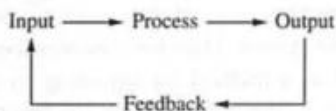


Feedback Control

PART

III

To this point we have studied the dynamic responses of various systems and learned important relationships between process equipment and operating conditions and dynamic responses. In this part, we make a major change in perspective: we change from understanding the behavior of the system to *altering its behavior* to achieve safe and profitable process performance. This new perspective is shown schematically in Figure III.1 for a physical example given in Figure III.2. In discussing control, we will use the terms *input* and *output* in a specific manner, with input variables influencing the output variables as follows:



Here we see a difference in terminology between modelling and feedback control. In feedback control the input is the cause and the output is the effect, and there is no requirement that the input or output variables be associated with a stream passing through the boundary defining the system. For example, the input can be a flow and the output can be the liquid level in the system.

There is a cause/effect relationship in the process that cannot be directly inverted. In the process industries we usually desire to maintain selected output variables, such as pressure, temperature, or composition, at specified values. Therefore,