4.2: Building Blocks of a Theory

David Whetten (1989) suggests that there are four building blocks of a theory: constructs, propositions, logic, and boundary conditions/assumptions. Constructs capture the “what” of theories (i.e., what concepts are important for explaining a phenomenon), propositions capture the “how” (i.e., how are these concepts related to each other), logic represents the “why” (i.e., why are these concepts related), and boundary conditions/assumptions examines the “who, when, and where” (i.e., under what circumstances will these concepts and relationships work). Though constructs and propositions were previously discussed in Chapter 2, we describe them again here for the sake of completeness.

**Constructs** are abstract concepts specified at a high level of abstraction that are chosen specifically to explain the phenomenon of interest. Recall from Chapter 2 that constructs may be unidimensional (i.e., embody a single concept), such as weight or age, or multi-dimensional (i.e., embody multiple underlying concepts), such as personality or culture. While some constructs, such as age, education, and firm size, are easy to understand, others, such as creativity, prejudice, and organizational agility, may be more complex and abstruse, and still others such as trust, attitude, and learning, may represent temporal tendencies rather than steady states. Nevertheless, all constructs must have clear and unambiguous operational definition that should specify exactly how the construct will be measured and at what level of analysis (individual, group, organizational, etc.). Measurable representations of abstract constructs are called **variables**. For instance, intelligence quotient (IQ score) is a variable that is purported to measure an abstract construct called intelligence. As noted earlier, scientific research proceeds along two planes: a theoretical plane and an empirical plane. Constructs are conceptualized at the theoretical plane, while variables are operationalized and measured at the empirical (observational) plane. Furthermore, variables may be independent, dependent, mediating, or moderating, as discussed in Chapter 2. The distinction between constructs (conceptualized at the theoretical level) and variables (measured at the empirical level) is shown in Figure 4.1.
Propositions are associations postulated between constructs based on deductive logic. Propositions are stated in declarative form and should ideally indicate a cause-effect relationship (e.g., if X occurs, then Y will follow). Note that propositions may be conjectural but MUST be testable, and should be rejected if they are not supported by empirical observations. However, like constructs, propositions are stated at the theoretical level, and they can only be tested by examining the corresponding relationship between measurable variables of those constructs. The empirical formulation of propositions, stated as relationships between variables, is called hypotheses. The distinction between propositions (formulated at the theoretical level) and hypotheses (tested at the empirical level) is depicted in Figure 4.1.

The third building block of a theory is the logic that provides the basis for justifying the propositions as postulated. Logic acts like a “glue” that connects the theoretical constructs and provides meaning and relevance to the relationships between these constructs. Logic also represents the “explanation” that lies at the core of a theory. Without logic, propositions will be ad hoc, arbitrary, and meaningless, and cannot be tied into a cohesive “system of propositions” that is the heart of any theory.

Finally, all theories are constrained by assumptions about values, time, and space, and boundary conditions that govern where the theory can be applied and where it cannot be applied. For example, many economic theories assume that human beings are rational (or boundedly rational) and employ utility maximization based on cost and benefit expectations as a way of understand human behavior. In contrast, political science theories assume that people are more political than rational, and try to position themselves in their professional or personal environment in a way that maximizes their power and control over others. Given the nature of their underlying assumptions, economic and political theories are not directly comparable, and researchers should not use economic theories if their objective is to understand the power structure or its evolution in an organization. Likewise, theories may have implicit cultural assumptions (e.g., whether they apply to individualistic or collective cultures), temporal assumptions (e.g., whether they apply to early stages or later stages of human behavior), and spatial assumptions (e.g., whether they apply to certain localities but not to others). If a theory is to be properly used or tested, all of its implicit assumptions that form the boundaries of that theory must be properly understood. Unfortunately, theorists rarely state their implicit assumptions clearly, which leads to frequent misapplications of theories to problem situations in research.