

Knowledge Worker

Behavior Control Theory (BCT)

July 2021

As performance improvement professionals, we have a deep and abiding interest in performance, especially human performance. As we know, performance has two major components: outcomes or results, and the actions or behaviors that produce them. We are, then, interested in behavior as well as results.

This month's column focuses on what I will for now refer to as BCT which is short for Behavior Control Theory. To be clear, what I am writing about here is what behavior controls, not what controls behavior. Nowhere is Kurt Lewin's well-known declaration that "There is nothing so practical as a good theory" (Lewin, 1951, p. 169) more applicable than to BCT. BCT is indeed an eminently practical theory.

So, let's get started with an everyday example: driving to work.

You're on your way to work. Traffic is no heavier or lighter than usual. The wind is a bit stronger than usual, perhaps the result of a cold front passing through. Keeping your car in your lane requires more effort than is usually the case. You feel the wind starting to move your car to the left and you immediately steer back to the right to keep it in its lane. You don't even think about it. The usual events mark your commute: someone cuts in front of you and you have to apply the brakes; heavy traffic in the right-hand and center lanes leads you to move to the leftmost lane for a while; there is the usual amount of speeding up and slowing down; and, without fail, some "tailgater" gets up close behind you and so you change lanes in order to get rid of that nuisance. Then comes a surprise. You notice "Road Work Ahead" signs and, predictably, traffic begins slowing down. Glancing at your watch, you note that you're cutting things close. So, rather than take a chance on being late to work you get off at the next exit and take an alternate route to your place of employment. As intended, you arrive at work on time. Not as early as originally intended but still on time.

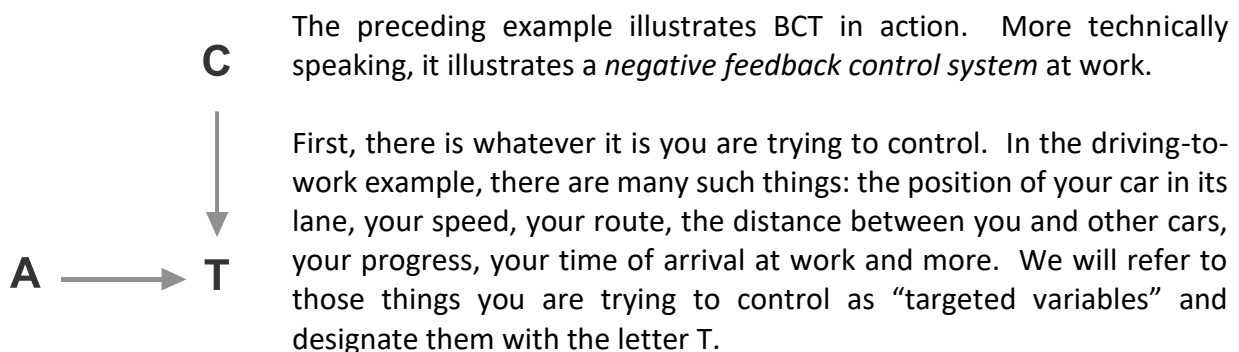


Figure 1 - ACT

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Second, there is whatever it is you are doing – your behavior or *actions*. In the example we are using, these include steering the car, speeding up, slowing down, braking, changing lanes, taking this or that exit and so on. We will designate behavior or actions with the letter A.

Third, there are other actors and factors that affect the same things you are trying to control. Gusts of wind can make your car drift. Heavy traffic can slow your progress. Other motorists can cut you off, follow too closely, block your attempts to change lanes or take a particular exit. In PCT the effects of these other actors and factors on the variables you are attempting to control are known as *disturbances*. We will refer to these complicating conditions simply as *conditions* and we will indicate them using the letter C.

These first three elements of BCT – targeted variables, actions and conditions are depicted in Figure 1.

Two key points need to be made here. First, whatever the current state of a targeted variable might be, its state represents the sum of the effects of your behavior and the effects of any disturbances or complicating conditions. Your control over a controlled variable exists because your actions are able to overcome any such disturbances. Second, the kind of control we’re talking about here is dynamic, not static; which is to say, for example, that you don’t wait until the wind blows your car into another lane to correct for that drift; you start compensating for the wind immediately.

What we’ve just covered might be thought of as you acting in and on the world “out there.” There is also a world “in here” – a world that consists of you, your goals, intentions and preferences; your take on things or your perceptions; and your behavior or actions.

Let’s look now at that other world as shown in Figure 2.

First, there are those things that you want, your intended states for the variables you are trying to control. In BCT, your goals, intentions, standards or intended states are called *reference conditions*. For our purposes, we will refer to them simply as *Goals* and use the letter G to designate them. In the driving-to-work example one such goal or reference condition might be to obey posted limits and drive at a fairly steady speed of 55 mph or whatever the posted limit might be. You no doubt have other goals as well: you mean to stay within your lane, not pose a hazard to other drivers or pedestrians (avoid any who pose a hazard to you), get off at a certain exit, make it to work on time; not run out of gas, and so on. There are lots of these goals or reference conditions at work at any point in time.

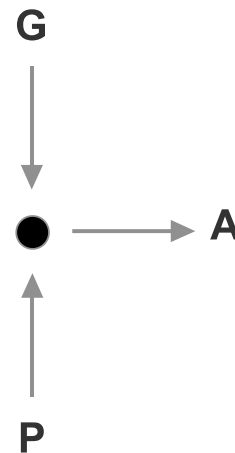


Figure 2 - GAP

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Second, there is *perception* (P). The perceptions that matter are yours. In the example of driving to work, these include your perceptions of where your car is in relation to the lane you're trying to stay in; its sideways movement owing to the wind; the distance between your car and those in front of and behind yours; the pace of traffic; any disruptions to the flow of traffic (actual or potential); your speed (probably in relation to posted limits and perhaps in relation to your progress toward your destination); the information revealed by gauges in the dashboard and even the sounds from the road and your car. Your perceptions inform you as to the current state of the targeted variables you are trying to control.

Third is a comparison of P and G. Is there any gap or discrepancy between your requirements and what you perceive? If so, *action* (A) occurs. If not, things are going along just fine and no action on your part is required. Remember that higher than normal wind? As it starts to move your car left or right, a discrepancy starts to develop, and you immediately compensate by steering in the opposite direction. The same is true for speeding up and slowing down, whether owing to road conditions or other motorists. Lots of adjustments are called for and you make them. And, for the most part, you don't even think about it, you just do it. But remember the road construction signs? You did have to think about the impact of that potential disturbance and you opted for an alternate route. Why? Because you wanted to get to work on time and the road construction threatened to disrupt your plans. As stated above, the comparison of what you perceive to be the situation with your goal or reference condition for it will reveal any gap or discrepancy. If an unacceptable gap or discrepancy is detected, you compensate for it; you act in ways that keep the targeted variable (T) at or near the value you have set as a goal (G).

To recap, your goal or reference condition is represented by G. Your perception of the actual or current situation is represented by P. The black dot where G and P come together represents the function of comparing the two. If this comparison yields a discrepancy, you act in ways that serve to reduce or eliminate any such gap. Behavior or actions are represented by the letter A. Your actions, then, link your world "in here" with the world "out there."

Although we intend to control some variable, all we know of it is known to us through our perceptions. Further, any requirements we have for that variable is internal to or part of us, not part of that variable itself. Our perceptions provide us with feedback about the current state of any variable we seek to control, and it is these perceptions of such variables that we compare with our goals and consequently lead to action or not. In other words, what we really control are our perceptions.

Combining the two models shown in Figures 1 and 2 yields a third model shown in Figure 3. This model couples the two previous models via the lines entering and leaving actions (A) and the dotted line indicating feedback in the form of Perceptions (P) of the targeted variable we are

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trying to control (T). The model in Figure 3 also uses overlapping circles to identify and distinguish between the person and that person's immediate environment.

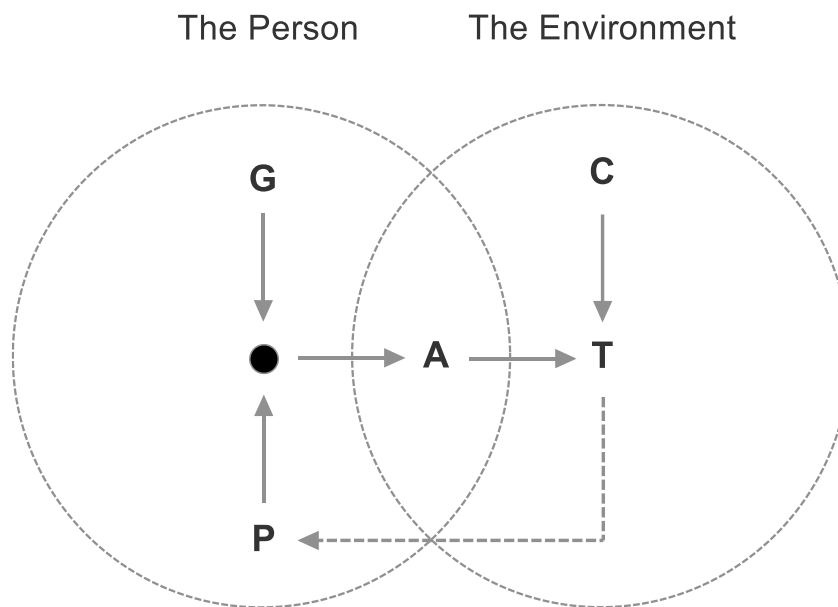


Figure 3 – The GAP-ACT Model

A Confession

At this point I have a confession to make. I have been referring to the theory described in this column as BCT. That is not its real name. The real name of the theory is PCT or Perceptual Control Theory as developed and articulated by William T. Powers. The core of his theory is that people are “living control systems” and their behavior serves to control their perceptions.

Are there other matters we could discuss? Sure; lots of them. For example, we could delve into the difference between positive and negative feedback, why that difference is important in a control system, and the fact that negative feedback is what makes control work. We could explore a much more complex, hierarchical view of the many levels of control systems that govern human behavior, what is known as “hierarchical PCT or HPCT.” (Even that seemingly simple, long-ago-mastered driving behavior of ours has many layers of complexity; for example, intensities, sensations, configurations, transitions, sequences, relationships, categories, events, programs, principles and systems concepts.) We could examine and critique competing theories of human behavior and show where, how and why they are dead wrong. We could even dig into

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why PCT hasn't yet come to dominate thinking about human behavior and performance. But those are all matters for another time and place. This is a PCT primer, not an exhaustive explanation of the theory and all related matters. So, that's it for now – except for the recommended readings below.

Recommended Readings

1. Powers, W. T. (1989). *Living Control Systems: Selected Papers of William T. Powers*. Benchmark Publications: New Canaan. CT.
2. _____ (1992). *Living Control Systems II: Selected Papers*. Benchmark Publications: New Canaan, CT
3. _____ (1998). *Making Sense of Behavior: The Meaning of Control*. Benchmark Publications: New Canaan.
4. _____ (2005). *Behavior: The Control of Perception (2nd Edition)*. Benchmark Publications: New Canaan, Ct.

References

1. Lewin, K. (1951). *Field Theory in Social Science*. Harper & Row: New York.
2. Nickols, F.W. (2011a). "The Manager as a Living Control System." *Proven*, Vol 5, No 1 (Dec 2011). Virginia Beach: VA.
3. _____ (2011b). "Manage Your Own Performance: No One Else Can." *Performance Improvement*, Vol 50, No 2 (Feb 2011), pp. 31-35. ISPI: Silver Spring, MD.
4. _____ (2010). "A Model for Helping People Hit their Performance Targets." *Performance Improvement*, Vol 49, No 8 (Sep 2010), pp. 21-26. ISPI: Silver Spring, MD.
5. _____ (2009). "The Autonomous Performer." *Performance Improvement*, Vol 48, No 2 (Feb 2009), pp. 44-48 ISPI: Silver Spring, MD.

About the Author

Fred Nickols is a toolmaker, a knowledge worker, a solution engineer, a writer, a consultant, and a former executive who spent 20 years in the U.S. Navy, retiring as a decorated Chief Petty Officer. In the private sector, he worked as a consultant and then held executive positions with two former clients. Currently, Fred is *Chief Toolmaker* and *Lead Solution Engineer* at [Distance Consulting LLC](#). His web site is home to the award-winning [Knowledge Workers' Tool Room](#) and more than 200 free articles, book chapters and papers. Fred writes this column on a monthly basis. All previous Knowledge Worker columns are accessible by clicking [here](#).