

Applications of theory

Causal mechanisms, descriptions and personal non-verbal experience mix when applied. Physical science, rich in causal mechanisms, depends on descriptive empirical data at several levels. A largely descriptive science may have pockets of insight that are of a causal mechanistic nature, whether formalized or not.

To illustrate, I'll share my perspective on applied sciences:

Medicine. Much of medicine is unexplained, and descriptions of symptoms (syndromes) abounds. Much drug research is done by systematic trial and error, just like Edison developed the light bulb. Practicing physicians know that a large part of their job is to comfort and support their patient while nature takes care of healing. Descriptive non-explanations are popular: you have red itchy eyes because of conjunctivitis¹, a red itchy nose because of rhinitis², and are cross-eyed because of strabismus³.

Medicine has made great strides in the last century thanks to the discovery of some causal mechanisms explaining what happens in the body. One example is the discovery of the mechanism of bacterial growth causing the phenomenon of infection. People have learned to avoid harmful bacterial growth through hygiene. Scientists have learned to interfere with bacteria through vaccination and antibiotics, reducing infectious disease. We know that you get other diseases through the mechanisms of virus growth, but have had limited success in interfering with these mechanisms.

When repairing mechanisms of the body, surgeons successfully employ many different causal mechanism explanations derived from the physical sciences.

Mechanical Engineering. Ancient feats of engineering are still admired today: sophisticated compound bows and arrows, ocean crossing canoes, aqueducts, large bridges.

We have few records of exactly how these things were designed and built, but I think it is fair to say that they were based on experience and description, along with some causal mechanism explanations.

1 **con·juñc·tī'vā**, n, the mucus membrane lining the inner surface of the eyelids, covering the front of the eyeball.
 2 **rhī'nī'tis**, n. [*rhino-* and *-itis*.] inflammation of the mucous membrane of the nose.
 3 **strā'bis'mus**, n. [from Gr. strabismos; *strabizein*, to squint; *strabos*, twisted.] a disorder of the eyes, as cross-eye, in which both eyes cannot be focused on the same point at the same time; squint.

Exhibit 21 and 22 continued:

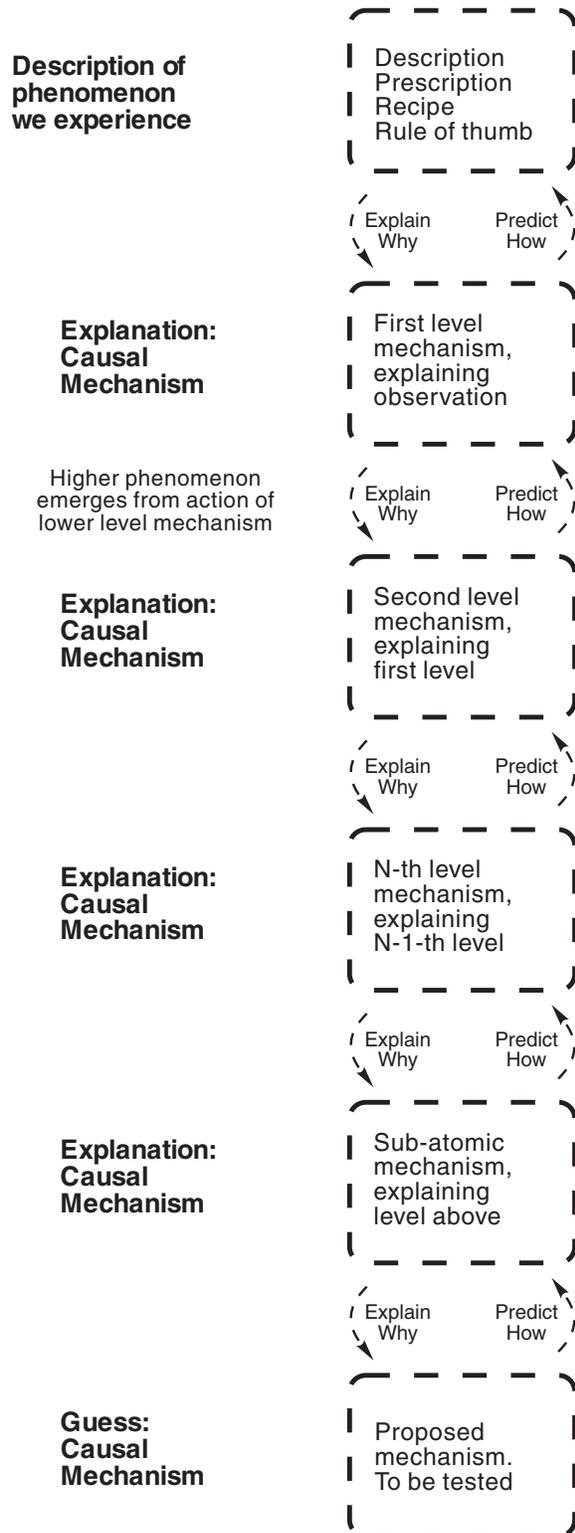


Exhibit 24. Causal mechanisms in depth.

PCT: Foundation for physical life science

Exhibit 26 illustrates layers of in-depth explanation in the format of exhibit 24.

At the level of description, PCT deals with familiar phenomena. This can create a problem when communicating about PCT, since some people (not used to causal explanations) look no further and conclude that PCT offers “nothing new.”

At the first level of interaction, many lay people have a feel for how individual control (self-direction, freedom) manifests itself in autonomy, conflict and cooperation.

At the second level of explanation, PCT demonstrations of how people can control a single task, acting as an apparent single perceptual control system, are compelling. (Understanding to this level clarifies conflict resolution and personal interactions).

At the third level of explanation, Hierarchical PCT (HPCT) suggests an outline of a hierarchical arrangement of control systems as the organizing principle for the human nervous system. Demonstrations show the operation of such a hierarchy in humans, particularly at lower levels of perception and control. (Understanding to this level clarifies leadership issues).

At the fourth level of explanation, neurologists have identified control systems made up of a few neurons. See exhibit 25.

At the fifth level of explanation, researchers study the structure and interaction of neurons in terms of biology, chemistry and electronics.

PCT and HPCT offer no suggestions for mechanisms behind phenomena such as consciousness, awareness or attention. Understanding the operation of the human mind in greater detail will require research for many years to come, especially at the third through fifth levels of explanation outlined here, including biochemical control systems of several kinds.

It is not necessary to wait for additional research. Even a cursory understanding of the demonstrable concepts of PCT and HPCT offer immediate advantages, as this understanding leads to more effective and satisfying personal interactions.

Exhibit 21 and 22 continued with application to PCT:

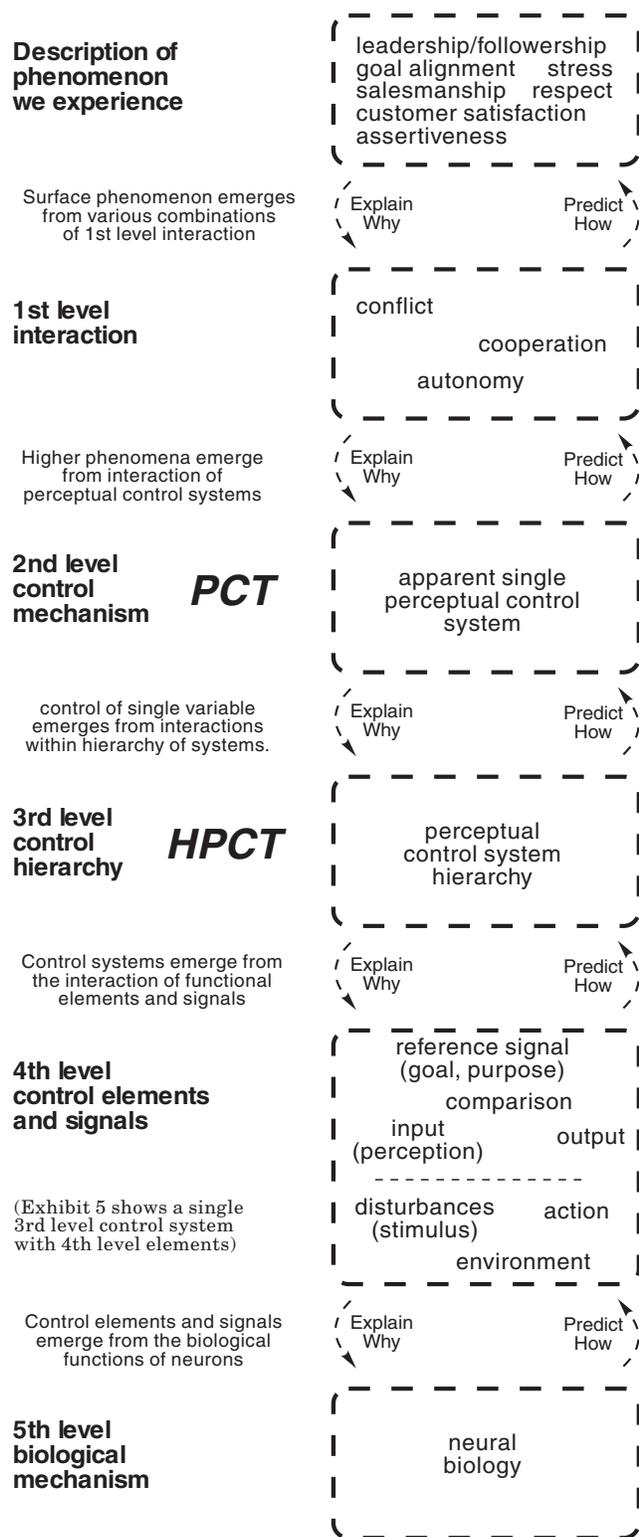


Exhibit 26. PCT psychology: Causal mechanisms in depth.