

Second Law of Thermodynamics

There are many imaginable phenomena that are not forbidden by the First Law of Thermodynamics but still do not occur. For example, when an object falls from a table to the ground, its potential energy is first converted into kinetic energy; then, as the object comes to rest on the ground, the kinetic energy is converted into heat. The First Law of Thermodynamics does not forbid the reverse process, whereby the heat from the floor would enter the object and be converted into kinetic energy, causing the object to jump back on the table. Yet this event does not occur. Experience has shown that certain types of events are irreversible. Broken objects do not mend by themselves. Spilled water does not collect itself back into a container. The irreversibility of these types of events is intimately connected with the probabilistic behavior of systems comprised of a large ensemble of sub units.

The Second Law of Thermodynamics is : *The direction of spontaneous change in a system is from an arrangement of lesser probability to an arrangement of greater probability; that is, from order to disorder (entropy).*