

Reorganization and MOL

By William T. Powers

1 Reinforcement Theory

The most popular explanation of learning is still based on reinforcement, or the idea of reward and punishment. According to this theory, learning isn't something organisms do; it's something done to them by their environments. Evolution has given certain things in the environment the power to make us change our behavior to get them, presumably because getting them enhanced our ability to compete with other organisms, so the only organisms left are the ones whose behavior is reinforced by such things.

The theory of reinforcement says that if behavior produces a reinforcer, a consequence favorable to the organism in some way, that behavior will become more likely to occur again. But consider picking up a glass, drinking its contents, and putting it down. Repeating all that behavior exactly will not get you another drink: the glass is now empty. Your action changed the environment so you have to do something different to get the same result. If getting a drink just reinforces the same behavior, you will not get another drink.

The same problem occurs in more subtle ways. When you pick the glass up, it is 20 centimeters directly east. When you put the glass down again, it is 15 centimeters to the east. If, to pick it up again, you now repeat exactly the same changes in the joint angles of your arm and shoulder with your body in precisely the same position and orientation, you'll probably knock the glass over. In general, in order to cause a given consequence to repeat in the real world, it is almost always necessary to *change, not repeat* the behavior that produces that consequence.

Reinforcement theory, therefore, is based on a misreading of how behavior works. What we have to explain is not how the same behavior is caused to repeat, but how exactly the right changes in behavior occur to generate the same consequence as before. To get the right temperature, add hot water to the bath, or sometimes add cold water. We see organisms producing the same consequences over and over using different, even opposite behaviors.

Note: This series of 8 statements is a continuation of *PCT in 11 Steps*, A summary of Perceptual Control Theory by Bill Powers.

2 From Reinforcement to Reorganization

A rat is left of the lever it's pressing so it moves to the right to press it. After eating the resulting pellet, it happens to be to the right of the lever so it moves left to press it again. Somehow the same kind of food pellet reinforces both directions of movement, but only the one that is needed is carried out.

This problem was actually recognized some time ago, but B. F. Skinner (who borrowed reinforcement theory from Thorndike and modified it) thought up a clever, though somewhat evasive, way around it. What is reinforced, he proposed, is not the particular lever-pressing movements, but the class of all possible movements that could perform the function of making the lever go down. He named that class "the operant."

This gives reinforcers some pretty occult powers. Not only do they increase the probability of pressing the lever, but the reinforcement from last time increases the probability of making the movements that are correct for *this present* instance of pressing, which may entail pawing the lever, sitting on it, or biting it, depending on what is happening between presses.

There is an alternative to reinforcement theory that doesn't have these problems. It was actually hinted at by Skinner. He was asked, in effect, why the rat presses the lever the very first time, before any reinforcing consequences have occurred. He explained that organisms normally "emit" unpredictably variable behavior when no reinforcements are occurring, and that is how the rat blunders into the lever the first time so the apparatus delivers a food pellet.

We can forget the part about reinforcement and just look at the variable blunders. Random variations aren't unlikely, but systematic explorations would do just as well. Suppose we guess that the initial unpredictable blunderings noted by Skinner are actually caused by a lack of whatever is rewarding to the organism. If the blunderings happen to bring some of the reinforcing thing to the rat, or vice versa, the deprivation is lessened and the blunderings slow down. As enough of the reinforcement becomes regularly available, the blunderings gradually become systematic behavior that presses the lever enough or in the right pattern to supply the missing reinforcer. The rat now provides itself efficiently all the reinforcement it wants or needs.

3 Reorganization theory

This leads us to a different view of the way both rats and people learn. Those random variations aren't an accident: they're the only way we have for learning something new that we can't learn by reasoning things out or referring to past experience. When we're really stuck, or really ignorant like a baby or dumb like a rat, all we can do is try things at random and hope to hit on something that makes life a little better. Of course we don't always go thrashing randomly around; we do that only when something goes wrong and nothing we already know how to do works to set it right.

We can begin to put a new picture together. When something goes wrong, meaning that there is trouble with controlling some perception, some process inside us starts to induce random but gradual changes of organization into the brain. The way we perceive, the way we detect errors, the way we convert errors into reference conditions for lower-order systems, all begin to change. This naturally changes the way other people will see us behaving. If for any reason our attempt to control a perception seems to be working better, the random variations slow down or stop and any current changes keep going in the same general direction as long as control seems to be improving. When it starts to get worse again, we start the random process again, changing randomly in different directions. With some luck, this will bias the changes so we spend more time making control better than making it worse.

As control gets better, errors get smaller, and the logical thing to do would be to make the changes smaller, eventually going to zero when the error is zero, or less than some amount that doesn't bother us any more. Once the brain's organization has changed enough to restore good control, the cause of the random variations goes away and we go on controlling using the new organization—as long as it continues to work well.

The outward appearance of this reorganizing process could easily be seen to mean that something reinforces the correct behavior. Reorganization theory says no, that is a misinterpretation. What is happening is that problems cause reorganization to start, and successes slow it down or stop it, and it's the organism, not the environment, that is starting and stopping the changes. A mirror image of reinforcement; causation reversed.

4 Reorganization and conflict

Reorganization theory tells us that organisms that learn have an ability to alter their own organization as a way of modifying control systems or creating new ones when difficulties arise. In PCT, the current assumption is that reorganization is the process that generates nearly all control systems in an adult human being (or modifies rudimentary systems we inherit). There has to be some predisposition to develop certain levels of control, but the actual systems that we end up with, the hypothesis says, are built mostly by the organism's own experiences in the present-time world, and are built by the most important control system we inherit from our ancestors, the control system that builds and modifies control systems. In PCT it is called "the reorganizing system," though it is likely to consist of many subsystems in the brain, and who knows, perhaps throughout the body. Those "repair" enzymes hopping along the backbones of DNA molecules might be doing more than repairing. They might be reorganizing the molecules.

There is a lot to learn about this new way of seeing behavior and learning.

Let's say that organisms have an inherited ability to reorganize themselves when things go wrong. Control theory tells us about one thing that can go very wrong in a brain. It happens when, in the course of random reorganization, two or more control systems at one level try to control their own perceptions by sending different reference signals to the same lower-order control system. In trying to see oneself as a worthy member of the human race (level $n+2$), one sets the sub-goals (level $n+1$) of being cooperative and also, for different reasons, being competitive. It is very hard to find one behavior (at level n) that will accomplish both of these reference conditions at the same time. In fact, if you want to accomplish them simultaneously, you can't. That's a conflict.

Because these are control systems, they will produce as much output action as required to match perception to reference. The result of conflict is probably going to be a disaster. The harder one system tries to be cooperative, the harder the other tries to be competitive, and where these strivings come together to direct lower-level behavior, they will cancel each other out. The control systems might as well have been removed with a neurosurgeon's scalpel. A great block of control has been lost.

5 Resolving inner conflict

We encounter little conflicts all the time. Stay home and relax or go out and have a good time. Chocolate or vanilla. Buy or don't buy. Turn right toward the movies or turn left toward the mall. Any time when we could do different things but not both at once, and we want to do both at once, we have a conflict. The normal result is that we very quickly reorganize and make a choice, removing the conflict. If we couldn't do that, life would be a serious mess.

Not every case where there are two mutually-exclusive choices is a conflict. When you drive to a store, on the way you repeatedly encounter possible choice-points: turn or go straight, turn left or turn right. But you already know the way to the store, and the alternatives never come up unless there's an accident or a road repair crew in the way. You've already resolved those conflicts. You just follow the sequence of left and right turns that ends up at the store and never even consider turning any other way.

But genuine choice-points, genuine conflicts, do come up, and sometimes they don't get reorganized away. Should I stay with my unfaithful wife because I love her or divorce her because I hate what she did? Tell the boss what my friend stole, or be loyal to the friend and not tell? Be a go-getter, or relax and enjoy life? To be or not to be, that is the conflict.

Persistent, chronic conflict is a debilitating state. It destroys the ability to control, because neither of two conflicting goals can be achieved; as soon as the error in one control system is reduced, the other is increased and that side pulls or pushes harder. All the effort that one system can produce is used only to cancel all the effort the other system can produce, or most of it. Most psychotherapists would agree that almost all the problems that people bring to therapy involve loss of control. Behind loss of control, we can now venture, there is most probably a persistent conflict.

Now the question is, "Why has this person's natural ability to reorganize not removed this conflict already?" Part of the answer lies in the answer to another question: "When something is wrong with one control system, causing poor control and reorganization, why doesn't reorganization change other control systems, too, even if nothing is wrong with them?" There must be some way of focusing or amplifying reorganization where it's needed.

6 Awareness and reorganization

A good answer comes not from theory but from experience. No matter what technique a psychotherapist uses—giving homework assignments, talking to chairs, rolling the eyeballs this way and that, or mindfully meditating—most would agree that problems don't get solved until the client is aware of them. It's generally accepted that awareness normally is in contact with only a rather small part of the activities going on in the brain, even control processes. This means that most of the brain is operating without awareness, even if it's still controlling all kinds of perceptions. The perceptions, however, would then just be neural signals with nobody looking at them, like (up to now) the ones you receive from the seat you're sitting in, or from your breathing. Therapists want your awareness to be focused on the problem, not elsewhere. It will be: awareness is attracted to problems.

So why should solving a problem depend on being aware of it? We can now offer a possible answer: because the main focus of reorganization follows the main focus of awareness. This is how the changes are confined to just part of the brain's organization. This is just a possibility suggested by the mobility of awareness and the apparent observed fact that change and awareness are intimately related. It's probably not a very controversial proposal.

PCT offers one additional dimension to consider: the organization into levels of control. Conflict involves at least three levels: an upper level goal using two lower control systems controlling different perceptions, and a lowest level where a single control system is receiving two incompatible reference images. Sit down, stand up. Go outside, stay inside. Text her, ignore her. The lowest system can't do both. It may come to some compromise state, but that won't do what any higher-level system needs to be done. There is a lot of difficulty at that lowest level. It wouldn't be surprising if that were where awareness goes: to the place where the conflict is being acted out.

But that isn't the place that needs to be reorganized. To reorganize at the lowest level will just change the way the conflict is being expressed. And this is where the therapist finds the client, embroiled in endlessly reorganizing the consequences of the conflict, while doing nothing to change the systems at the higher level that are causing the conflict. What the client needs is to move awareness up to where changes of organization will do some good.

7 The Method of Levels: MOL

We have the recipe for resolving conflicts: move awareness to the level that is causing the conflict rather than the level acting it out. That's easy to say, but how do you do it?

Very probably, all successful psychotherapists manage to do it. If the ideas in PCT are right, they wouldn't be successful if they weren't doing it (beside whatever else they're doing that they think is important). What psychotherapists almost all do is to get the client talking about a problem which we would now expect to involve some kind of conflict, and by that means bring the consciousness or awareness of the client into contact with the parts of the brain where the problem is located. The image is that of a flashlight in a dark cathedral. Awareness is the place where the circle of light is, showing a pew or a stained glass window or a plaque or a dead body. All else is in darkness, though it's obviously still there. Inside the cathedral of the brain, the spot of light may be on the struggle to accomplish two incompatible things at once—but if it is there, where is whoever holds the flashlight? Somewhere else. Perhaps at a higher level. Excuse the metaphors, please; one day they will be replaced with something firmer. But that dead body does attract attention.

In the approach called the Method of Levels, there are two goals. One is to get the client talking about, aware of, the details of the problem. The other is to try to find hints about the higher system from which the client is observing, hints that are regularly dropped by the client. The flow of conversation will be interrupted by a sigh, a laugh, a long pause, or very often by some statement about the process going on, such as “This isn't getting me anywhere,” or (what the therapist really likes to hear) a remark such as “It's like I'm looking down at both sides of the problem at once.”

Whatever the disruption might be, the therapist asks about it, hoping to draw the client's attention up a level. If the idea about awareness and reorganization is right, that should concentrate reorganization at the new level and start changes going at the level where the conflict is being caused. It doesn't matter what the client says about the new level or what the therapist thinks about it. Simply focusing reorganization at that level is all that the method of levels requires. No diagnosis, no treatment, no advice, no interpretation, no suggestions, no homework. But ... not “no therapy.”

8 Where are we? Where next?

PCT had its first beginnings in about 1953. Today it is known by hundreds, perhaps even thousands, of scientists all over the world. Some 10,000 school counselors, teachers, and administrators in the US have been through courses to learn it. The method of levels, first practiced in the US by a few counselors and licensed therapists, is now in use at the University of Canberra, Australia; Fife, Scotland; Manchester University, England; New Jersey and North Carolina and California USA; and the school system in the Northern Territories of Canada. Other places, too. Undergraduate and graduate courses on PCT and MOL are offered, with a PhD program starting up in Manchester.

But PCT is far from a finished product, just as MOL is far from a common method of therapy. New terminologies and new orientations open the way to new research possibilities; there is simply no predicting what the future holds or what PCT will look like in another 50 years. Some go so far as to say that PCT shows us the form of the first actual science of psychology, the first sign that psychology could become a science like physics and chemistry with all their rigor and unity. What will still remain useful of the older theoretical frameworks or the data they produced is undetermined as of now; it could be that with the new orientation, all the old problems will have to be drastically reframed, with as little proving to be interesting as there was of alchemy when it was replaced by chemistry. Such a revolution would, of course, create very human difficulties for those who have bought into older theories. Stubborn resistance is understandable and to be expected. There is no reason to discard the old just because it is old, but if it turns out to be no longer relevant, it will be discarded nonetheless.

Many of those involved with PCT and MOL have longed for years to see a “Center for the Study of Living Control Systems” come into being, where scholars, researchers, students, and the public could gather to develop these new ideas further and to communicate and learn them both as theories and as applications. It would be an amazing place.

Bill Powers

Lafayette, Colorado, October 2009