



Building a house



Making cookies



Manufacturing a product

CONSTRUCTION PROCESSES

A construction process is carried out in a setting that comes with capabilities and raw materials. Initial conditions followed by the execution of explicit steps produces the results that are present at any given stage of development.

If we want to make, fabricate, or construct something in general, what is involved? Consider construction processes such as building a house, making cookies or manufacturing a product. (See sidebar.) These processes require:

- A. a *construction site*, such as:
 - a plot of land
 - a kitchen
 - a factory floor
- B. *raw materials*, such as:
 - lumber, nails, screws, concrete, shingles
 - butter, sugar, flour, eggs
 - screws, wood, wire, silicon
- C. *capabilities* provided by tools and workers, such as, the abilities to:
 - hammer, cut, lift, measure, drill
 - pour, measure, transfer, mix, heat, cool
 - mold plastic, cut, hammer, screw, solder, move objects
- D. the *ability to build in successive steps* or stages such that one stage is completed before the next one begins, such as:
 - lay foundation, then frame ground-floor walls
 - make batter, roll it out, then cut shapes
 - mold casing, then attach circuit boards
- E. an *executive power* which wills, controls, or governs the execution of capabilities at the site such as:
 - the builder
 - the cook
 - factory workers

Are any major elements of a construction process missing from this list? Could construction take place without a construction site or raw materials? Could something be constructed without capabilities or sequence, i.e. the ability to complete one step and then another? Wouldn't everything stay the way it is initially without a decision-maker or first-cause to trigger the execution of the available capabilities? Note that in these examples, the decision-maker also has a role in executing the available capa-

bilities in a particular sequential order so that the desired results are produced.

Observe that the raw materials cited above are all initially supplied to their respective construction sites as portions of stuff which are separate from each other, and separate from the environment of the construction site. Individual boards, sticks of butter, sacks of sugar, rolled sheets of steel, and water from a pipe are examples of stuff that have boundaries which were not determined by nature. A living tree has to be cut down and processed to make lumber; sugar cane has to be grown, harvested, processed and refined to produce sugar; and oil has to be found, pumped out from the ground and refined to produce gasoline and plastic pellets. These are definition processes.

We are concerned with making explanations about how the world works. Looking at construction processes in general reveals that the ability to make things requires that some defined materials be on hand. Therefore, consider the fundamentals of definition.