean that the future situation S^{t+1} is conceived of as a 'condition' of the present change $\frac{dx}{dt}$. In fact, the same $\frac{dx}{dt}$ would occur if the closed system would be destroyed before the time $(t + n)$. In other words, the change $\frac{dx}{dt}$ depends on the situation (S^t) at that time only (in line with formula [I]). The technical possibility of expressing this change mathematically as a function of a future or a past time does not change this fact.²

The equivalent to $\frac{dx}{dt}$ in physics is the concept 'behavior' in psychology, if we understand the term behavior to cover

² Frequently an occurrence is said to be caused by the 'preceding conditions.' This term seems to have been misunderstood by psychologists to refer to a distant past situation (S^{t-n}), although it should refer to the present situation, or at least to the 'immediately preceding situation' (S^{t-dt}). We will come back to this question.

any change in the psychological field. The field theoretical principle of contemporaneity in psychology then means that the behavior b at the time t is a function of the situation S at the time t only (S is meant to include both the person and his psychological environment),

$$(4) \quad b^t = F(S^t)$$

and not, in addition, a function of past or future situations S^{t-n} or S^{t+n} (Fig. 2). Again, it is possible to relate the behavior b indirectly to either a past situation (S^{t-n}) or a future situation (S^{t+n}); but again, this can be done only if these situations are closed systems, and if the changes in the intermediate periods can be accounted for by known laws. It seems that psychologists are increasingly aware of the importance of this formula.

III. HOW TO DETERMINE THE PROPERTIES OF A FIELD AT A GIVEN TIME

If one has to derive behavior from the situation at that time, a way has to be found to *determine* the character of the 'situation at a given time.' This determination implies a number of questions which are, I think, interesting both psychologically and philosophically.

To determine the properties of a present situation or—to use a medical terminology—to make a diagnosis, one can follow two different procedures: One may base one's statement on conclusions from history (*anamneses*), or one may use diagnostic *tests of the present*.

To use a simple example: I wish to know whether the floor of the attic is sufficiently strong to carry a certain weight. I might try to gain this knowledge by finding out what material was used when the house was built ten years ago. As I get reliable reports that good material has been used, and that the architect was a dependable man, I might conclude that the load probably would be safe. If I can find the original blueprints, I might be able to do some exact figuring and feel still more safe.

Of course, there is always a chance that the workmen have actually not followed the blueprints, or that insects have weakened the woodwork, or that some rebuilding has been done during the last ten years. Therefore, I might decide to avoid these uncertain conclusions from past data and to determine the present strength of the floor by testing its strength now. Such a diagnostic test will not yield data which are absolutely certain; how reliable they are depends upon the quality of the available test and the carefulness of testing. However, the value of a present test is, from the point of view of methodology, superior to that of an *anamneses*. An *anamneses* includes logically two steps: namely, the testing of certain properties in the past (of the quality, size, and structure of the woodwork) and the proof that nothing unknown has interfered in the meantime; in other words that we have to deal with a 'closed system.' Even if a system is left untouched by the outside, inner changes occur. Therefore, in addition, the laws governing these inner changes have to be known (see above) if the properties of a situation are to be determined through an *anamneses*.

Medicine, engineering, physics, biology are accustomed to use both methods, an inquiry into the past and a test of the present. But they prefer the latter whenever possible.⁸

Psychology has used diagnosis by *anamneses* rather excessively, particularly in classical psychoanalysis and other clinical approaches to problems of personality. Psychology of perception and psychology of memory have been relatively free from the historical type of diagnosis. Experimental psychology, on the whole, has shown a progressive trend toward testing the present situation.

The method of determining the properties of a situation (S^t) by testing them at that time t avoids the uncertainties of

⁸ There are cases where a historical procedure is preferable. For instance, the hunger of a rat can probably be better determined by the duration of starvation than by a physiological or psychological test of the hunger at the time t . This conclusion from the past to the present can be made, however, only during periods and in settings where a 'closed system' (no interference from outside) can be enforced; e.g., for animals which during this period do the same amount of work, which have been on a known diet, etc. The difficulties of this type of control have led Skinner (19) to link the problem of drive strength to properties of present consumption.

historical conclusions. It does not follow, however, that this method eliminates considerations of time-periods altogether. A 'situation at a given time' actually does not refer to a moment without time extension, but to a certain time-period. This fact is of great theoretical and methodological importance for psychology.

It may be helpful to go back for a moment to the procedure in physics. If the vertical lines in Fig. 1 represent the so-

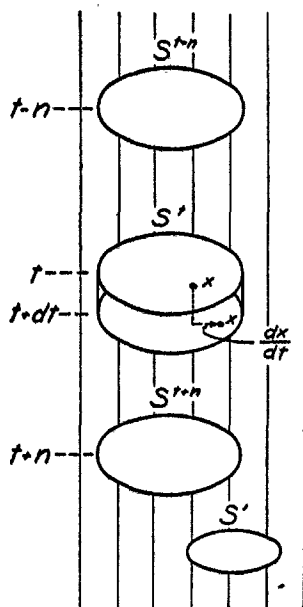


FIG. 1. S during $t - n$ until $t + n$ is a 'closed system'; but S is not genidentical with S' .

$\frac{dx}{dt}$ indicates the velocity of x .

called physical 'world-lines,' a 'situation' means a cut through these lines at a given time t . A description of such a situation has to include (1) the relative position of the parts of the field at that time; (2) the direction and the velocity of the changes going on at that time. The first task is fulfilled by ascribing certain scalar values to the different entities; the second, by ascribing certain vectors to them. The second task contains a difficulty which I would like to discuss.

To describe the direction and velocity of a change going on at a given moment, it is necessary to refer to a certain period of events. Ideally, a time-differential should suffice for such determination. Actually, one has to observe a macroscopic time-interval or at least the position at the beginning and at the end of such interval to determine that time-differential. In the simplest case the velocity at a given time is assumed to equal the average velocity during that macroscopic time-interval. I will not attempt to follow up the details of this procedure in physics. If sufficient laws are known, certain indirect methods like those based on the Dopler effect permit different procedures.

However, it remains a basic fact that the adequate description of a situation at a moment is impossible without observation of a certain time-period. This observation has to be interpreted (according to the 'most plausible' assumption and our knowledge of the physical laws) in a way which permits its transformation into a statement of the 'state of affairs at the time t .'

In psychology a similar problem exists. The person at a given time may be in the midst of saying 'a.' Actually such a statement implies already that a certain time-interval is observed. Otherwise, only a certain position of mouth and body could be recorded. Usually the psychologist will not be satisfied with such a characterization of the ongoing process. He likes to know whether this 'a' belongs to the word 'can' or 'apple' or to what word it does belong. If the word was 'can,' the psychologist wants to know whether the person was going to say: "I cannot come back" or "I can stand on my head if I have to." The psychologist even likes to know whether the sentence is spoken to an intimate friend as a part of a conversation about personal plans for the future or whether this sentence is part of a political address and has the meaning of an attempt to retreat from an untenable political position.

In other words, an adequate psychological description of the character and the direction of an ongoing process can and has to be done on various microscopic and macroscopic levels.

To each 'size of a unit of behavior' a different 'size of situation' can be coordinated. That the individual in our example is saying "a," can be made sure without taking into account much of the surrounding of the individual. To characterize the sentence as a part of a political retreat, much more of the surrounding has to be considered.

Without altering the principle of contemporaneity as one of the basic propositions of field theory, we have to realize that to determine the psychological direction and velocity of behavior (*i.e.*, what is usually called the 'meaning' of the psychological event), we have to take into account in psychology as in physics a certain time-period. The length of this period depends in psychology upon the scope of the situation. As a rule, the more macroscopic the situation is which has to be described the longer is the period which has to be observed to determine the direction and velocity of behavior at a given time (Fig. 2).

In other words, we are dealing in psychology with 'situational units' which have to be conceived of as having an extension in regard to their field dimensions and their time dimensions. If I am not mistaken, the problem of time-space-quanta, which is so important for modern quantum theory in physics (17), is methodologically parallel (although, of course, on a more advanced level) to the problem of 'time-field-units' in psychology.

The concept of situations of different scope has proved to be very helpful in solving a number of otherwise rather puzzling problems. Tolman (20), Muenzinger (16), and Floyd Allport (1), have stressed that a psychological description has to include the macroscopic as well as the microscopic events. Barker, Dembo, and Lewin (2) distinguish and treat mathematically three sizes of units of processes and corresponding sizes of situations. They have handled certain problems of measuring the strength of frustration during extended periods by referring to overlapping situations in regard to two different sizes of time-field-units. Lippitt and White (15), in their study of social atmosphere, distinguish still larger periods of events. They have shown that the beginning

and end of these macroscopic units can be determined rather precisely and with very satisfactory reliability. However, I will not discuss these questions here where we are interested in methodological problems only.

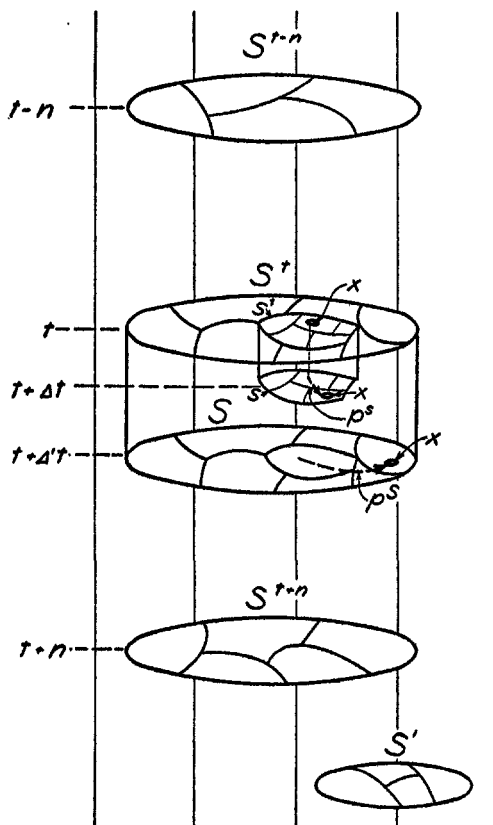


FIG. 2. S during $t-n$ until $t+n$ is a 'closed system'; but S is not genidentical with S' . $S^{t,t+\Delta t}$ is a small time-field-unit which extends over a relatively small area and includes the relatively small time-period t until $t+\Delta t$. $S^{t,t+\Delta't}$ is a larger time-field-unit covering a larger area and including the longer period t until $t+\Delta't$. p^s and p^s indicate the change in position of x during the small and the large time unit.

IV. THE PSYCHOLOGICAL PAST, PRESENT, AND FUTURE AS PARTS OF A PSYCHOLOGICAL FIELD AT A GIVEN TIME

The clarification of the problem of past and future has been much delayed by the fact that the psychological field

which exists at a given time contains also the views of that individual about his future and past. The individual sees not only his present situation; he has certain expectations, wishes, fears, daydreams for his future. His views about his own past and that of the rest of the physical and social world are often incorrect, but nevertheless constitute, in his life space, the 'reality-level' of the past. In addition, a wish-level in regard to the past can frequently be observed. The discrepancy between the structure of this wish- or irreality-level of the psychological past and the reality-level plays an important role for the phenomenon of guilt. The structure of the psychological future is closely related, for instance, to hope and planning (2).

Following a terminology of L. K. Frank (6), we speak of 'time perspective' which includes the psychological past and psychological future on the reality-level and on the various irreality-levels. The time perspective existing at a given time has been shown to be very important for many problems such as the level of aspiration, the mood, the constructiveness, and the initiative of the individual. Farber (4) has shown, for instance, that the amount of suffering of a prisoner depends more on his expectation in regard to his release, which may be five years ahead, than on the pleasantness or unpleasantness of his present occupation.

It is important to realize that the psychological past and the psychological future are simultaneous parts of the psychological field existing at a given time t . The time perspective is continually changing. According to field theory, any type of behavior depends upon the total field, including the time perspective at that time, but not, in addition, upon any past or future field and its time perspectives.

It may be illustrative to consider briefly from this field theoretical point of view the methodological problems connected with one of the basic concepts of the conditioned reflex theory, namely, the concept of 'extinction.' An individual has experienced that after a certain stimulus, let us say the ringing of a bell, food will appear. Being hungry, the individual eats. After a number of such experiences, the indi-

vidual will show certain preparatory actions for eating as soon as the eating bell rings. The individual is then said to be 'conditioned.' Now, the situation is secretly changed by the experimenter and the eating bell is not followed by food. After a while the individual catches on and does not show the preparatory action for food when the bell rings. This process is called 'extinction.'

'Habits' of a person at a given time can and have to be treated as parts of the present field. Whether they should be represented partly as cognitive structure or resistance to change of cognitive structure, partly as a building up or fixation of valences (13), or whether they have to be conceptualized in other ways is not a problem here. Habits of action (18, 14), as well as of thinking, are dealt with in field theoretical research. They are closely related to problems of ideology (9) and expectation.

As Tolman (20), Hilgard and Marquis (7), and others have correctly pointed out, conditioning as well as extinction are both related to changes in the reality level of the psychological future. Field theorists have to distinguish in regard to conditioning and extinction two types of problems. The one type deals with such a question as how expectation is affected by perception on the one hand, and memory on the other. What changes in the perceived structure of the psychological present lead to a change in the structure of the psychological future, and what are the laws governing the interdependence of these two parts of the psychological field? The studies on level of aspiration have provided some knowledge about the factors which influence the structure of the future reality-level. Korsch-Escalona (10) has made a step toward a mathematical treatment of the effect of the future reality-level on the forces which govern present behavior. Study of the level of aspiration has also given us considerable insight into the effect of the psychological past (namely of previous success or failure) on the psychological future. This question is obviously closely related to extinction.

The methodological position of these types of problems is clear: They deal with the interdependence of various parts of

the psychological field existing at a given time t . In other words, they are legitimate field theoretical questions of the type $b^t = F(S^t)$.

The second type of questions, treated in the theory of conditioned reflex, tries to relate a later situation S^t , (for instance, during extinction) to a previous situation S^1 during learning or to a number of similar or different previous situations S^1, S^2, S^3, \dots : it relates behavior to the number of repetitions. In other words, these questions have the form $b^t = F(S^{t-n})$ or $b^t = F(S^{t-n}, S^{t-m}, \dots)$. Here field theory demands a more critical and more analytical type of thinking. One should distinguish at least two types of problems:

(a) How the perceived psychological situation will look at the time S^t depends obviously upon whether or not the experimenter will provide food and on similar external physical or social conditions. Everybody will agree, I suppose, that these factors cannot possibly be derived from the psychological field of the individual at the previous time, even if all the psychological laws were known. These factors are alien to psychology.

(b) There remain, however, legitimate psychological questions in this second type of problem. We can keep the boundary conditions of a life space constant or change them in a known way during a certain period and investigate what would happen under those conditions. These problems lie definitely within the domain of psychology. An example is the problem of restructurization of memory traces. We know that these processes depend on the state of the individual during the total period S^{t-n} until S^t (Fig. 2) and are different, for instance, during sleep and while being awake. Doubtless the experiments on conditioned reflex have given us a wealth of material in regard to this type of problem. They will have to be treated finally in the way which we discussed in the beginning, namely, as a sequence of relations between a situation S^t and the immediately following situation $S^{t+\Delta t}$.

On the whole, I think the psychological trend is definitely going in this direction. For instance, the goal gradient theory has been formulated originally as a relation between behavior and past situations. Straight, analytical thinking demands that such a statement should be broken up into several propositions (12), one of which has to do with the intensity of goal striving as a function of the distance between indi-

vidual and goal. This is identical with a statement about certain force fields and is probably correct. A second proposition implied in the goal gradient theory links the present behavior to the past situation S^{t-n} . The specific form is, to my mind, unsatisfactory. But even if it should be correct, it should be treated as an independent theory. Hull's formulation of a 'Gradient of Reinforcement Hypothesis' is a step in this direction.

V. PSYCHOLOGICAL ECOLOGY

As an elaboration of our considerations, I would like to discuss some aspects of Brunswik's treatment of the role of statistics (3). I do not expect ever to live down the misunderstandings created by my attack on some ways in which statistics have been used in psychology. I have been always aware that quantitative measurement demands statistics (see Hull's answer to Brunswik [8]). That statement holds also for 'pure cases'; *i.e.*, situations where it is possible to link theory and observable facts in a definite way. Since psychology is increasingly abandoning the inadequate objectives of statistics, further discussion might have little pragmatic value.

However, Brunswik has brought into the open new and important aspects, and I feel that their clarification may be helpful for psychological methodology in general.

Within the realm of facts existing at a given time one can distinguish three areas in which changes are or might be of interest to psychology:

1. The 'life space'; *i.e.*, the person and the psychological environment as it exists for him. We usually have this field in mind if we refer to needs, motivation, mood, goals, anxiety, ideals.
2. A multitude of processes in the physical or social world, which do not affect the life space of the individual at that time.
3. A 'boundary zone' of the life space: certain parts of the physical or social world do affect the state of the life space at that time. The process of perception, for instance, is intimately linked with this boundary zone because what is perceived is partly determined by the physical 'stimuli'; *i.e.*, that part of the physical world which affects the sensory organs at that time. Another process located in the boundary zone is the 'execution' of an action.

Brunswik states correctly (3, p. 266): "The 'field' within which Lewin is able to predict, in the strict sense of the word, is the person in his life space." Then he proceeds, "But the life space is not to be confused with geographic environment of physical stimuli, nor with actually achieved results in the environment. It is post-perceptual, and pre-behavioral." This statement is partly incorrect, namely, insofar as perception and behavior, to my mind, are legitimate problems of psychology. This view is a necessary consequence of the field theoretical approach according to which the boundary conditions of a field are essential characteristics of that field. For instance, processes of perception which should be related to the boundary zone depend partly on the state of the inner part of the psychological field; *i.e.*, upon the character of the person, his motivation, his cognitive structure, his way of perceiving, etc., partly on the 'stimulus distribution' on the retina or other receptors as enforced by physical processes outside the organism. For the same reasons, the problems of physical or social action are legitimate parts of psychology proper.

Brunswik, however, is correct in assuming that I do not consider as a part of the psychological field at a given time those sections of the physical or social world which do not affect the life space of the person at that time. The food that lies behind doors at the end of a maze so that neither smell nor sight can reach it is not a part of the life space of the animal. In case the individual knows that food lies there this *knowledge*, of course, has to be represented in his life space, because this knowledge affects behavior. It is also necessary to take into account the subjective probability with which the individual views the present or future state of affairs because the degree of certainty of expectation also influences his behavior.

The principle of representing within the life space all that affects behavior at that time, but nothing else, prevents the inclusion of physical food which is not perceived. This food cannot possibly influence his behavior at that time under the conditions mentioned. Indeed, the individual will start

his journey if he thinks the food is there even if it is actually not there, and he will not move toward the food which actually is at the end of the maze if he doesn't know it is there.

In the past this principle has not always been adhered to in animal psychology but it seems to me so obvious that I had assumed all psychologists agreed on this point. Statements which could be interpreted otherwise I had regarded as loose terminology rather than an expression of differences of opinion until I listened to Brunswik's paper. The discussion following this paper seems to have brought out the issue still more clearly and it will be appropriate, I hope, to refer to this discussion.

According to Brunswik, it is possible to think in terms of laws rather than mere statistical rules if one limits the psychological field in the way described. However, he claims that for this gain one has to pay "the price of an encapsulation" into a realm of problems which actually leaves out the most dynamic aspects of psychology. He wishes to include in the psychological field those parts of the physical and sociological world which, to my mind, have to be excluded. These parts, he states, have to be studied in a statistical way, and the probability of the occurrence of events calculated.

To my mind, the main issue is what the term 'probability' refers to. Does Brunswik want to study the ideas of the driver of a car about the probability of being killed or does he want to study the accident statistics which tell the 'objective probability' of such an event. If an individual sits in a room trusting that the ceiling will not come down, should only his 'subjective probability' be taken into account for predicting behavior or should we also consider the 'objective probability' of the ceiling's coming down as determined by the engineers. To my mind, only the first has to be taken into account, but to my inquiry, Brunswik answered that he meant also the latter.

I can see why psychology should be interested even in those areas of the physical and social world which are not part of the life space or which do not affect its boundary zone at present. If one wishes to safeguard a child's education

during the next years, if one wishes to predict in what situation an individual will find himself as a result of a certain action, one will have to calculate this future. Obviously, such forecast has to be based partly on statistical considerations about non-psychological data.

Theoretically, we can characterize this task as discovering what part of the physical or social world will determine during a given period the 'boundary zone' of the life space. This task is worth the interest of the psychologists. I would suggest calling it 'psychological ecology.'

Some problems of the 'life history' of an individual have their places here. The boundary conditions of the life space during long- as well as short-time periods depend partly on the action of the individual himself. To this degree they should be linked to the psychological dynamics of the life space. The rest of the calculation has to be done, however, with other than psychological means.

The essence of explaining or predicting any change in a certain area is the linkage of that change with the conditions of the field at that time. This basic principle makes the subjective probability of an event a part of the life space of that individual. But it excludes the objective probability of alien factors that cannot be derived from the life space.

BIBLIOGRAPHY

1. ALLPORT, F. H. Methods in the study of collective action phenomena. *J. soc. Psychol.*, SPSSI Bulletin, 1942, 15, 165-185.
2. BARKER, R., DEMBO, T., & LEWIN, K. Frustration and regression; Studies in topological and vector psychology II. *Univ. Ia Stud. Child Welf.*, 1941, 18, 1-314.
3. BRUNSWIK, E. Organismic achievement and environmental probability. *Psychol. Rev.*, 1943, 50, 255-272.
4. FARBER, M. L. Imprisonment as a psychological situation. Unpublished Ph.D. Thesis, State Univ. Iowa, 1940.
5. FESTINGER, L. A theoretical interpretation of shifts in level of aspiration. *Psychol. Rev.*, 1942, 49, 235-250.
6. FRANK, L. K. Time perspectives. *J. soc. Phil.*, 1939, 4, 293-312.
7. HILGARD, E. R., & MARQUIS, D. G. *Conditioning and learning*. New York, London: D. Appleton-Century Co., 1940.
8. HULL, C. L. The problem of intervening variables in molar behavior theory. *Psychol. Rev.*, 1943, 50, 273-291.
9. KALHORN, J. Ideological differences among rural children. Unpublished Master's Thesis, State Univ. Iowa, 1941.

10. KORSCH-ESCALONA, S. The effect of success and failure upon the level of aspiration and behavior in manic-depressive psychoses. In Lewin, K., Lippitt, R., & Korsch-Escalona, S., *Studies in topological and vector psychology I. Univ. Ia. Stud. Child Welf.*, 1939, 16, no. 3, 199-303.
11. LEWIN, K. *Der Begriff der Genese in Physik, Biologie und Entwicklungsgeschichte.* [The concept of genesis in physics, biology and theory of evolution.] Berlin: Julius Springer, 1922.
12. ——. The conceptual representation and the measurement of psychological forces. *Cont. psychol. Theor.*, 1938, 1, no. 4. Pp. 247.
13. ——. Field theory and learning. In *41st Yearbook of the National Society for the Study of Education*, Part II, 1942, pp. 215-239.
14. ——. The relative effectiveness of a lecture method and a method of group decision for changing food habits. Committee on Food Habits, National Research Council, 1942.
15. LIPPITT, R. An experimental study of the effect of democratic and authoritarian group atmospheres. *Univ. Ia Stud. Child Welf.*, 1940, 16, no. 3, 44-195.
16. MUENZINGER, K. F. *Psychology: the science of behavior.* Denver: World Press, 1939. Pp. 270.
17. REICHENBACH, H. *From Copernicus to Einstein.* New York: Alliance Book Corp., New York Philosophical Library, 1942.
18. SCHWARZ, G. IV. Über Ruckfalligkeit bei Umgewöhnung. I, II. [On relapses in re-learning.] *Psychol. Forsch.*, 1927, 9, 86-158; 1933, 18, 143-190.
19. SKINNER, B. F. *The behavior of organisms; an experimental analysis.* New York: D. Appleton-Century Co., 1938.
20. TOLMAN, E. C. *Purposive behavior in animals and men.* New York: Century Co., 1932. Pp. xiv, 463.