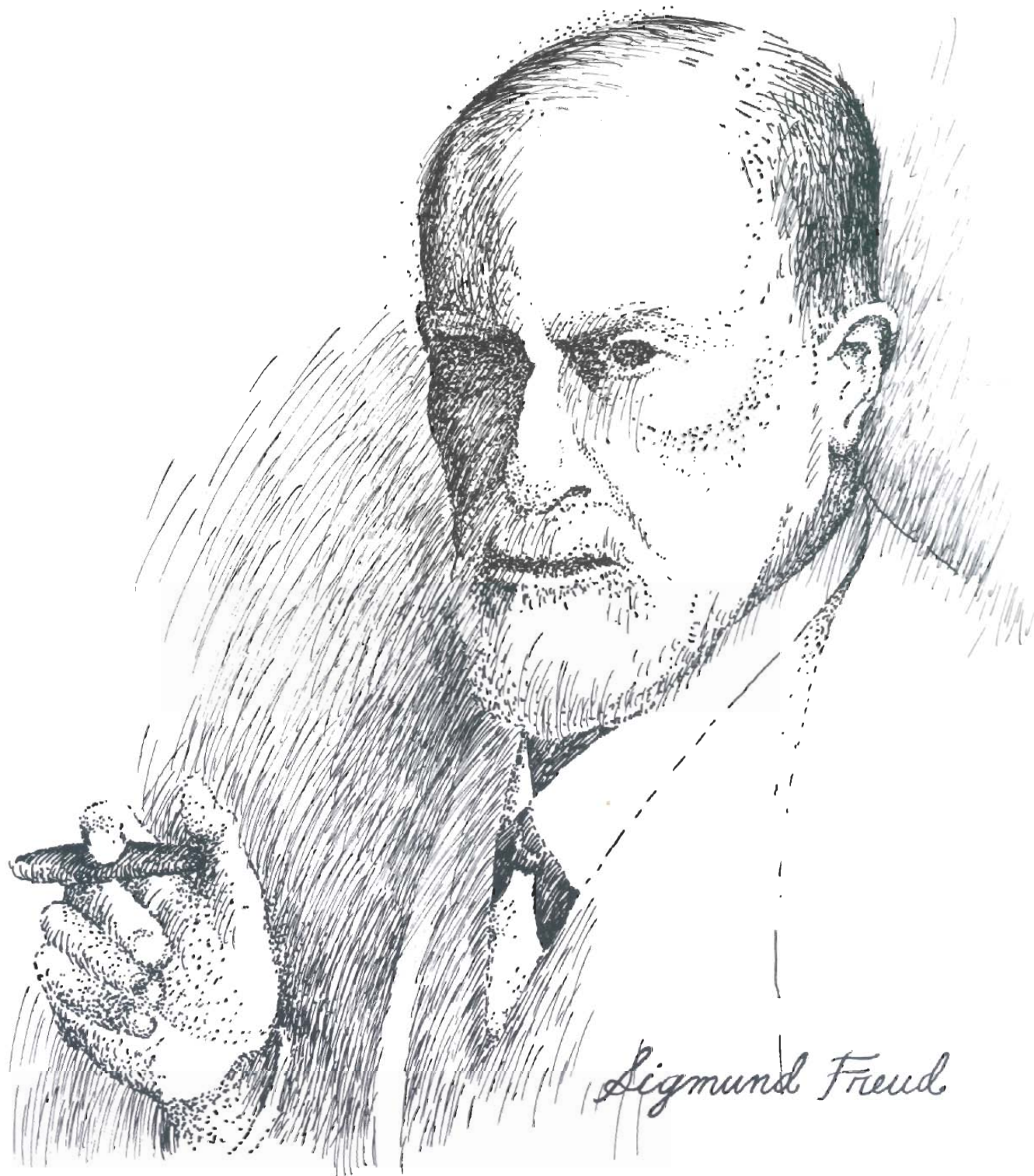


# Determinism



Mark Twain, a sophisticated observer of human behavior, wrote a book called *Pudd'nhead Wilson*. The book is about two babies born in the same household on the same day — Thomas à Becket Driscoll came into the world as the heir of the Driscoll family, the leading family in the small town of Dawson's Landing, Missouri; while Valet de Chambre was born into slavery by Roxana, a fair-skinned Negro owned by the Driscolls. Thomas' mother died in childbirth, and he was given to Roxana to care for, along with her own child. Because Valet de Chambre's father was a white man and Roxana was light-skinned, her child was quite fair, and Roxana delighted in being told that the two children were equally handsome.

One day an incident occurred which terrified her. She and the three other house slaves were accused of stealing some money. The master threatened to sell all four of them "down the river" — that is, further south, where the treatment of slaves was much less humane.

Roxana escaped being sold, but as a result of this event, she was gripped by a terrifying thought: what if someday the master should decide to sell her beloved Chambers, as he was now called, "down the river"? The thought so agonized her that she decided to drown both herself and her child. Being a proud woman, she regarded it unseemly to be found dead in her work clothes, so she dressed in her best clothing and borrowed one of Tom's gowns for Chambers. After dressing her son in this fine garment, she was amazed to find that the clothing irradicated all difference between the small master and slave.

As a result of this revelation, the idea of suicide was replaced by a more positive one — she would exchange the identities of the children so that her son, being substituted for Tom, could live in safety and nevermore be threatened by the injustice of slavery. Because of the master's involvement in his own affairs, and because the other three house slaves who were familiar with the children, were sold, Roxana was successful in carrying out her plan.

The rest of the story deals, in part, with the way in which the social roles of the two youngsters shaped their behavior: the real master into a slave, and the real slave into a master. As a result of being thrust into the role of heir to a prominent family, Roxana's child became a spoiled, snobbish coward. His vices ranged from treachery to murder.

When Roxana's child was brought to trial for the murder he had committed, the exchange of children was revealed and the real heir was reinstated to his rightful position.

However, Twain paints a sad picture of the real heir's condition. Despite his restored wealth and freedom, the years spent in slavery had a damaging effect — Tom, unpolished and uneducated, was doomed to remain a misfit in a free man's world. Mark Twain seems very aware of the effect of the environment on the shaping of behavior. He explored the idea of role exchange also in *The Prince and the Pauper*, where a poor boy poses as a prince, and a prince takes the role of a poor boy. Twain is of the opinion that training makes a man what he is: a free child raised as a slave becomes slave-like, and a slave raised like a free man acts like a free man.

Since we're familiar with the law of reinforcement, we can imagine how a changling master takes on the personality of a real master:

*Small changling master (pounding the table with his grubby little fists): "Gimme eat, gimme eat right now!"*

*Adults: "Isn't that cute; he sure knows how to get those slaves to move, he's a horn master!"*

On the other hand:

*Small changling slave (pounding the table with his grubby little fists):  
"Gimme eat!"*

*Adults: "You wait yo' turn bo', massa' gwine eat furs!"*

*Little changling slave: "But I'm hongry!"*

*Adults: "You hesh yo' mouf, you some kind uppity niggah o' sump-thin'?"*

In role shaping, the whole social environment acts to deliver reinforcement for appropriate role behavior, and punishment for inappropriate role behavior. We remember that if a response is followed by a reinforcing event, the rate of that response is maintained or increased; while if a response is followed by a punisher, the response rate drops. The law of reinforcement may be the most powerful law available to us when dealing with behavior. This law, along with others, accounts for the process of building a person's response repertoire.

The message of *Pudd'nhead Wilson* is that specific laws govern behavior so that behavior, like other natural phenomena, is lawful and regular, as opposed to erratic and accidental. Certain situations produce particular types of behavior. When those situations are repeated, the behaviors are likely to be repeated.

What is the significance of Mark Twain's story for a behavioral science?

## THE LAWFULNESS OF BEHAVIOR

Lawfulness of behavior means that behavior is the result of some condition that has *caused* it to happen. The occurrence of a causal factor would tend to produce the same result each time. Some factor or factors are responsible for the behavior. Does that mean that nothing we do is spontaneous? If by spontaneous we mean uncaused, then it is true that as far as we know, no behavior is, technically speaking, spontaneous.

What does lawfulness of behavior mean?

The idea of causality of behavior is difficult to accept. It may be accepted in certain situations, but not in others. For example, if you asked someone how a person who was raised as a slave would act, he'd probably say, "the guy would act like a slave". If you then spent a semester explaining the law of reinforcement, and various other behavioral laws to him, and he understood what you were saying, and then you asked him, "How do you think a person raised as a slave gets to act like one?", he would tell you how various conditions might shape slave-like behavior. If, at this point, you said, "Then you must agree that behavior is lawful?", he'd probably say, "Sure, I guess you could say that". And if, finally, you jumped in with, "You would therefore, no doubt, agree that all behavior is due to some causal factor?", he'd probably say, "Now, wait a minute, I wouldn't go as far as that!!"

Psychology has found that behavior is \_\_\_\_\_ (spontaneous, caused, unpredictable).

This chapter is precisely about the fact that all behavior is caused. We find that everywhere in nature where man has looked for lawfulness, it exists. All of the sciences deal with cause and effect relationships. In working with human and animal behavior wherever we have looked, we have found that behavior is a function of some cause.

### Evidence for the Lawfulness of Behavior

If we put a rat in a box with a lever that can be depressed, and leave him there for an hour, he'll probably depress the lever a few times. If, during

the next hour, we deliver sugar-water to him right after he depresses the lever, he'll press the lever many more times during this second hour than he did during the first. In other words, if you find a factor that leads to pressing the lever (like the delivery of a reinforcer), and apply that factor, you'll cause a rat to press a lever. You have introduced a condition (reinforcement) that causes some behavior (the increased frequency of lever pressing).

But maybe a rat in the box is old hat. Perhaps animal studies are neither dramatic enough, nor close enough to human behavior to give credence to the notion that human behavior is also caused. Well, pick a situation, any situation. For example, let's visit a typical classroom. In the classroom we find Mortimer, who has behavior problems. Mortimer exhibits a wide range of behavior that messes up the teacher and the rest of the class. Let's sit down and watch for a while and see what happens to him. Mortimer misbehaves and his teacher says, "Sit down, Mortimer." Mortimer misbehaves again, and his teacher says, "Stop climbing the pipes, Mort!" Mortimer misbehaves a third time, and the class says in unison, "Ha, ha!; titter; giggle; hee-hee; look at Mortimer!" And the teacher says, "Why are you holding Lynn's head under the water faucet, Mortimer?"

What appears to be happening is that the child gets a reaction from either the teacher or the class everytime he misbehaves. Though the reactions he gets are not always pleasant, they do signify that attention is being paid to him. In contrast, quiet Ken, who has been sitting, unobtrusively, with his hands folded, hasn't had a remark directed toward him all day. The attention that Mortimer is getting for his "bad" behavior is, in fact, maintaining this behavior. Each unruly behavior is caused by the fact that he has been reinforced for that class of behaviors in the past.

Here is another example: you're at a party and Kirk is there too. "That Kirk, you can never tell what he's going to do next." An hour goes by and there's Kirk doing a strip in time to the Stones', "Take It or Leave It". Surely, his behavior is spontaneous; he is the most spontaneous person we know. Oh, yeah? Whenever Kirk has shown such "unpredictable" behavior in the past, he's gotten everyone to look at him. Having everyone look at him and pay attention to him is a powerful reinforcer. The cause of the occurrence of this class of behavior is the reinforcement it has received in the past.

Let's look at still a third example. Amy's mother is visiting a friend and in the course of their conversation says, "I can't understand it, Amy is such a shy, quiet child; neither Henry nor I are like that. I wonder where she gets it from?" The mother goes on chatting with her friend, and after a while Amy says, "Ma, may I . . ." And her mother snaps, "Amy, how many times have I told you not to interrupt when I'm talking!" A half hour goes by and Amy says, "Ma, I have . . ." The mother says, "Amy, please, I don't often get a chance to talk to another adult!" An hour goes by and Amy says, "Please, I've got to . . ." Her mother counters with "Amy, do I have to tell you again!" Shortly, afterwards, a little pool unobtrusively forms under Amy's chair. Her eagle-eyed mother quickly notices it and says, in outrage, "Can you believe that, look what she's done; she's too shy to even ask where the bathroom is." The cause of Amy's "shyness" is obvious to everyone but her mother. Everytime Amy opens her mouth, her mother punishes her. This example may be an exaggeration, but often parents will reinforce certain behaviors, like praising their child for punching a kid who has picked on him, and then be surprised when the child's aggressive responses increase in frequency; or reinforcing a child's dependent behavior and being surprised when the child is not in-



Give an everyday example that illustrates that behavior is caused.

dependent. The point is that behavior is caused. If the correct causal factors are applied, then the desired behaviors will result, but if incorrect causal factors are introduced then undesirable behaviors may result.

Within the past decade quite a bit of work has been done in mental hospitals toward finding the causes of undesirable behavior, withdrawing these causes, and/or instituting new causal conditions on which more desirable behaviors are dependent. The techniques used are those developed in the field of operant psychology. So far the applications of these techniques have been generally limited to hospital and institutional settings, such as schools, because only under such conditions can the experimenter adequately deal with causal conditions to a large enough extent to have a significant effect.

A few recent examples of the cause and effect approach are mentioned below. In the first case a causal factor was sought, and in the next two an alternate behavioral effect was instituted by changing causal conditions. Lieberman and Raskin (1972) were interested in the conditions which govern mood. They assigned the subjects certain tasks, during which the reinforcement contingencies were varied, and had the subjects report verbally on their mood during performance of the tasks. They found that verbal reports of depression occurred as a function of the amount of reinforcement delivered contingent upon task performance.

Fordyce (1970) found that chronic pain-associated behaviors, like taking medicine, moaning, and verbalizing pain, were partly maintained by unwitting reinforcement which the hospital personnel delivered contingent upon these behaviors. He changed conditions so that reinforcement was no longer contingent upon these behaviors, but rather on alternate ones, and found that the pain-associated behaviors decreased in frequency.

Lieberman (1971) wanted to change the behavior of members of a therapy group in the direction of greater cohesiveness — intimacy, solidarity or affection toward each other. He trained a group therapist to use social reinforcement and found that the members of this therapist's group showed a higher frequency of social cohesiveness than did the members of a matched group where the therapist used more conventional group therapy methods.

These studies and many others that have been done in the area of behavior modification indicate that when causal conditions are manipulable, behavior can be changed. Certainly the work in behavior modification, taken together with the large number of experiments done in the laboratory provide considerable evidence that behavior is dependent on causes. When events are found to depend on causes, when events are lawful, those events are said to be *determined*. Data gathered from all scientific fields indicate that *determinism* holds throughout nature. It has become clear that the *law of determinism*, that is, that all things are determined, holds for the behavioral area also. The law of determinism, which states that all events are determined or caused is probably the most important conclusion we can draw from science.

### **Behavioral Determinism Threatens Man's Uniqueness; or: Human Being, Superstar**

From the beginning of his history man viewed himself as a unique creature qualitatively different from the other creatures, a creature the gods had placed upon a unique heavenly body, a body at the center of the universe. The concept of his own uniqueness is very reinforcing to man. As we will see, man has been generally reluctant to accept scientific findings that question that uniqueness.

Three examples from an institutional setting illustrating the cause and effect approach to modifying behavior were mentioned (Fordyce; Lieberman and Raskin; and Lieberman). Describe one briefly, naming the cause of the behavior and the effect.

Define the law of determinism.

Until the mathematical formulation of Copernicus, the European world, guided by the Church, envisioned the Earth as being fixed in place at the center of the universe with several heavenly bodies — Mercury, Venus, the Sun, Mars, Jupiter, Saturn, and some fixed stars — orbiting in concentric circles around it. As a result of his studies, Copernicus rather apologetically suggested that perhaps it was the Sun that was fixed in place at the center of the universe, while the rest of the heavenly bodies, including Earth, rotated in concentric circles around it. What he, in fact, was saying, though by no means would he have said it this way, was that the Sun was unique, while the Earth was behaving like the other heavenly bodies. In other words, his findings indicated the unpopular concept that there was a *physical continuity* between the Earth and the other heavenly bodies. This replacement of the Earth as center of the universe by the Sun was the first step in the scientific study of astronomy which was to follow. However, at that time, Copernicus' findings were greeted with severe opposition by the Church and many of his fellow astronomers.

Several years later, Galileo, through his invention of the telescope, was able to actually observe the heavenly bodies. These observations led him to support Copernicus' theories of the Earth's motion. As a result, Galileo was subjected to an Inquisition trial and was forced to recant his support of Copernicus under the threat of death.

A few centuries later, Darwin came along and threatened man's uniqueness again. Human beings had long believed themselves far above the other creatures of earth, sort of "kings of the hill". Then Darwin offered evidence that we are not so far removed from the rest of the creatures. He claimed that *biological continuity* existed between man and the other animals. This idea can hardly be said to have grabbed the human race. Darwin's followers were subjected to physical threats for their beliefs. In fact, we haven't stopped fighting it.

Some of you may be familiar with the Scopes Trial that occurred in the 1920's (which was the theme of the movie '*Inherit the Wind*'). During the trial, two giants of oratory, Clarence Darrow and Williams Jennings Bryan engaged in a verbal battle over the question of whether evolution ought to be taught in school. Darrow, the defense attorney for Scopes, a teacher who had in fact taught evolution, lost the case. Also, in California, recently, a bill has been proposed to make it mandatory, in schools where Darwin's theory of evolution is taught, that the Christian account of creation be given equal time.

Copernicus introduced the physical continuity between man's Earth and the other heavenly bodies. Darwin introduced biological continuity between man and the other animal species, and finally Freud introduced the concept of *behavioral continuity*. In the course of his treatment of people with behavior problems, he was struck by the fact that he could often trace maladaptive behavior to some circumstance in the patient's history. He concluded that the causes for behavior, including the most bizarre and erratic actions, lie somewhere in the history of the person behaving, though frequently that person might be totally unaware of these reasons. He felt that there was a continuity between behavior and other natural phenomena, and that behavior, like other natural phenomena, is deterministic, involving cause and effect relationships. These opinions predictably gave rise to a good deal of negative reaction and even to the persecution of Freud. Many of us believe that these concepts which Freud laid out in his book, *Psychotherapy and Everyday Life*, are his most important contribution to the study of behavior.

Several historical concepts were not readily accepted because they threatened man's feeling of uniqueness. As an illustration describe Freud's concept of behavioral continuity.

## Behavioral Determinism is Not Intuitively Obvious

Our society is becoming more aware of the influence of past history on present behavior. We hear that an individual didn't turn out well "because he came from a broken home", or "because he received little love as a child." You may recall that following the Watts riots in Los Angeles, President Johnson felt that the American public was sophisticated enough for him to call for the improvement of environments that give rise to such destructive behaviors, rather than commenting negatively on the individuals who were rioting. This means that the American people are at least in part ready to blame environmental conditions rather than individuals. Twenty years ago, a United States president might not have been able to make such a deterministic statement without fear of damaging his political career.

The Head Start program is another indication that behavioral determinism is becoming a more acceptable idea. The concept behind Head Start is to structure the preschool environment in an attempt to increase the likelihood of school success, which shows a belief that scholastic behavior is, to some extent, shaped by the pre-school environment.

Hundreds of books have been written by pediatricians, psychologists and psychiatrists dealing with how to raise children so that they can grow up to be well-adjusted individuals. Publishers continue to publish these books, which means that the public is ready for "as you sow, so shall ye reap" concepts of child-rearing.

However, there are situations in which we lose our deterministic cool. You may have noticed that when an individual has been apprehended for committing a grave crime, like assassination, or mass murder, frequently, when his relatives and acquaintances are interviewed, they tend to make statements like, "he was such a quiet, friendly person, he must've just gone crazy". They react to the outrageous behavior as if it had occurred by means of a kind of behavioral spontaneous generation. We find it harder to accept behavioral determinism when the unacceptable behavior is exhibited by people who are close to us. We hear parents say, "We don't understand it, we've always given Billy everything he wanted, and here he is taking drugs and running around looking like those hippie kids he hangs out with". Billy's behavior is not viewed as being brought about by causal factors, but by Billy himself. He is labeled the cause of his behavior. He is *being* a bad kid. He's doing it all. In interpersonal relationships, it's very hard to keep from blaming the person who exhibits the undesirable behavior. "Why can't he just stop \_\_\_\_\_ (taking drugs, drinking, running around, or getting bad marks);(fill in the blank). We have all been guilty of expecting people we care about to change from some "bad" behavior to some "good" behavior through "will power", "strength of character", or by "trying hard".

Because behavior depends on particular causal conditions, you can not get a cessation of the behavior without doing something about those conditions. Similarly, you can not get certain behaviors to occur without dealing with the appropriate causal conditions.

There is another type of situation in which our intuition may lead us to reject behavioral determinism, and that is when we are trying to solve a problem or make a decision. Let us look at the following example.

*If Behavior Is Determined, Why Am I Having Such a Hard Time Making Up My Mind Blues?*

*Melvin Furd, Jr. woke up with a start, "I've gotta make up my mind to-*

Describe two types of situations in which people tend not to accept determinism.

day. Yessir, today is *the day*. Lib is splittin' tomorrow morning. Am I gonna split with her, or am I gonna stay at Western Michigan University?" Lib Erata was one of the hippest woman around, and he found being with her very rewarding. But, now she was about to take off for a commune in the foothills of the beautiful, but distant, Sangre de Cristo mountains in southern Colorado. What should he do? Lib wanted him to go with her because she felt that his training in operant behavior modification would be valuable to the commune, and that he could get a lot of practical experience applying what he had learned.

The thought of psychology led Melvin to worrying about his boss, Dr. Jonathan Procrastinator. What would he do if Melvin left? And what about Melvin's B.A. degree, should he really screw it up by going?

And, oh boy, how would Melvin Furd, Sr., who had been subsidizing Melvin's income, react? Melvin remembered that he used to be interested in new ideas; after all, didn't he manufacture biodegradable condominiums for a while because he was sick and tired of seeing all those disgusting things in the Western Michigan University parking lots when he was a student there? If he were aware enough of social problems to be worrying about pollution, maybe he could understand Melvin's interest in trying a new society. In fact, he thought, maybe his dad's early interest in condominiums may have had something to do with Melvin's interest in joining a commune now.

He paced back and forth on into the night. What to do, what to do?

A week or so later, Melvin Furd, Sr. received a post card with a view of the beautiful Sangre de Cristo mountains. On the back was scrawled a message in a familiar hand: "Have gone to Colorado. Don't worry. Love, Melvin. P.S. Please send money."

When a person is trying to solve a problem or make a decision, as Melvin was, the deterministic quality of behavior is probably less obvious than in other situations. If you put a quarter into a one-armed bandit in Las Vegas, and you win, it's not hard to understand the reason for putting another quarter into the machine: "I won, and I'm trying to win again." But if you're expending a great deal of energy in solving a problem, really sweating it out like Melvin was, it somehow seems illogical to say that the solution finally arrived at was determined.

If Melvin had been asked if his decision to go to Colorado was determined he probably would have said, "Hell, no, if it was determined, why did I have such a hard time making up my mind?" The determining factors responsible for the final choice may actually include the preliminary choice behavior itself — weighing and reviewing advantages and disadvantages — as well as any other relevant factors in a person's history or present environment. However, you can also have a situation where there's a lot of preliminary behavior, but where that behavior is really irrelevant because the choice depends on some other factor. In this case, the person may talk as if the preliminary behavior were responsible for his decision and not be aware of the causal nature of the actual determining factor. For example, Melvin's behavior the day before leaving for Colorado may not have had anything to do with his going. The determining factor may have been his interest in Lib.

After Melvin, Jr. took off, Melvin, Sr., a man of rare perceptive ability, sat brooding over his son's behavior. Suddenly, in a flash of intuition, he said to his wife, "I know why he did it, now I understand! It must have been that time when he was little."

In making a choice, what causal factors may contribute to a final decision? Need preliminary choice behavior be causal? Explain.



*“What time, dear, what do you mean?”*

*“The time he fell out of the apple tree onto his head. It explains why he’s done this now. I don’t see any other explanation, a boy with such a brilliant future. That fall probably made him a little funny in the head, and it didn’t show up until now.”*

We can speculate about some factor in an individual’s past history causing an observed behavior, but we can not know whether we’ve hit upon the real causal factor unless we are able to test it. If we want to know if a factor is causal, we must introduce it under the proper experimental conditions and see if the expected behavior occurs. (See Chapter Seven on functional relations.) Melvin, Sr. thought that Melvin, Jr. went to Colorado because he had fallen on his head at a young age. If you wanted to find out if being dropped on the head leads to going to Colorado, you’d drop children on their heads and then check to see if 20 years later they go to Colorado, or do something else equally rational. (We’re only kidding ASPCC.) Of course, we don’t seriously expect this factor to be causal to going to Colorado 20 years later — Hollywood, perhaps — but not Colorado.

Can we be sure of the factors responsible for a person’s behavior just by looking at his past history? What is necessary to determine whether a factor is causal?

Often people are not aware that their behavior is determined. Sometimes the causal factors are “forgotten”, or are not connected with the effect, or are not noticed. For example, Freud found that people with phobias, after a great deal of probing, could trace these fears back to some childhood experience (like a claustrophobic being locked in a closet when he was a child). Even with such dramatic antecedent conditions, the connection between these conditions and the later traumatic reaction, was frequently not apparent to the individual. As was mentioned in Chapter Six, people can behave without being aware of their behavior, and they are even less frequently aware of the causes of their behavior: “I don’t know what it is about Fred, but he irritates me. There’s just something about him.” The thing about Fred that is irritating is that Fred worked for the Democratic Party during the last election, while the man speaking is a staunch Republican.

“I don’t know why I gobble handfuls of chocolate cookies, I know they make me fat.” The reason for the behavior is that the immediate reinforcement of cookies in the mouth is more powerful than the more temporally removed consequence — being fat.

There are also situations where people talk as if there is a reason for their behavior, but the reason is incorrect. For example, the evenings of the day that Melvin, Sr. and his wife received the postcard from Melvin, Jr., they had a dinner engagement at the Furkles’.

*In the car on the way home Bottles said to Melvin, “I was so embarrassed at the Furkles’; why did you yell at me in front of everybody like that?”*

*“Bottles, it just makes me mad when you try to talk about things that you don’t know anything about. What do you know about the effects of marijuana? I wish you’d just keep your mouth shut if you don’t know what you’re talking about! If people just didn’t run off at the mouth stupidly all the time, the world would be a much better place!”*

We suspect that the real reason for Melvin, Sr.’s anger was not really Bottles’ verbal behavior, but rather the fact that Melvin, Jr. was in Colorado. Citing incorrect reasons for anger seems to run in the Furd family, as it does in many families.

Melvin Furd, Jr. was enthusiastic about trying out some ideas in behavior modification. Instead, when he arrived at the commune he was confronted with the fact that the first thing he and Lib would have to do was to build their own dwelling place. Apparently constructing a geodesic dome in which to live was one of the norms of the commune. Lib designed a small dome structure, and it remained for them to construct it. Though Melvin and Lib were both pretty sharp, neither of them was particularly good at manual labor. Then, too, Melvin was a little unhappy that no one in the commune was exactly beating a path to his tent to ask for help in behavioral areas. After a week of construction, Melvin had just about had it. He had band-aids on nine of his ten fingers. While banging away with a hammer he was mumbling, "blankity-blank domes, how can she expect me to put them together; I've never done any building before, what does she want from me?! Maybe I'll just go back to Kalamazoo and chuck this whole idea!"

At this point, Lib walked up, after being gone all morning, and said, "Hey, Mel, it's beginning to look great! I can't wait 'til it's finished!"

Squash went the hammer on the remaining uninjured finger. "@†\$%+\*&†!, why the hell do you have to talk to me when I'm working, Lib? Now see what you've made me do!!"

Those of us who have lived in close proximity to another person will recognize these two situations immediately. Very often when an individual is in a punishing situation he will react by aggressing toward the person who is nearest and dearest to him, and not even be aware of the reason for his aggression. To the strains of "You Always Hurt the One You Love", we will leave this section.

Give an example illustrating the fact that people are often unaware that their behavior is determined.

## PHILOSOPHICAL ATTRIBUTES OF DETERMINISM

### Determinism — An Empirical Law

In *Science and Human Behavior*, Skinner indicates that to study behavior, we must first *assume* a **deterministic view** of behavior. We would like to suggest that the *assumption* of lawfulness and causality is not necessary to the study of behavior. What **really happened** when psychologists began examining behavior **was** that they looked at instances of behavior, and these instances appeared lawful. Each new experiment producing behavioral change contributed further evidence that behavior is lawful.

If determinism is not an assumption, what is it, then? It is an *empirical law*. An empirical law is a generalization about certain events, where the generalization is based on *actual data* rather than on theoretical speculations. It is a generalization based on what **really is**, rather than what might be. When looking at actual behavior we've found that in situation **1**, behavior **is** caused; in situation **2**, behavior **is** caused; in situation **3**, behavior **is** caused; . . . and in situation **1001**, behavior **is** caused. Every time an experimenter introduces an independent variable that **produces** some behavior or some change in behavior, we have further *empirical evidence* that behavior is caused or deterministic. We can **point out** the causal conditions for increasing or decreasing the frequency of **response**, for eliminating responding, for producing certain **magnitudes** of responses, for **shaping** behavior that was not originally in the repertoire, for **building** long complex chains of responses, and so forth.

We maintain that causality is not an assumption, but is, rather, an empirical law. Define empirical law and explain why causality (or determinism) fits the definition.

How would you go about finding out if a class of behavior is caused?

Causal factors for behavior were sought and found outside the laboratory, too. In hospitals and institutions where it is possible to manage the causal conditions for certain behaviors, troublesome behaviors have been successfully diminished, and adaptive behaviors have been augmented by applying the deterministic techniques of operant psychology. The empirical, experimental evidence for determinism, provided both in and out of the laboratory, is great enough so that we can now make the statement that *determinism is an empirical law*.

We can say that experimental behavior is caused, since we are dealing with the causal conditions, but what can we say about behavior as it is observed outside of experimental situations? How can we make statements about its deterministic quality? If we are interested in a behavior, we can go into the lab, and try to produce it by managing independent variables which we believe to be related to it. We can set up a laboratory model for the behavior. If we are successful in producing it, we can say that the relation between our independent variable and the behavior is one of the possible cause and effect relations responsible for the behavior observed. Sometimes certain behavior seems to contradict experimentally determined causal relationships. For example, it has been empirically observed that certain kinds of stimuli act as punishers. These stimuli decrease the probability of the occurrence of a response that produces them (See Chapter Two for a discussion of punishment). If a child sticks a screwdriver into an electrical outlet, and gets an 110-volt shock, he will be less likely to screw around the next time. Or, if a fellow dates a girl who spends the whole evening describing her ex-boyfriend, there is little chance that he will call her for a date again.

However, occasionally, behavior in which people seem to be “working for unpleasant results” is observed: Larry the loser seems repeatedly to place himself in situations where he is “put down”; or little Joey invites a spanking by displaying a series of naughty behaviors, until his mother finally obliges him; or the Sad Marquis, member of the Whip and Boot Club, goes to elaborate lengths to provide himself with physical abuse. If stimuli that usually act as punishers fail to do so — if the frequency of responses that produce them increases instead of decreases — does this fact lead to the conclusion that behavior is unpredictable, and that behavioral determinism does not hold after all?

If we can show experimentally that some stimuli do not always act as punishers, that sometimes they act in another capacity, then the concept of behavioral determinism would still hold. It is possible to experimentally demonstrate that stimuli that are usually punishing can sometimes have other effects on behavior. For example, Holz and Azrin (1961) reported an experiment in which they delivered aversive shock contingent on each response, while food reinforcement was delivered on a variable-interval schedule. They alternated this condition with extinction (where neither shock nor food was delivered). After a number of sessions, they changed the food/shock condition so that food delivery on the variable-interval schedule was terminated, leaving only the shock contingency. In other words, responses in that situation now lead to shock but not food. When responding during this condition was compared to responding in the extinction condition, where neither food nor shock were delivered, response rate was found to be higher where shock was contingent on the response. Also, when shock, which had been previously associated with food, was introduced into the extinction condition, response rate was higher than it had been during the extinction condition.

This indicated that the shock had taken on discriminative properties for food. The fact that a stimulus that usually acts as a punisher can become a discriminative stimulus for reinforcement provides us with at least one way to account for behavior in which individuals seem to be seeking aversive events, though this may not necessarily be the only way to account for such behavior. It also allows us to say that a situation where an organism is apparently working for punishment does not violate deterministic principles.

In some situations the causal factors may be difficult or impossible to isolate. Again we are drawn to examine self-injurious behavior, but this time, in the severe form sometimes found among patients in mental hospitals, where serious and sometimes lethal injury is self-inflicted. An unrestrained patient may tear flesh from his body, gouge out his eyes, or beat his head against the wall.

Usually, if we want to determine what factor is responsible for maintaining a behavior, we can prevent a suspected factor from occurring and see if the behavior extinguishes. But, in this case, extinction can lead to serious injury or death. The general belief is that self-injurious behavior is gradually built up by attention delivered contingent upon it. Certainly, when a patient starts mutilating himself, the staff's reaction is to get over to him as quickly as possible and restrain him, thereby providing him with attention. However, very few would be willing to test this belief. If the staff were instructed to ignore the behavior to find out if attention were, in fact, maintaining it, a blood bath would ensue which most experimenters would be unwilling to endure.

It may also be that other reinforcers are involved early in the history of the behavior, before it gets shaped by the suspected attention factor. For example, thumb sucking, chewing on pencils, and nail biting, or pulling on an ear, and pulling out hair may provide sensory feedback that is mildly reinforcing. It is conceivable that a concerned parent might pay sufficient attention to this mild behavior so as to reinforce it and gradually shape it into a serious problem of self-injury.

At any rate, though it is probably true that severe self-injury is maintained by attention, because of the prohibitive nature of the behavior, not enough work has been done to make a conclusive statement about the factors that are responsible.

When the circumstances are such that they impede trained people in the search for causal factors, as they are in the area of self-injury, then we either try alternative ways of approaching the problem, or, perhaps, set it aside for a while until the technology has developed enough to be able to handle it. We don't throw up our hands and admit defeat, nor do we say that the phenomenon is non-deterministic. We have not always been able to find all of the factors causing various behavioral and physical events in the real world or even in the laboratory. But, we have had a history of reinforcement for persisting in the search. The empirical generalization that all things are understandable, or in other words, that all phenomena have discoverable causes, has proven sufficiently valid so that in the occasional cases where we can't immediately find causes for a phenomenon, we still have faith that causes exist.

As a matter of fact, determinism can never be disproven. Logically, it is incorrect to make a statement about the non-existence of some event like a causal factor. To say something doesn't exist, it is necessary to have examined all possible cases. For example, we can never say that a behavior

Some stimuli usually act as punishers in that they decrease the rate of a response that produces them. Occasionally, these stimuli are found to increase the rate of a response that produces them. How would we go about showing that this is not a violation of the laws of determinism?

In some situations it is not possible to isolate the causal factors. Severely self-injurious behavior is such a situation. What do we conclude about the causal nature of events in that situation?



What does it mean to say that determinism can't be disproven?

was not caused because we have neither the infinite time necessary to examine all factors that are possibly causal, nor do we have the ability to bring all factors which are possibly causal under experimental control.

Isn't the fact that the determinism concept can't be disproven, a weakness in the concept? It is a weakness only if you consider determinism a theory, because theories should be capable of being disproven. However, determinism is a working empirical generalization, and in the unlikely event that we were to discover that determinism didn't work in some situation, we'd just drop the concept. So far determinism has served us well as an empirical generalization.

An additional point to be made in this section, where we argue that behavioral determinism is an empirical law, is that once a cause and effect relationship has been established, we should not expect it to occur one hundred percent of the time. In other words, if the causal condition is present, the effect may not always occur. And the fact that the effect does not always occur does not invalidate the deterministic quality of behavior. For example, suppose we had a mental patient who often broke into a Hindu chant when nurses were in sight. Suppose the attention provided by the nurses for chanting was found to be responsible for the behavior. The causal nature of the relation might lead us to expect the patient to chant each time he saw a nurse, but this is not correct. Why not? Because usually more than one factor has a causal relation with any particular behavior. In this case, though the nurses generally paid attention to the chanting, occasionally, they, or some of the other patients, may have told the chanter to "stop the wailing", so that both reinforcement and punishment were in control of the behavior. It is often difficult to know how many variables are in control. And it is also difficult to know the strength of each variable.

Give an illustration of the fact that a causal factor does not have to produce an effect each time the causal factor is presented.

Our patient will probably not chant in the presence of the nurses all of the time, but some lesser proportion of the time. The percentage of the time the behavior occurs, or the probability of the occurrence of the behavior, may also depend on another group of factors, those which govern competing behavior. Maybe our patient is hung up on bubble gum. In fact, he finds it very reinforcing to blow bubbles. Chanting while blowing bubbles becomes a bit sticky, so perhaps when he has bubble gum available, the probability of his chanting decreases.

Give two reasons why causal factors do not produce an effect 100% of the time.

At any rate, the fact that a relationship between some factors is causal does not mean that the introduction of the controlling factor will insure a particular behavior each time. If we were able to isolate all of the factors affecting some behavior and eliminate them, except for the one that concerns us, and if we could isolate and eliminate all the factors controlling competing behavior, then we might approach a situation where the controlling variable produced its dependent behavior 100% of the time.

Even when a behavioral experiment is performed in a laboratory, and the experimenter has taken pains to eliminate, or hold constant, all variables other than the experimental variable, extraneous factors usually gain a certain amount of control of the behavior. What are the reasons for the presence of uncontrolled factors in a laboratory? One of them is practicality. For example, extraneous noise can sometimes have an effect on behavior (some behaviors being more affected than others). However, sound-proofing an experimental chamber so that all noise is really filtered out can be prohibitively expensive. The ordinary so-called sound-proof apparatus usually allows some noise to come through. In other cases, the physical conditions of the lab do not allow certain variables to be controlled.

Dr. Arthur G. Snapper of Western Michigan University's Psychology

Department tells the following story about an extraneous controlling variable. When working as a graduate student in a psychology laboratory affiliated with a well-known New York museum, he had trained starlings to perform a complex discrimination to determine visual thresholds. The birds were generally showing fairly stable behavior under a food reinforcement contingency. However, every few days, one of the birds would emit no responses at all. After some amount of investigation, the unknown factor was found to be the *Giganticus Americanus*, a huge species of cockroach. Apparently, when one of these monstrous bugs unwittingly found its way into a starling's cage, it provided a meal large enough so that the lucky starling who had feasted on it no longer worked for food reinforcement.

In the same lab, one of the birds was found to be performing erratically one day, and, upon investigation, it was discovered that a *Giganticus Americanus* was lying dead across some elements of the equipment controlling the experimental chambers, and the bridge created by its body was shorting out the apparatus. (Maybe this is the kind of situation that is meant by experimenters when they talk about "getting the bugs out of the system".) Apparently, *Giganticus Americanus* was a permanent resident of the museum and no amount of roach poison locally applied in the lab was effective in getting rid of the problem. Often, the effort needed to eliminate extraneous variables is too great for the amount of control they exercise over behavior.

Another set of extraneous variables may be contributed by the history of the experimental subject. Things like a subject's genetic history or previous conditioning history due to his size or his standing in his litter are often beyond the control of the experimenter.

Finally, sometimes conditions that we had not thought to be connected with behavior at all may have a large effect. For example, there is recent evidence that a certain kind of avoidance behavior which is fairly hard to train can be trained much more easily if the physical space in which the training occurs is reduced in size. No doubt, further research will reveal the connection between behavior and other previously unsuspected determining factors.

The point to be emphasized here is that if factors which are known to control a certain behavior fail to produce the behavior some part of the time, there are probably other factors in effect which are also in control of the behavior. It must be stressed that failing to get the expected behavior 100% of the time does not mean that there is a non-deterministic element operating in the system.

Of course the ultimate goal of a behavioral science is to attempt to discover all of the relevant variables exercising an effect on particular behaviors.

We should state that the method of reasoning used to arrive at a deterministic conception of behavior is the method called *induction*. Induction is a technique for developing general rules by looking at a number of specific cases. For example, if we wished to find out in which direction objects move when they are released in mid-air, we would test various objects by releasing them in mid-air. We release a ball in mid-air, and find that it drops down; we release a feather, and it floats down; we release a person (preferably someone we don't like), he falls down; we release an ugly china vase that Aunt Millie sent us (this could get to be fun), it crashes down. After testing a number of different classes of objects, if they all fall down, then we can *induce* the general rule that **when** objects are released in mid-air, they fall down.

List and illustrate three reasons why causal factors other than the independent variable can occur unwittingly in the laboratory even though the experimenter has tried to control for such extraneous factors.

What reasoning process leads to the concept of behavioral determinism? Define and explain the process.

In the case of behavior, each time behavior was experimentally observed, it was found to be dependent on some causal factor. Behavior 1 was caused, behavior 2 was caused, behavior 3 was caused, and so forth. Uncaused behavior has never been observed. Therefore, through the process of induction we have come to the general law that behavior is caused or deterministic.

Describe how the Heisenberg Principle is used as an argument against determinism, and discuss whether it is a valid argument.

Before leaving this section, we should mention that people who argue against behavioral determinism have been known to whip out *Heisenberg's Principle of Indeterminacy* as their last resource in the argument. Heisenberg stated that the principle in reference to the science of physics. He said that in the case of certain subatomic particles it is impossible to determine both position and velocity simultaneously. The reason for this is that the photon of light, by means of which the observation is made possible, itself exerts an effect on the particle. Heisenberg used the word "determine" to mean *measure*. If you try to measure one aspect of the particle, the measuring process may affect that particle so that another aspect can no longer be accurately measured. For example, you cannot measure velocity and location at the same time. The anti-determinists have grabbed at the principle like "drowning men grabbing at straws". They have interpreted his word "determine" to mean *cause*, citing Heisenberg as having argued against determinism. They might make a statement like the following: if certain factors in physics are indeterminate (uncaused), then how can the behavioral sciences, where the variables are more difficult to define, more complex and harder to isolate, hope to discover the operation of deterministic laws?

Since this anti-deterministic argument is based on a misinterpretation of the Heisenberg Principle, we cannot accept the suggestion that it adds credence to the anti-deterministic point of view.

Explain why it is not correct to talk as if a "state of freedom" exists.

### Freedom

Freedom is a difficult word to deal with. It is sometimes used as if some sort of "state of freedom" exists, when, in fact, it is only possible to be free of specific influences. One can be free of political coercion, free of persecution, free from the effects of the elements, free from extreme states of physiological deprivations, but one cannot merely be "free". Talking about an abstract state of "freedom" is imprecise and lacks a referent. In other words, freedom must always refer to the absence of specific controlling factors. We must be able to answer the question, "freedom from what?"

However, people may have learned to describe their reaction to the absence of certain specific controlling factors as feelings of freedom. Generally, people tend to say they "feel free" when their behavior is not under the control of aversive events. Probably, the fewer the number of aversive events present in their environment at the time, and the greater the number and ease of contact with positive events, the more they feel free.

Our cultural day-dreams concerned with feeling free are situations like the following. We have left behind all of our problems, and we are leisurely walking along a lovely beach. We feel the warmth of the sun, and when it gets too hot, we just wander into the cool, delightful water and swim around and maybe ride a wave or two. If we get tired, we lie on the sand and bake in the sun. And if we get hungry or require some other form of unconditioned reinforcer, a beautiful person magically appears to de-

live the thing desired. The escape-to-a-tropic-isle dream of freedom is a classic in our society. It is characterized by maximal positive events and an absence of negative events, including physical effort and extreme deprivation. Probably the most famous of those who actually tried to make it come true was the painter Gauguin, who left his wife and children to seek the “free” life in Tahiti.

Today the commune may have replaced the tropic island as a place to seek a feeling of freedom. Young people may see in the commune a place where the members commonly reject the rules and restrictions of the society they wish to escape. In the commune, they can at least be free of requirements that achievement and success be primary goals in life, restrictions on sexual behavior and drugs, and so forth. Whether they “feel free” in the commune depends on what it really offers in the way of various positive and negative events.

Sometimes people associate a “feeling of freedom” with the presence of some particular individual, “I feel so free and things are so easy when I’m with Mohamet the Guru. I never feel shy, and I can really talk to him.” Accidentally, or through careful controlling of their own behavior, certain people happen to be very skilled in dealing with other people. A person with these kinds of skills may load their social interactions with positive events and cut aversive events to a minimum. He may avoid making direct negative statements or showing anger, and provide positive events such as attention, interest, empathy, and behavior which is particularly reinforcing to the person he’s dealing with. Sometimes a person with these skills conveys the illusion of freedom while in reality he is programming us against our own best interests.

Unfortunately, the advertising world is also often geared to programming us against our own best interests, subtly using positive and negative reinforcers so that we are not even aware that we’re being controlled. We are induced to smoke cigarettes, eat and drink things which are bad for our health; spend hard-earned money on products that don’t really do anything for us; and generally to behave in ways that are deleterious to us in the long run. As a result, we get poorer and sicker, while the manufacturers and hucksters get richer and sicker.

Most kinds of aversive events that last for any length of time make us feel as if we’re not free, or are trapped. Punishment, threat of punishment, explicit or implicit disapproval of our behaviors lead us to feel trapped. We can also feel trapped while performing behaviors that are ultimately positively reinforced, if the moment-to-moment effect of the task itself is aversive. A man may be performing a job that is somewhat tedious or difficult, and though he gets an adequate paycheck at the end of the week, he tends to feel dissatisfied and hemmed in. The aversive events don’t have to be large or dramatic for us not to feel free. A family may look forward to a glorious vacation at an expensive resort, where they expect to have a wonderful time because everything is done for them and they are free from the cares of the world. When they actually get there, they may find that the mildly aversive consequences of a formally scheduled recreation program, or, of the fact that they are expected to dress in certain ways to engage in certain activities, put a damper on the vacation and they don’t get the feeling of freedom they expected.

Some kinds of aversive control are necessary for survival. Parents may have to use aversive control to prevent small children from doing harm to themselves by playing with matches, crossing dangerous roads, or swallowing caustic substances. The environment itself offers a great deal of aversive

What situation does “feeling free” really describe?

What situation does the advertising industry illustrate?

Describe situations that lead us to “feel trapped”.



Describe how aversive control sometimes acts in our benefit.

Explain why we are never totally free from the influence of controlling factors.

stimulation. Because touching hot objects or standing up under tables, or crashing into furniture hurts, the child learns to avoid hot things and to avoid hard powerful contact with objects. When we learn a new skill, like bicycle riding or skiing, for example, the aversive consequences that occur as a result of performing incorrectly help shape us into performing the behavior correctly. Of course, once we have acquired the necessary skills, the fact that those skills were based on aversive control doesn't matter, since now we make infrequent contact with the aversive events.

An accurate use of the word freedom requires that we use it in terms of the absence of specific controlling factors. However, we can describe the conditions that prevail when we talk about feeling free or not feeling free. We may be able to decrease contact with some kinds of controlling events, but we can never eliminate all contact with controlling events. A man may want to escape factors that have power over him by becoming a hermit. He will still be subject to the effect of his physiological needs. He will still seek food and shelter and warmth. In this situation, possibly, deprivation of positive social factors might itself come to control his behavior and induce him to occasionally seek social contact.

At the furthest extreme, if a man were unconscious or in a state of "suspended animation", he would still be subject to bacterial action, the pull of gravity, and to deterioration of tissue through lack of nourishment.

#### "Free Will" vs. Determinism

"Free will" is a concept that is used most often in the context of trying to decide whether or not a man is responsible for his own behavior. If behavior is deterministic, that is, the product of causal factors, then an individual cannot be said to be responsible for his own behavior. If, conversely, the individual is capable of exercising "free will", then his behavior is not subject to causal factors and he can be considered responsible for his own behavior. Some people combine "free will" and determinism, claiming that although certain behaviors are caused, behaviors like choosing between moral and immoral alternatives are not determined but are instead, subject to "free will".

We suggest that in light of the empirical evidence which we discussed earlier, indicating that behavior is determined, it does not seem reasonable to reserve certain areas as being non-deterministic and subject to "free will". We must conclude that all behavior, including choice behavior, is determined. If we observe a behavior that looks as if it is spontaneous, or an act of "free will", closer examination will reveal that it, in fact, depends on some causal factor.

Sometimes, it is hard to believe that a behavior is caused. For example, suppose a man is very successful at his profession and seems to be getting a great deal of reinforcement for his professional behavior. Suppose that this successful man suddenly decides to give up his profession and go off to become a beachcomber. Wouldn't this be an example of exercising "free will"? It's a safe bet that if we examined the factors present in his life, we would find some unsuspected source of aversive control that was determining his "erratic" escape behavior.

Suppose an individual has a behavior problem and seeks help. Wouldn't this constitute an act of "free will"? No, his seeking help is the result of causal factors. If the factors to which he is subjected do not lead him to seek help, then he will not do so.

A good way of looking at the difference between "free will" and determinism is that a "free will" advocate would say that an individual is

capable of any behavior within the confines of practical and physical limits; whereas, an advocate of determinism would say that an individual is only capable of behavior that he has been led to by his history and environment.

Describe the difference between "free will" and determinism.

"Free will" is sometimes used to explain "self control", where the individual, himself, is instrumental in bringing about some positive change in his own behavior. People who believe in "free will" tend to talk as if an individual can *magically* muster enough "self control", for example, to stop taking drugs, spend more time studying, be more considerate of others, etc.

Operant psychology, which approaches behavior deterministically, can specify actual self-control techniques, where emitting a behavior will modify a future behavior. These include: providing oneself with sub-vocal discriminative stimuli favoring desirable alternatives, placing ourselves in situations where "good" behavior will be reinforced, or where "bad" behavior will be extinguished, or punished, etc. Of course, a person is only capable of utilizing these self-control techniques if his history and environment cause him to do so.

Describe some "self-control" techniques suggested by operant psychology.

It might be argued that if a person is presented with a choice between two alternatives that are both strongly positive (or strongly negative), he must exercise free will to make that choice. For example, during Melvin Furd, Jr.'s first year at Western Michigan University he met two girls who had him going for a while: Lucrecia, whom he finally married and Zelda, whom he didn't. Now a casual observer might say that the two girls were equally matched, and that it would be hard to make a choice between them. But in Melvin's eyes, Lucrecia had the advantage because it happened that she was a dead ringer for Penelope Harper who sat behind Melvin in homeroom during his throbbing first year of high school, dominated his fantasy life the next year, and his social life the last two years.

If Penelope had not existed, and there was nothing to give one girl precedence over the other, poor Melvin might have bounced back and forth between them for a long time.

When a person is trying to make a choice between two fairly equal alternatives, what leads him to decide in favor of one as opposed to the other?

When alternatives are "equal", the final decision, in the direction of one and not the other, depends not on free will, but on some determining factor from a person's past history or present environment.

## Determinism and Predestination

Sometimes people tend to confuse determinism and predestination because both claim that events are caused. Actually, they are not alike. Predestination leads us to believe that nothing we can do will change a predetermined event; whereas, determinism provides an approach where by things can be directly changed here and now.

Predestination is a philosophical belief in which some powerful entity (Fate or God) has a plan, and events occur according to that plan in a pre-arranged manner. In terms of behavior, the predestinationists (fatalists) believe that human action is purposely determined or compelled, and the end-point is fixed and immutable. Predestination is well illustrated by Sophocles' classical tragedy, "Oedipus Rex", in which it was foretold that Oedipus would kill his father and marry his mother and, although attempts were made to thwart the fated events, he ultimately found himself guilty of patricide and incest.

Define predestination.

Predestination is also illustrated by the teachings of the religious order founded by Calvin. The Calvinists believed that, at birth, individuals were predestined either for Heaven or for Hell, and that nothing they did during their life-time could change the course of their destiny.

Behaviorally, predestination claims that no matter what an individual does in life, his behavior cannot change the end-point that is his fate. For example, if it were destined for a person to drown, he might avoid all bodies of water, rivers, streams, lakes and oceans. He might make his home in a desert where the rainfall is negligible. He might even avoid bathing except if someone were with him to rescue him if he should fall in the bathtub. Still, when it came time for him to die, he might pass out during dinner one night falling face first into his soup, and drown. In other words, there is nothing he can do to stop the course of destiny. You might occasionally hear someone espousing this fatalistic philosophy in statements like, "I got through that battle alive because none of the bullets had my number on it", or "I'm not afraid to fly. When my time is up, I'll die even if I'm home in bed." (We might be tempted to ask the man speaking: "When on a plane, what if your time hadn't come but the pilot's had?")

Remember doing mazes on the puzzle page of comic books when you were a kid? Your task was to get the little lost boy (puppy or kitten) through the forest to the "X" which marked his house. Fatalism is analogous to that situation, where "X" was like the fated end-point and you, as an agent guiding the little lost boy, were Fate. No matter which intermediate paths you had the boy take, you would ultimately have to bring him to the end path that led to "X".

Determinism, on the other hand, is an empirical law or generalization that has developed as a result of the findings of science. Science has concluded that events occur only as a result of causal factors. Things do not occur spontaneously; instead, each event is dependent on some previous set of factors. As far as behavior is concerned, it occurs as a result of environmental and behavioral causal conditions, and these causal conditions depend on previous causal conditions, and so forth down the line. An individual's behavioral repertoire would be said to be a result of cause and effect chains which, no doubt, interact in complex ways. As opposed to predestination, the end-point in life is not fixed, it is the product of the antecedent conditions to which the individual has been exposed during his lifetime. Let us examine a particular situation.

Harvey has had a rough childhood. As a result of his parent's death when he was very young, he was put in an orphanage, where the people who ran it were not particularly kind. He didn't see them very much anyway, for most of his time was spent in foster homes. Because he was never allowed to stay in one foster home for very long, he did not develop close interpersonal relationships with the families. As a result, he reached adulthood without having achieved any close social relationships. Therefore, he was quiet, afraid of people, and unable to successfully engage in social interaction. From that point on, any of the possibilities listed below might occur. The one that will occur depends on the nature and relative strength of the determining factors which comprise his history and his present environment.

If his previous history does not lead him to seek a change in his behavior, and no antecedent conditions for change occur in his environment, he could go on being socially inept for the rest of his life. He might, on the other hand, if his past experience permits (having read this chapter, for instance), provide himself with discriminative stimuli necessary to get out there and try interacting socially, whereupon if the results were positive, he might become more socially skilled. However, if the results were negative, he might withdraw even further. Alternately, again, if his history

allows it, he could seek help and possibly be retrained to greater social skills.

Or, his circumstances might be such that he would do nothing at all to help himself, but some environmental event might gain control. For example, he might meet a person who, perhaps, unwittingly would become a shaper of his social behavior. Or, perhaps his job might bring him more frequently into contact with people, and that contact might be reinforcing and tend to increase the frequency, and eventually, the intensity, of social contacts.

To restate: both determinism and predestination deal with causation. Predestination focuses on a final, caused end-point. (Some fatalistic philosophies, in fact, may believe that the end-point is set merely because a Supreme Being or Beings can look into the future, and, therefore, see the final point. In this case the final goal is not so much caused, as foreseen.)

Determinism would claim that chains of events brought about by an individual's own behavior, together with extraneous chains of events that also happen to exercise control over his behavior, interact in a complex way so as to make it impossible to accurately predict the end-point of an individual's life. Determinism focuses on the fact of causation of events. It is concerned not with a final goal, but with the fact that causation exists.

Predestination is a rigid philosophy in that there is no escape from the final goal. We might ask whether determinism is equally constricting. Does determinism allow for escape from the network of causal chains that affect the individual? Determinism would claim that an individual's behavior is under the control of the multitude of determining factors to which it is subjected. How, then, can we talk about changing behavior?

Behavior can only be changed if the events affecting the individual, or that have affected him in the past, lead him to a situation in which factors capable of modifying his behavior can gain control. To return to Harvey: to the extent that his history or environment leads him to seek help from a psychologist, he might acquire the ability to successfully interact with people.

Determinism is a very positive concept, because, although it is subject to the restriction that determining factors must lead to a situation where an individual's behavior can be modified, once there, his behavior has a good chance of being changed for the better. One causal condition can replace another, thereby instituting a positive behavioral change.

Perhaps one of the things that makes people wary of a deterministic philosophy is that it often seems as if the causes of behavior are exclusively under the control of inescapable variables in the person's past history or in the external environment. Though this is frequently true, "self control" of behavior can occur provided the determining factors allow it. This can be witnessed, for example, in the fact that a large number of people really have given up smoking, some people really do lose weight, some people really study for exams on time, and so forth.

Techniques for self control are implicit in the determinism concept. It is possible to manipulate conditions which govern our own behavior by applying positive reinforcement to a desired response; giving ourselves subvocal discriminative stimuli for the behavior we want to acquire; setting up punishment for undesired responses; placing ourselves in situations where we know correct responses will be reinforced, and avoiding situations where they will not be reinforced, etc.

Sometimes when self-controlling behavior has gotten underway it is maintained by the environment: after we have lost ten pounds, people might

Contrast predestination and determinism.

How does determinism incorporate the concept of positive behavioral change? What are the restrictions on the occurrence of positive behavioral change within a deterministic framework?



Describe how you might use a self-control technique to rid yourself of an undesirable behavior like interrupting others when they're speaking, or criticizing people behind their backs.

Why can we describe behavioral determinism as optimistic?

begin remarking that we look marvelous; or after we have pledged to pay a dollar every time we make a negative statement, and have thereby decreased the frequency of negative statements, people might start commenting on how charming we've become.

Behavioral determinism is very optimistic; it implies that things can be directly changed for the better, here and now. If behavior depends on certain causes, given the proper conditions, all we need do is lay hands on those causes and we can change behavior for the better.

## SUMMARY

This chapter has pointed out that behavior is lawful, that it does not occur spontaneously, but rather, that each behavioral effect is dependent on causal factors. We spoke of the evidence for the deterministic quality of behavior, and mentioned factors that tend to obstruct the acceptance of this concept. We also explained that determinism is an empirical law arrived at through the reasoning process of induction. We concluded by discussing freedom, "free will", and predestination in relation to determinism.

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