People are “Living Control Systems.” The diagram below depicts the basic elements of a control system as they apply to human performers in the workplace. The elements are briefly discussed below.



We are above the dashed line. What we seek to control is below the dashed line, in the world “out there,” so to speak. That which we seek to control is known as the Target Variable (T).

Our Input Function is concerned with Sensing, and the Target Variable affects our sensory inputs. Our Input Function converts these into a Perceived Value (*P*) of the Target Variable.

The Reference Value (*R*) specifies the intended or desired Perceived Value of the Target Variable.

We compare our Perceived Value of the Target Variable with the Reference Value.

Any difference between the Reference Value and the Perceived Value constitutes an Error (*E*), which feeds into our Output Function.

Our Output Function is concerned with Behaving, and it converts Errors into Actions (A).

The effects of our Actions are connected to the Target Variable via the Performance Path, a set of connections that runs from our Actions through the situation to the Target Variable.

Assuming our Actions affect the Target Variable in appropriate ways, the Perceived Value of the Target Variable changes and matches the Reference Value. There is now no Error and no need for further action.

There are other actors and factors at work, and these “Disturbances” (D) as they known, can independently affect the value of the Target Variable. In most cases, our Actions counter or compensate for these independent effects but, on occasion, they can overwhelm us, and we are unable to control what we wish to control.

## An Example

A simple example involving driving an automobile will illustrate.

I am driving down a two-lane highway. One of my many purposes is keeping my car in the middle of my lane. At a more detailed level, I want to keep my perception of bottom center of the windshield aligned with the right lane marker. Alternately, I keep my perception of the bottom left corner of the windshield aligned with the center line. As long as I perceive one or the other of those alignments, I am confident my car is in the middle of the lane. There is a crosswind blowing from the right side of the road and, if I did nothing, the wind would push my car into the oncoming lane. But, without giving it any thought, my steering actions compensate for the crosswind and my car stays in the center of its lane.

My Target Variable is the position of my car. My sense of sight provides me with a perception of the road and the relationship between the bottom center of the windshield and the right lane marker, as well as the bottom left corner of the windshield and the center line. There are two reference values at work; one specifies alignment of the bottom center of the windshield with the right lane marker, while the other specifies alignment of the lower left corner of the windshield with the center line. As I drive along the road, there are slight differences in those alignments, but my steering actions quickly correct any errors, including those caused by the crosswind. The performance path runs from my steering behaviors, to the steering wheel, to the steering column, and on through the rest of the steering mechanism to the front wheels. That structure enables me to control what I perceive to be the position of my car in its lane.