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# THE GENERAL PROPOSITIONS OF EXCHANGE THEORY

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BETH HOMANS NOTES

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... A proposition states a relationship between properties of nature. The propositions we shall use will avoid each of two extremes. On the one hand, they will not take the form of saying merely that there is some relationship between the properties, that  $x$  is some function of  $y$ , for logic is unable to draw any definite conclusions from propositions of this sort. Nor, on the other hand, will they take the form of saying that  $x$  is a definite function of  $y$ , such as  $x = \log y$ , for the data rarely justify any such precision. Instead they will take the form of saying that, for instance, as  $x$  increases in value, so does  $y$  (or in the case of some of the propositions decreases), without saying how much  $y$  increases. Propositions of this form do say something, though obviously they say it pretty crudely. They are only approximate truths, but an approximate truth is far more valuable than no truth at all. If even our general propositions take this form, the conclusions in logic we are entitled to draw from them cannot be of a higher degree of precision. Luckily the propositions to be explained are as crude as the general ones. Though certainly a science, social science is certainly not an exact science.

## THE SUCCESS PROPOSITION

"In the beginning was the act," said Goethe. [We] shall be much more interested in men's actions than in their attitudes, especially if attitudes do not lead to action. We are sick of a social science in which men are always "orienting" or indeed "orientating" themselves to action, but never acting. Yet we shall not be concerned with all the actions of men. Our propositions will not refer to reflex action, such as the familiar knee jerk, but will refer to what Skinner (1938) calls *operants* and we might call voluntary actions to distinguish them from reflexes, which are clearly involuntary. Our first proposition relates a man's (or woman's) action to its success in getting a favorable result. In classical psychology it is called "the law of effect." Because we believe another name will make its meaning more obvious, we shall call it the success proposition.

We may state it as follows:

1. For all actions taken by persons, the more often a particular action of a person is rewarded, the more likely the person is to perform that action.

The proposition in itself says nothing about the reasons why the person performed the action in the first place. In the case of an experimental animal like

a pigeon, its repertory of innate behavior seems to include a tendency to explore or investigate its environment by pecking at the objects within it. The psychologist may have so arranged its cage that the motion of a metal key will release a grain of corn to the pigeon. If, in the course of exploring its cage, the pigeon happens to peck at the key and thus get the corn to eat, the probability that the pigeon will peck the target again will increase. Not until then will the psychologist be able to use the pigeon's tendency to repeat its action for the purposes of further experimentation. The same sort of behavior is characteristic of men. What the success proposition says is that, whatever be the reason why a person performs an action, once he has in fact performed it, and the action has proved successful—the result has for the person what we shall later call positive value—then the person is apt to repeat the action.

The result of an action is what follows it. The success proposition holds good even if success was not, in the eyes of some informed observer, caused by the action but was rather a matter of chance. Much of the magic men have performed has been maintained by fortuitous success, especially when success is much desired and alternative means of producing it are not known. After all, rain usually does follow the magic of rainmaking—sooner or later.

The proposition may sound as if it said that an action were caused by its result, which is absurd to those of us who do not believe in teleology. But it does not say that. What we observe is a sequence of at least three events: 1) a person's action, which is followed by 2) a rewarding result, and then by 3) a repetition of the original action or, as we shall see, by an action in some respects similar to the original. It is the combination of events 1 and 2 that causes event 3, and since the former two precede the latter in time, we are saved from teleology. It is natural to call the original sequence of three events a learning process, and therefore the general propositions we shall use are often called the propositions of "learning theory." We believe this to be a mistake, since the propositions continue to hold good long after the behavior has in every ordinary sense of the word been learned. The fact that a person's action has been rewarded on one occasion makes it more probable that he will repeat it on the next occasion. If there are many such occasions, the probability that he will perform the action will vary directly with the frequency with which it has been rewarded, and we have deliberately cast the proposition so that it takes this form. Remember that we are particularly concerned . . . with the process by which social behavior gives rise to relatively enduring social structures. Without repeated social actions there are no enduring social structures.

The proposition implies that an increasing frequency of reward leads to an increasing frequency of action, but it is obvious that such an increase cannot go on indefinitely. It has built-in limits, as we shall see later when we consider satiation. The proposition also implies that the less often an action is rewarded the less often it is apt to be repeated. At the extreme, if an action once rewarded is never rewarded thereafter, a person tends in time never to perform it at all. In the technical language of behavioral psychology, it eventually becomes *extinguished*. But the time required for extinction may be very long indeed, and a single occasion on which the action is rewarded may be enough to *reinstiate* it at full strength.

Let us now consider some qualifications of the success proposition. The shorter the interval of time between the action and the reward, the more likely the person is to repeat it—the more likely, to use the language of everyday life, he is to "see" the connection between his action and its reward. If we wish a person to learn, we shall do well to reward his correct responses promptly. This is the principle on which "teaching machines" are based. The reason why we do not use ordinary language but a proposition which merely sums up the facts is that everyday language is apt to embody assumptions about human behavior that

are not always justified. Thus prompt reward is apt to make action more probable even if the person does not "see" the connection between his action and its reward in any conscious sense. The greater, moreover, is the value of the reward, the more likely is the person to make the connection, but we shall have much more to say about that value later.

The frequency with which the person performs the action depends also on the pattern in which the reward comes. (On this matter see especially Ferster and Skinner, 1957.) For a given total number of rewards within a given period of time, it looks as if man, like an experimental animal such as a pigeon, will repeat an action less often if it is rewarded regularly—for instance, if it is rewarded every time it is performed—than he will if it is rewarded at irregular intervals of time or at irregular ratios between the number of times he performs the action and the number of times it is rewarded. Furthermore an action once regularly rewarded will, when the reward ceases, become extinguished sooner than one rewarded irregularly. One reason why people are willing to work so hard at gambling, fishing, or hunting, even when they have little success, is that such actions are characteristically rewarded irregularly. Indeed the tendency to repeat an action more often if its reward comes irregularly may have arisen in animals, including the ancestors of men, because of its survival value. If one depends for one's food on activities such as fishing and hunting, one had better not give up too easily if one is unsuccessful, but persist. The tendency implies that animals will do just that.

Though we take note of these relationships subsidiary to the success proposition, we shall have little more to say about them. They do not render invalid the success proposition itself. Even in its crude form, the latter holds good over a wide range of behavior. In gross and in a first approximation it will serve us well in explanation.

We stated the success proposition as if it applied to a single kind of act and a single kind of reward at a time: the higher the absolute frequency of the reward, the higher the absolute frequency of the action. It is both true and convenient to state the proposition in this way. But men, like other organisms, are not usually so constrained that they can perform one kind of action and one only. Alternative kinds of action, which get men alternative rewards, are open to them. In this case we may be less interested in the absolute frequencies with which they perform actions and receive awards than in the relative frequencies, or how they distribute their actions among alternatives. The success proposition implies that the relative frequencies with which a man performs alternative actions should equal the relative frequencies with which the actions are rewarded. This proposition, though plausible, has not been experimentally demonstrated for men. But Herrnstein [1971] has demonstrated it experimentally for pigeons. . . .

#### THE STIMULUS PROPOSITION

We turn now to the second of our general propositions—but remember that they are "our" propositions only in the sense that we use them and not that we discovered them. This proposition concerns the effect on action of the circumstances attending it. Since in many accounts of operant or voluntary behavior these attendant circumstances are called *stimuli*, we call this the *stimulus proposition*.

We may state it as follows:

II. *If in the past the occurrence of a particular stimulus, or set of stimuli, has been the occasion on which a person's action has been rewarded, then the more similar the present stimuli are to the past ones, the more likely the person is to perform the action, or some similar action, now.*

In formulating their theories some psychologists include the reward of the action itself among the stimuli, referring to it as a *reinforcing stimulus*. We believe it is confusing to do so. It is true that the sight of some object that we have coveted and obtained earlier is a stimulus to our efforts to obtain it again; but it is the sight of the object, not the success in obtaining it, that is the stimulus. If we confuse the two, proposition II would seem to say the same thing as proposition I, whereas they really say something different.

Proposition II says that the reappearance of the circumstances attending successful action make more probable the repetition of the action. Thus a fisherman who has cast his line into a dark pool and has caught a fish becomes more apt to fish in dark pools again. The connection between the stimuli and the action is subject to both *generalization* and *discrimination*. If our fisherman has been successful in a dark pool, he may come to fish more often in any pool that is to some degree shady. Indeed his action itself may generalize. If he has been successful at one kind of fishing, he may become prepared to try other kinds and even other related sports, such as hunting. On the other hand, he may learn to fish only under very specific conditions of water, light, and shade, provided he has been successful under these but not under other conditions. In this case, the stimuli that govern his behavior have become highly discriminated. Should the conditions under which success is alone possible become complicated, they may not establish themselves at all as stimuli for his action. He is, as we say, unable to recognize them. As in the case of reward, the temporal relationship between stimulus and action makes a difference: if the crucial stimulus precedes the action by too long a time, the actor may not make the connection. The greater the value of the reward, the more sensitive to stimuli the person may become—so much so that if the value to him of a potential reward is very high, he may become oversensitive and, until corrected by failure, respond to irrelevant stimuli. Finally, alertness to stimuli or attentiveness to stimuli is itself an action which, like any other kind of action, a person may perform more often if it has brought him reward. All of these relationships should be looked on as subsidiary to the main stimulus proposition.

In social behavior persons and their attributes become crucial stimuli. Did this person, rather than another, reward a man's action? If he did, his identity was one of the circumstances attending successful action, and his presence on some new occasion is a stimulus making it more likely that the man will once more direct similar action toward him. Does this person display the cold blue eyes that a man's father did when the father punished him long ago? Then the grown man may show some slight tendency to avoid such a person. In human social behavior, what complicates the stimuli even more is the fact that they are largely verbal. The use of language sets the behavior of men further apart from that of animals than does anything else. The same general propositions apply to the behavior of both, but within these propositions the complexity of the stimuli available to men in their interaction with each other makes possible a higher order of complexity in their behavior.

The crucial variable in the stimulus proposition is obviously the degree of similarity between present stimuli and those under which an action was rewarded in the past. Yet similarity may not vary along a single dimension but along many, and indeed it may depend on a complicated pattern of measures. The ways in which persons discriminate among, or generalize across, combinations of stimuli is the subject of the field of psychology called *perception or cognition*. So various and so many are the findings in this field that in this book we shall only state the stimulus proposition, though we shall feel free to use more specific findings *ad hoc* to explain particular cases. The real intellectual danger is not that the findings are complex but that some social scientists should believe perception and cognition to be essentially different from other behavior and thus

require a different type of explanation. They are not essentially different. The ways in which men perceive and think are just as much determined by the results they achieve as are other kinds of behavior.

Yet we do not wish to appear so rigidly behaviorist as to deny reality to some processes in which perception plays a large part and which are of great importance in social behavior. Our view of these processes has been greatly influenced by the work of Bandura (1969).

Men, like many animals, often imitate the behavior of others of their kind. Imitation of others naturally requires some degree of observation of their behavior. We believe that a tendency to imitate others is genetically inherited and not initially learned through operant conditioning. Yet, whatever its origin, a man will not persist in performing an action he has imitated unless that action eventually brings him reward. If it is successful in bringing him reward, he will not only be apt to repeat it but also to adopt imitation as a generalized form of behavior. Then his practical success will support the genetic tendency, and the persons he has imitated will become stimuli in whose presence he will be especially likely to carry out imitative actions again.

Evidence is also accumulating that men can learn to act in a certain way even when, at first, the reward they get from the act is only vicarious. Suppose that a child sees another child put a box against a wall and use it to climb successfully out of his yard. At the moment, the first child has no occasion for climbing a wall himself, but if he does have such occasion later, the evidence suggests that he is much more likely to look for a box than he would have been if he had not observed the other child, even though he has yet received no reward himself. Naturally he will not go on repeating the action unless sooner or later he is personally rewarded for performing it, but the initial stimulus to the action is the observed success of the other child, not his own. This kind of learning has been called *model learning*. The success of any one action originally modeled on the action of another may lead to a generalization of modeling behavior. As Bandura and Walters put it (1963:5): "Most children develop a generalized habit of matching the responses of successful models." They cannot help developing at the same time a generalized habit of observing those who are successful, or indeed of observing others to discover whether they are successful. The matching presupposes the observation.

If we did not accept the reality of model learning, we should be hard put to it to account . . . for the effect of a man's behavior not only on the others with whom he is in immediate contact but also on members of an audience, who take no part in the social behavior themselves but only watch it.

#### THE VALUE PROPOSITION: REWARD AND PUNISHMENT

In proposition I we stated the effect of the success of an action in obtaining a reward on the probability that a person will repeat it. In speaking of the reward, we assumed that the value to the person of the result of his action was greater than zero—that is, he was not indifferent to it nor did he find it actually punishing. But the proposition had nothing to say about *how* rewarding the person found it. This variable, the degree of reward, we shall now bring in and call it *value*. The value in question is always that of a given unit of reward, no matter how that unit be defined, since, as we shall see, the values of successive units may change. The gross effect of this variable upon behavior may be expressed by the *value proposition*:

III. *The more valuable to a person is the result of his action, the more likely he is to perform the action.*

The variable, *value*, may take either positive or negative values (now .

in the mathematical sense of the term). The results of a person's actions that have positive values for him we call rewards; the results that have negative ones, punishments. The zero point on the scale is where the person is indifferent to the result of his action. The proposition implies that just as an increase in the positive value of the reward makes it more likely that a person will perform a particular act, so an increase in the negative value of the punishment makes it less likely that he will do so. And by an obvious extension of the stimulus proposition, if the occurrence of a particular stimulus was the occasion on which an action was punished, the recurrence of the stimulus on a new occasion makes it less likely that the person will perform the action. All of this is obvious enough.

Any action that has the result of allowing a person to avoid or escape punishment is rewarded by that result, and the person becomes more likely to perform the action. Thus there are two classes of reward: intrinsic reward and the avoidance of punishment. Similarly, there are two classes of punishment: intrinsic punishment and the withholding of reward.

The use of punishment is an inefficient means of getting another person to change his behavior: it may work but it seldom works well. On the other hand, it may give great emotional satisfaction to the man who does the punishing, and that is something not altogether to be despised. Punishment may be enough when all that is required is that the person stop doing something. Even then, if his action has otherwise brought him valuable reward, it will soon reemerge itself unless the punishment is often repeated and severe. Much more efficient as a means of eliminating an undesirable activity is simply to let it go unrewarded and thus eventually become extinguished, but applying this method sometimes takes strong nerves. Suppose we wish to stop a child's crying, when we suspect he cries only because it gets him attention. The best thing for us to do would be to ignore him when he cries. But a mother often finds it heart-rending to carry out a policy like this. What if there really were something wrong with him?

Punishment or its threat is still less efficient when it is used not just to stop a person from doing something but to get him to perform a particular action. Then we punish him if he does not perform the action. The difficulty here is that punishment makes rewarding any action that allows him to avoid or escape the punishment and not just the one we have in mind. Accordingly, we must also be prepared to punish or otherwise block off all avenues of escape except that one. Doing so is apt to prove a costly business, especially if we add the cost of surveillance to determine whether he is really doing what we wish him to do. Punishment, moreover, is apt to produce hostile emotional behavior in the person punished, and we must be prepared to cope with it. . . . To get a man to perform an action by rewarding him if he does it, rather than by punishing him if he does not do it, avoids these costs—but then the positive rewards may not be available. We must face the fact that positive rewards are always in short supply. Accordingly, while recognizing its disadvantages, there are times when we shall use punishment for lack of anything better, as a means of controlling behavior.

The things that men find rewarding—their values—are infinitely varied. Some of them are innate—that is, genetically determined and therefore shared by many men, such as the value set on food and shelter. Even some social values may be innate. It now looks as if men had evolved from apes that hunted in packs in open country. As a result, we seem today to be more "social" in our behavior than our cousins, the present anthropoid apes, just as wolves, who hunt in packs, are more "social" than their cousins, the jackals. Men could hardly have maintained pack behavior if they did not find social life as such innately rewarding. But this is speculation, and in any event, the capacity to find reward in social interaction must be highly generalized, not tied down to specific kinds of social reward.

What makes values infinitely varied is that, besides being born in men and animals, they can also be learned. A value is learned by being linked with an action that is successful in obtaining a more primordial value. (See especially Staats and Staats, 1963:48-54.) Suppose a mother often hugs her child—and getting hugged is probably an innate value—in circumstances in which the child has behaved differently from other children and, as the mother says, "better." Then "behaving better" than others is a means to a rewarding end and is apt to become, as we say, "rewarding in itself." In other words, it is an *acquired* value. The reward may generalize, and the child may be well on the way to setting a high value on status of all kinds. By such processes of linking, men may learn and maintain long chains of behavior leading to some ultimate reward. Indeed, apart from obvious anatomical differences and the use of language, the chief difference between the behavior of men and that of other animals may lie in the capacity of men to maintain longer chains relating, as we say, means to ends. For the animals the ultimate reward cannot long be postponed, if the sequence of behavior is not to fall to pieces. And even for men the ultimate reward must come sooner or later. Note that the process by which values are acquired and linked to one another is the same for men as for other animals, but the number of links that can be put together in a chain is greater for the former than for the latter. As usual, the differences are not differences in kind but in degree.

Since different individuals may encounter different circumstances in the course of their upbringing and thus acquire different values, men are apt to be more unlike one another in their acquired than in their innate values. Yet there are some values that men in particular kinds of society would have difficulty in not acquiring. These are the so-called *generalized values*, good examples of which are money and social approval. The act of fishing can be made more probable only by its success in getting a rather specific reward, that is, by the catching of fish—though some men seem to use fishing only as an excuse for daydreaming or admiring the scenery. But money and social approval can serve as rewards for a wide variety of actions and not just for some single kind. It is for this reason that they are called *generalized values*.

So numerous are the values men can acquire, and so varied are the circumstances in which they acquire them, that it is idle to make any general statement about which ones they will hold. But if the particular values held by particular individuals in particular circumstances are known or can be reasonably inferred from the attendant circumstances (if the values in question can be taken as given—and they often can be), then this variable can certainly be used in accordance with our propositions to predict or account for other aspects of behavior. But let no one talk about human values in abstraction from the past history and present circumstances of particular men.

In spite of all this talk about rewards, the reader should never assume that our theory is a hedonistic one, concerned only with materialistic values. The values a man acquires may perfectly well be altruistic. All our theory asks is that the values in question be a man's own values, not those that somebody else thinks he ought to have. A man's success in obtaining altruistic values has just the same effect on his behavior as his success in obtaining egoistical ones: he becomes more likely to perform the actions that have proved successful, whatever they may be. My sisters and I once knew a woman who set a high value on doing good to others, including ourselves. People sometimes say that virtue like hers is its own reward, that no external reward, no change in the behavior of others, is needed to maintain it. We soon discovered that this was not true in her case. Her high-minded behavior did require an external reward, and it was nothing less than our willingness to allow her to do good to us. Strangely enough, we were sometimes unwilling, and then she got as angry as the most materialistic of women deprived of the most material of goods. The language she used was

more likely to disguise her anger, but we soon became aware that it was anger just the same. We suspect that the same sort of thing may be true of other persons who hold altruistic values, which does not in the least mean that we must be cynical about them or admire them less. They are out to help others, and why should the fact that in so doing they also reward themselves be held against them?

#### THE DEPRIVATION-SATIATION PROPOSITION

It is something to know what a man finds rewarding or punishing, what his values, positive or negative, are. But the value proposition (III) is not really concerned with what a person's values are. It is concerned rather with *how valuable* they are, how valuable a person finds a particular reward in comparison with other rewards. This question in turn must be divided into two separate ones. First: Is the same kind of reward more valuable on one occasion than on a different occasion? Does a person find catching fish more rewarding, for instance, this morning than he will this afternoon? Second: Is one kind of reward more valuable than a different kind on the same occasion? Does, for instance, a person this afternoon find catching fish more rewarding than the results of working in his garden?

What we shall call the *deprivation-satiation proposition* deals only with the first question. We may state it as follows:

IV. *The more often in the recent past a person has received a particular reward, the less valuable any further unit of that reward becomes for him.*

If a man has received the reward often, he is beginning, as we say, to be satiated with it. Its value for him decreases, and by the value proposition (III), he becomes less apt to perform an action that is followed by this reward. The proposition emphasizes the "recent past" because there are many rewards with which a man can only temporarily be satiated. Food is the best example. If, on the other hand, a man has learned to value a particular kind of reward, but has received it only rarely in the recent past, we say he is deprived of it. For him, its value increases and by the value proposition he becomes more apt to perform an action that is followed by this reward.

Obviously the deprivation-satiation proposition is not very precise and states only a very general tendency. What constitutes the recent past within which deprivation or satiation takes place must be different for different kinds of rewards. Food can satiate men quickly, but it soon recovers its value. Most persons are not so easily satiated with money or status, if indeed they ever can be wholly satiated. The reason is that these are *generalized rewards*, which can be used to obtain a large number of more specific ones. Unless a person is satiated with all the things that money can buy, he will not be satiated with money itself.

As for the second question—whether one kind of reward is more valuable than a different kind on the same occasion—we can state no general proposition that will help us to answer it. We can only try to deal with particular cases. The number of possible comparisons is infinite, and in each case we must rely as best we can on the accumulated experience and knowledge that men have of other men and even at times of our own knowledge of particular persons. We know, for instance, that a man caught out in a chill rain without a coat is likely for the moment to set a relatively high value on shelter compared to other rewards, but that even then he would stay out in the rain if seeking shelter meant losing his life. Again, we know that a man who is new to his job is likely to set a relatively high value on getting good advice on how to do it. At the other extreme, there are preferences, differences in value, which are far from obvious. Thus we are told that the Chinese, faced with a choice of drinks, do not like milk and far prefer tea. It is easy to say that they have been taught to like tea and not milk, but that is not really an answer to the question. Why should they have been

taught the preference? The ultimate answer may lie in differences between the traditional agriculture of China and that of the West. Yet if we have some confidence that we know what the values of a man or of a group of men are, even if we do not know why they hold these values—if we can take their values as given in given circumstances—we can, with the help of our general propositions, make some good bets on what their other behavior is apt to be.

We have begun by separating the two kinds of questions about relative values. In the end we may have to bring them together again, so that we do not leave the different values of the same reward at different times wholly unrelated to the different values of different rewards at the same time. In general, a man's satiation with a particular reward renders all his other rewards relatively more valuable to him. Moreover, it may turn out that the values can be placed in some kind of rank order, or hierarchy, of values, such that unless a man is first satiated with a particular kind of reward, the next higher kind in the hierarchy will have little value for him. Or rather, to bring in the success proposition (I), the man, if not actually satiated, must be pretty sure of getting enough of the first kind before he can set much store by the next (see Maslow, 1954). Thus unless a man knows where his next meal is coming from, he is unlikely to set a high value on some other reward such as status; he can forgo status more easily than he can food. Americans are said to set a high value on democratic processes. Would they do so if democracy got in the way of their getting enough to eat? One may guess that democracy would be the loser, but fortunately most Americans have not had to make the choice. There are some intangible and ideal rewards on which men will set a very high value—but only if other "lower" needs are being met. We can only raise the question here. We know too little about the ways in which men rank values in a hierarchy of this sort.

#### COST AND PROFIT

One reward is an alternative to another when it is not a perfect substitute for the other in the sense in which two nickels are usually a perfect substitute for a dime. Now that we have brought up the question of alternative rewards, we are in the position to go back to the value proposition (III) and restate it in a different, and sometimes more useful, form. Indeed there may be more than one such form. Some actions that get a man reward necessarily incur him punishment at the same time. Thus if a fisherman is to get a successful day's fishing, he may have to scramble through thickets or wade into a pool and get soaked to the skin. We may go even further and argue that, since the withdrawal of a reward is itself a punishment, most actions must incur punishment. For when a man chooses to perform one of two alternative actions followed by two alternative rewards, he necessarily withdraws from himself or, as we shall now say, forgoes the reward to be gotten from the action he did not perform. Thus the fisherman who scrambles through thickets to cast his fly in a secluded pool forgoes the reward he would have received from any alternative action that would have gotten him out of being scratched.

Following the economists, we shall say that the *cost* of any action performed is the forgone reward of an alternative action not performed. There may, of course, be several alternatives, though never an infinite number of them. We have in mind the best alternative, the one that would have brought the most valuable reward. And we shall call the excess of the reward a person gets from an action over the cost he incurs his *profit* or net reward from the action. . . .

Since reward tends to increase the frequency with which a man performs an action and cost, being a punishment, tends to decrease it, we are now in a position to reformulate the value proposition by saying: the greater the profit a person receives as a result of his action, the more likely he is to perform the action. The reformulation does not bring in anything essentially new, it merely makes ex-



plific the effect of alternative rewards forgone and incidentally, we believe, confirms to the intuitive notions men have concerning what determines their actions.

A still better formulation may be one which puts the matter in terms of the relative frequency at which men perform alternative actions. At the risk of gross oversimplification, let us suppose that a man can perform two alternative actions, 1 and 2. The frequency with which he performs one let us call  $A_1$ , and the frequency with which he performs the other,  $A_2$ . Similarly, the value of a unit of reward that he receives from one is  $V_1$ , and the value of such a unit that he receives from the other is  $V_2$ . Then according to the value proposition (III), if the frequencies with which the actions are rewarded are equal:

$$\frac{A_1}{A_2} = \frac{V_1}{V_2}$$

Profit has been defined as  $V_1 - V_2$ , in the case of action 1, that is, as its reward less its cost, the forgone value of the alternative reward, and as  $V_2 - V_1$ , for action 2. As  $V_1$  and  $V_2$  tend toward equality, the profit of either action tends toward zero, which now must be looked on as the profit of either action *relative* to that of the other. Under this condition, equation (I) does not imply that the man will cease to perform either action but only that he will perform one just as often as the other; in this sense, he is indifferent between the two.

If a particular kind of action is repeated in successive units, each with its associated units of reward and cost, and if the value of the reward of successive units decreases (as is usual in satiation) while their cost increases (as, for instance, in fatigue), then the science of economics would say that a man would maximize his total reward from this kind of action if he stopped repeating it when the value of the reward from its latest unit just equaled the cost associated with that unit. Or, marginal cost should equal marginal return. But this statement helps little in explaining or predicting human behavior in the cases, not often studied by economists, in which action does not meet these conditions and men cannot assess the value of successive units of reward and cost in money but only by far grosser processes. In this book we need not assume that men try to maximize their rewards. For us they need not be maximizers but only meliorizers. They do try to make their rewards greater. Whether they ever really try to make them the greatest possible is another question, and one which it would be exceedingly difficult to answer.

The value proposition, in the present way of putting it, implies that the probability of a man's performing one action rather than another depends only on their relative values, on the excess of reward over cost, and not at all on the absolute values of either. It implies that if the profit is the same, the probability remains the same whether the costs and rewards are absolutely high or low. At extreme values this does not remain true. If the value of the reward of an action is very high, but the cost is very high too, especially if both the reward and the cost are uncertain, then a man may be overcome by anxiety and "freeze up"—he may be unable to perform any action at all. An example of extreme values would be a great prize that can only be obtained at the risk of great danger. Nevertheless the value proposition, as stated now in terms of the relation between reward and cost, holds good in its crude way over a wide range of values, and if we do not press it beyond its limits it will serve us well.

For an action to incur cost, an alternative and rewarding activity must be on hand to be forgone. Unless a real alternative is open to a man, so that he is able to forgo it, his action costs him nothing, and he is apt to perform it even if the absolute value of its reward is low. Great captains try to arrange, if they can, that their soldiers shall have no alternative to fighting the enemy, as Cortez did when,

before his advance into Mexico, he burnt his ships behind him. Nor should we overlook here a special and weighty kind of cost. If a man has chosen a certain course of action, and it is one that will take time to accomplish—if he has, as we say, committed himself to this course—one of the costs he incurs, one of the values he forgoes, is that of awaiting himself of other opportunities, which might turn out later to be even more attractive, but which are incompatible with his chosen course. As Marshal Foch, the generalissimo of the Allied armies at the end of World War I, put it: "One should not sell one's freedom of action except for a high price."

The value proposition, some scholars argue, must, if it is valid, imply that a man can rank all his values on a single scale. In fact, efforts to get a man to do just that by means of a questionnaire of some sort often results in inconsistencies: the man will rank value A higher than value B, and B higher than C, but then rank C higher than A. Whatever may happen in the abstract and in answer to a questionnaire, the issue is not one of great importance in real life. Again, for example, once the fisherman has gone off to fish and left the camp far behind, once he has committed himself to fishing, he cannot easily go back to the camp and play bridge, especially if others, his possible partners in bridge, have made the same choice he has made. It is idle then for him to compare the rewards of fishing with those of playing bridge. The only choice now open to him may be between fishing in one pool and fishing in another. The fact that a man never has to choose among all his values but only between those open for him to gain at a particular point in time makes it easier for others, including social scientists like ourselves, to predict his behavior. For many purposes, indeed, we only need to know which of two or three rewards has the greatest value for him. We need not know, if indeed we could possibly find out, just how much greater it is. This characteristic of human behavior may, on the other hand, make trouble for the man who is doing the choosing. Once a man has committed himself at a series of choice points to particular courses of action, he may find himself in the end, even if he chose the better alternative at every point, in a position he would not have intended or preferred if he could have foreseen the whole sequence from the beginning. Nothing in the human condition leads to greater tragedies than this. . . .

### THE AGGRESSION-APPROVAL PROPOSITION

So far we have had nothing to say about the emotional behavior of men, and thus have left out much that makes them human. A fuller psychology than ours pretends to be would include several propositions about emotional behavior, among the most important of which would be statements about the causes and effects of anxiety. But . . . in order to keep the treatment as simple as possible, we shall introduce only one proposition about emotional behavior, the only one we shall badly need in order to explain the findings about social behavior. . . . This proposition we call the *aggression-approval proposition* and we can perhaps state it most conveniently by dividing it into two parts, one concerned with aggression and the other with approval.

The first part is usually called the *frustration-aggression hypothesis* (Miller and Dollard, 1941):

*V<sub>a</sub>. When a person's action does not receive the reward he expected, or receives punishment he did not expect, he will be angry; he becomes more likely to perform aggressive behavior, and the results of such behavior become more valuable to him.*

Let us now comment on each clause of this complicated proposition.

When a person does not get what he expected, he is said to be frustrated. A purist in behaviorism would not refer to the expectation at all, because the word

seems to refer, like other words such as "purpose," to a state of mind. Yet if we did not use it we could only replace it by a long circumlocution, without any offsetting gain in rigor. Nor need the word refer only to an internal state; it can refer to wholly external events, observable in principle not just by the person himself but by outsiders. What a man expects to get by way of reward or punishment under a given set of circumstances (stimuli) is what he has in fact received, observed, or was told others received, under similar circumstances in the past; and none of these things are private events confined within the individuals' head. This is what we shall mean by the word *expectation*...

When a man is frustrated, he is apt to feel some degree of the emotion we call anger. Again, a purist in behaviorism might not refer to anger in his version of the proposition but only to the aggressive behavior; we keep the anger in so that we may not do too great violence to the common sense of men. Men show that the experience of anger has much the same meaning for all of them through the ease with which they can communicate to others the fact that they are angry. No doubt the more valuable to a person is the reward he expected or the more painful the punishment he did not expect, the greater is his frustration and hence his anger.

When a man is frustrated, he is apt to perform aggressive actions. These are actions that attack, break, hurt, or threaten the source of the frustration, whether the real source or what the man perceives it to be. If for any reason the real source cannot be attacked, almost any target will do in a pinch. The target may of course be an inanimate object. We do not kick a struck door just because a kick will help to open it, for it usually will not. We kick the door in order to hurt it. But (here) we are naturally much more interested in human sources of frustration and targets of aggression. In anger, moreover, the successful results of aggressive action reward a man as they would never have done without the anger. When we are furious at someone and hit him, the sight of his wincing under our blow becomes intensely rewarding.

In our first four propositions we were dealing with voluntary or, as the behaviorists call it, operant behavior. Operant behavior and emotional behavior such as aggression differ in the initial conditions that make their appearance more probable. No previous stimulus can automatically get a man to perform an operant the first time. He must just happen to perform it, even as a matter of chance, and be rewarded by it before he will perform it again. Only after he had been rewarded will the attendant stimuli begin to get some control over his action. Aggressive behavior can, on the contrary, be automatically produced the first time by a stimulus—the failure of an action to get the expected reward. In this respect, its initial release by a stimulus, aggression resembles a reflex like the familiar knee jerk.

Yet in another and more important respect aggression differs from a reflex. A reflex cannot be learned—one cannot learn to do a convincing knee jerk—but aggression can be learned. That is, an aggressive action, originally purely emotional, can become voluntary. Whatever the conditions of frustration that led a man to perform an aggressive action in the first place, if in fact his aggression is followed by a reward wholly apart from the satisfaction of his anger, he becomes more likely to perform it again, just as if it were an ordinary operant. As we all know to our cost, aggression may pay, and if it does will be repeated. Many men and groups use aggression simply as an instrument for attaining practical results. In their case, the aggression may create the anger, not the anger, the aggression. But by the same token, a man may come to perform aggressive actions less often if they have not been successful or have actually resulted in punishment. He may learn to get his outward aggression, if not his inward anger, under control. Or he may still attack but may learn to displace his attacks from targets that respond

with punishing reprisals to less dangerous ones. In this book aggression and the like will be treated as if they were, at one and the same time, both emotional and voluntary activities.

Let us now turn to the second part of the aggression-approval proposition. We have long believed that the special emphasis psychologists have placed on the first part, that is, the frustration-aggression hypothesis, has tended to give a one-sided view of the emotional behavior of men since it has pointed only to their negative emotions. But if they can be frustrated and hate, they can also be fortunate and love. Let us therefore propose with some diffidence the following as the second part of the aggression-approval proposition:

Vb. *When a person's action receives reward he expected, especially a greater reward than he expected, or does not receive punishment he expected, he will be pleased; he becomes more likely to perform approving behavior, and the results of such behavior become more valuable to him.*

If the reader is not altogether happy with the words *pleased* and *approving* which we have used in the proposition—and we confess we are not altogether happy ourselves—let him find his own opposites to *angry* and *aggressive*.

Many of the comments that we have made about the first part of the proposition we may repeat, *mutatis mutandis*, for the second part. Two points are of particular importance. First, though men often give what we call their spontaneous admiration to others who have provided them with unusual reward, they obviously can also learn to give approval to others simply as an instrument for getting further reward from them, apart from the expression of the admiration itself. Approval can become such an instrument because many men find the approval they receive from others rewarding, just as they find aggression punishing. In short, approval like aggression may become a voluntary as well as an emotional action. In later chapters we shall have a great deal to say about approval as one of the most important rewards of social behavior. Second, if what was once an unexpected and unusual reward becomes by repetition an expected and usual one, the person's original emotional reaction will tend to decline in strength, which need not mean that he will cease to use approval instrumentally. . . .

### THE PROPOSITION AS A SYSTEM OF PROPOSITIONS

Now that we have stated the general propositions . . . we must make one or two comments on the set of propositions as a whole. We have stated each proposition baldly, without qualifications, without adding the escape clause that each holds good only under the condition that "other things are equal." The reason we have done so is that what these "other things" are and where they are "equal" are determined for each proposition by the other propositions in the set. The effects that would be predicted by any one of the propositions may in concrete cases be masked or modified by the effects of other propositions in the set. That is, the set must be taken as a whole system of propositions.

Let us offer just one crude illustration. The success proposition (I) says that the more often an action is rewarded, the more often a man will perform it. But this relationship certainly does not always hold good in real life. For if the reward comes often enough, the value the man sets on a further unit of it will, by the satiation proposition (IV), decline, perhaps even to the extent that he is indifferent to it for the time being. But as the value of the reward decreases, then the man, according to the value proposition (III), becomes less likely to perform it and not more likely. What follows from the three propositions taken together is that a man will perform an action at the fastest rate when the action is rewarded only just enough to keep him slightly deprived of it. If he were wholly deprived, it

would mean that his action was utterly unsuccessful in getting the reward, and complete lack of success leads to inaction just as much as satiation does.

#### THE HISTORICITY IMPLIED BY THE PROPOSITIONS

The propositions imply, if we did not know it already, that the past history of men makes a big difference to their present behavior, and not just the recent past but often the past of long ago. A man's past history of success, of stimulation, of the acquisition of values all affect the way he behaves now. The choices he made in the past may still be limiting the opportunities available to him today, or he may perceive them as limiting; hence the great weight attached to a man's early experience by all schools of modern psychology. The ill effects of some early experiences may of course be overcome, but it may be difficult to do so—there is something to be overcome.

The effect of past experience extends beyond the history of individuals to the history of societies. Since children learn much of their behavior and values from parents and other members of the older generation, the past culture of a society tends to perpetuate itself. We need not believe that a society maintains itself by teaching its members just those actions it is prepared to reward, just those values it is prepared to satisfy. If a child acquires at his mother's knee a value like independence, he may, when he grows up, try to change his society radically instead of preserving it. Indeed we know that old values and actions whose success in attaining these values were learned long ago may, in new circumstances, lead to radical, unforeseen, and quite unintended social change. . . . Yet there is always some tendency for past behavior to maintain itself at least in the sense that every new generation has to start from something that already exists, it can never make a wholly fresh start. Indeed the men of the past may, in pursuit of the values of their time and by its methods, have created institutions to which their descendants are committed, at least to the extent that they cannot change all their institutions at once. Past institutional commitments have the same effect on the history of societies that past choices often have on the history of individuals. . . .

This may be a useful point at which to enter a warning. Although the general propositions we shall use are often called the propositions of "learning theory," we are far from believing that men are equally likely to learn anything in the way of behavior, provided only that they encounter in the social and physical environment the appropriate stimuli and rewards. They do not, so to speak, start life as blank sheets of paper on which the environment can readily write whatever occurs to it to write in the way of learning. Not only their experience but their genetic endowment—not only nurture but nature, to use the neat antithesis—determines what they learn.

It is not a question of which is the more important, nurture or nature, though that was the question psychologists asked themselves for several decades. The real question is how the experience of men interacts with their genetic inheritance. . . .

#### THE RATIONALITY PROPOSITION

We have less need to bring in past history in explaining some kinds of behavior than others. In order to understand this point let us begin by looking at a proposition that in effect sums up the first three of our propositions, those concerned with success, stimuli, and value. (As for the last two propositions, the *deprivation-satiation* proposition (IV) states one of the causes for a change in the value of a reward and the *aggression-approval* proposition (V) states the conditions under which the results of certain kinds of actions become valuable.) The proposition has been called the principle of rational choice or the *rationality proposition*. (See, for instance, Harsanyi, 1967.) It may be stated as follows:

VI. *In choosing between alternative actions, a person will choose that one for which, as perceived by him at the time, the value,  $V$ , of the result, multiplied by the probability,  $p$ , of getting the result, is the greater.*

In so acting, a person is said to maximize his expected utility (Olshe and Olshe, 1970:3).

Just as the rationality proposition has nothing to say about why a man perceives his chances of success as high or low, so it has nothing to say about why he has acquired certain values and not others, why he sets a higher value on one reward than he does on another, or why he values a particular reward more highly on one occasion than he does on another. A more fully developed psychology, and one that deals with the effects of a man's past history on his present behavior, is needed to account for these things.

Yet we must always remember that, besides what a man perceives to be his chances of success in various actions, there are always the actual chances of success as given by the outside world independent of his perceptions, including at the extreme the certainty that some kinds of actions will be successful. Suppose we have reason to believe that a man's perceptions of the outside world are accurate, that the outside world and his map of it coincide. Suppose we can assume further that his values are common values, values that most persons share, or that are common to a class of men to which he is known to belong. Then, in explaining his behavior, we can neglect the details of his past history. . . .

Much human behavior, of course, meets these conditions and can be explained in this way. But much behavior cannot be explained by the rationality proposition. If a man's values are somewhat queer. . . and if his chances of success are not given by the outside world, or at least not accurately known by him, then the rationality proposition by itself may not help us much. Our favorite example, among the enormous number that could be cited, is the decision by William the Conqueror (then simply the Bastard), Duke of Normandy, to invade England in 1066. That he set a high value on the result of successful conquest, becoming king of England, those of us who have some knowledge of other feudal lords will find no difficulty in accepting. But what about the other term in the rationality proposition, his chance of success as perceived by him? He could not know what his chances were. As the economists would say, his condition was one of uncertainty and not of risk. In risk the odds on success are accurately known, in uncertainty they are not known. Even if he were fairly sure he could get an army and a fleet together, there remained for him the dangers of a sea voyage, of landing on a hostile shore, and of battle with an English army under the experienced and hitherto successful command of Harold Godwinsson. Defeat in battle would almost certainly mean death. William's contemporaries might well have judged his chance of success to be small. On the record, we have no reason whatever to believe that he was a foolish man. Why then did he go ahead with the enterprise? In trying to answer this question it is surely relevant to point to the almost unbroken series of his military victories over the preceding twenty years. It is not the rationality proposition but the success proposition that will account for the effect of these victories on his decision. Past success in military action made his future military action more probable. Or, as we say in ordinary language, past success had given him confidence.

Certainly, if we keep the rationality proposition firmly in mind, we shall never forget that human action is determined by two kinds of factors, not one. Many persons, including many social scientists, talk as if what determines a man's action was his "motivation" alone—in our terms, the value he sets on the result of his action. But a man may be highly motivated in this sense and still not take action, if his similar actions in the past have been uniformly unsuccess-



cessful. Again, some social scientists talk as if the reason why some lower-class groups, like blacks in the United States, remain unassimilated to the larger society in which they live is that their values are different from those of other groups in the society. Their values may be just the same as those of the rest of society, but if their actions have been, for whatever reason, unsuccessful in obtaining those values, they will turn to alternative actions. If these alternative actions are successful in obtaining a different kind of reward, their actions may keep them as effectively cut off from the rest of society as if their values had been different all along. The rationality proposition serves to remind us that action is determined by success and value jointly.

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## THE POTENTIAL IMPACT OF B. F. SKINNER UPON AMERICAN SOCIOLOGY

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It has been argued elsewhere (Friedrichs, 1970, 1972) that the 1950's witnessed proximate consensus within American sociology over the "orthodoxy" of a "systemic" image of the nature of our subject matter and that this in turn was supported by a self-image in which the sociologist identified himself with the value-free stance he associated with the natural scientist (a posture characterized as "priestly").

It was also suggested that, confronted by the obstinate anomaly that is fundamental social change, a miscellany of alternative paradigms flowered in the 1960's. They were dominated, however, by "system's" polar opposite—"conflict"—and an associated self-image which identified the sociologist as an agent of change (the latter termed, in contrast, a "prophetic" stance).

The analysis concluded with the observation that a "dialectical" paradigm might, for a wide variety of reasons, ultimately inherit the field so hotly contested by "system" and "conflict," since it would appear capable of granting essentially equivalent status to both as well as opening the way to a dialogical relationship between the "priestly" and "prophetic" modes of self-understanding.

What was almost completely overlooked was the possibility that the two sets of contending paradigms—"system" versus "conflict" and "priestly" versus "prophetic"—might be combined as well under the aegis of a renaissance behaviorism. Indeed, it would appear that the latter may be in an even better position to inherit the claim of sociological "orthodoxy" in the latter half of the 1970's.

The charismatic point of reference for the new behavioral dispensation appears clearly to be B. F. Skinner. Psychologist though he may be, it is worth recalling that Talcott Parsons, orthodoxy's dominant spokesman in the 1950's, was trained and received his earliest appointment at Harvard not as a sociologist but as an economist and that the first review symposium of the American Sociological Association's official journal of reviews, *Contemporary Sociology*, focused upon Skinner (Marwell and Boguslaw, 1972). Furthermore, the latter's fundamental posture is ably served by two of sociology's most highly respected and strategically placed practitioners, is claiming the allegiance of a rapidly growing group of younger sociologists and social psychologists, and is remarkably in tune with the ethos of a national research establishment upon whose funds the major graduate faculties (and thus graduate training) in the discipline depend.

What is in the Skinner box of tricks that ghosts that fundamental strength lies in its combination of the hard, natural scientific proclivities of the scientific "priest" with