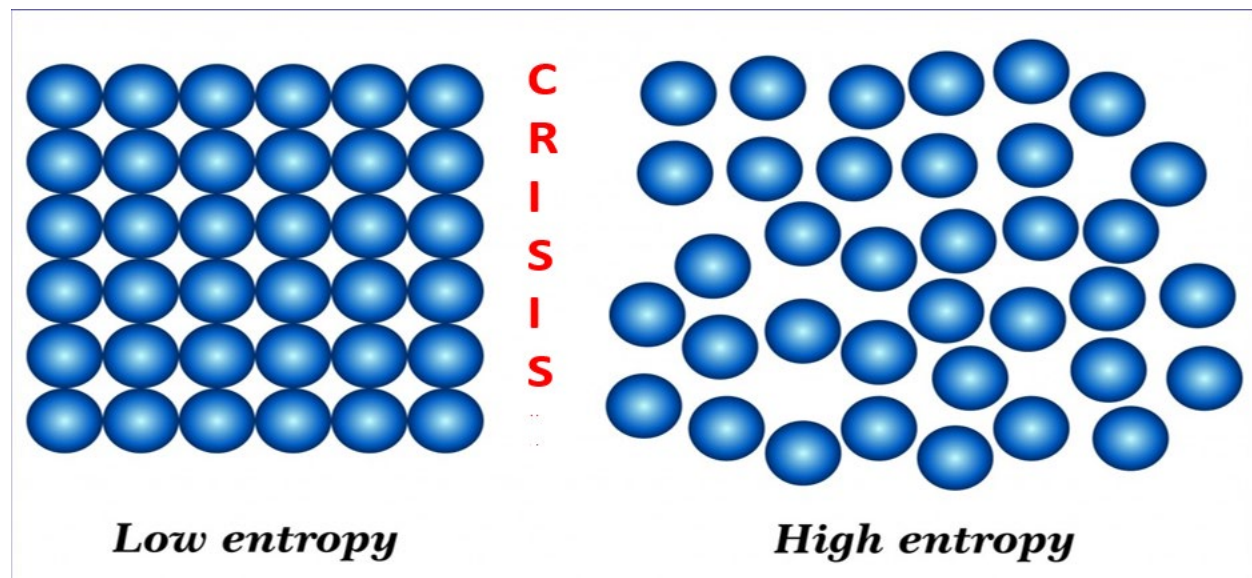


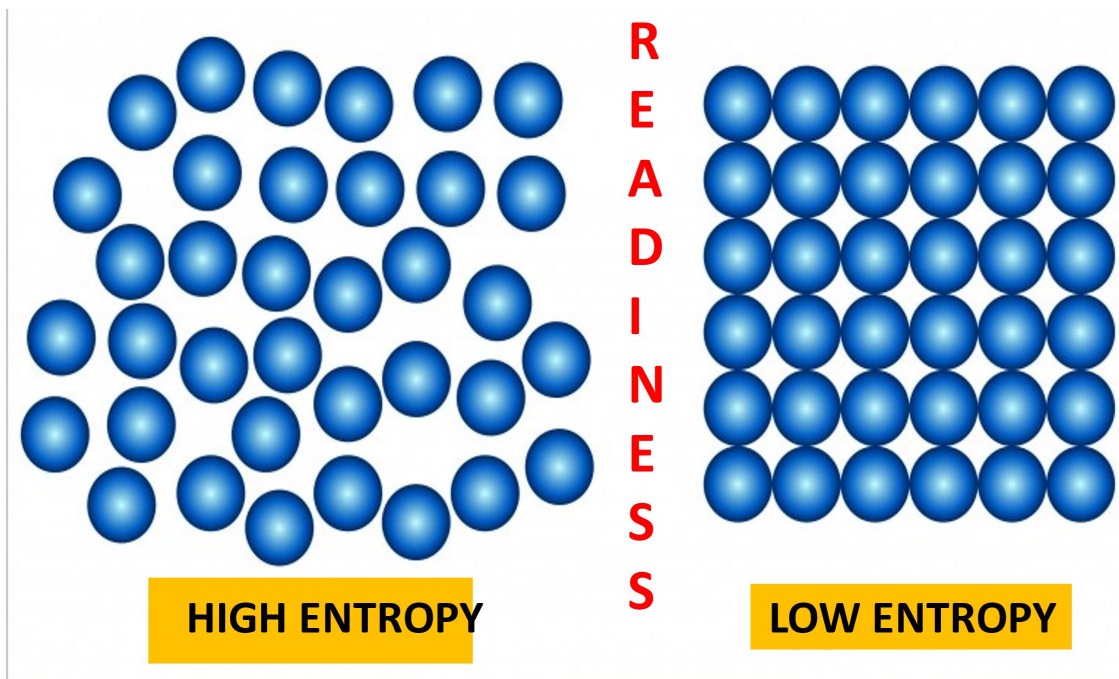
CCCL and Entropy

“Our job? To fight against Entropy.”

Entropy is known as the second law of thermodynamics stating that in nature everything tends spontaneously to transit from a state of higher energy (lower entropy) to a state of lower energy (higher entropy). In other words, any system spontaneously shifts from one state to another and while doing so, it dissipates part of its energy (increases its entropy). Entropy is also associated with the concept of “Order” where: low entropy = order and high entropy = disorder or “Chaos”. Therefore, any system shifts spontaneously from order to chaos and in the process of doing so it dissipates part of the energy it contains (increases its entropy). What living organisms have learned to do throughout their history is to “plug” into these processes of spontaneous energy dissipation and transfer a part to support their own requirements. For example, a car is nothing else but a human invention that transfers chemical energy contained in petrol (i.e, an organized form of energy that would otherwise dissipate and be lost through evaporation) and transforms it into mechanical energy that serves human defined purposes. The same can be said for everything else in the universe. Even our own bodies convert energy contained in the food we consume (highly structured chemical energy that would otherwise be spontaneously wasted) into mechanical or electrical energy that ultimately generate heat (disordered forms of energy) all of which are essential for the purpose of survival. If the shift from order to chaos is spontaneous and we can siphon part of that energy during the process of dissipation, the opposite (when the shift is reversible) can be done only if we can supply energy from outside of the system. For example, if we drop a cube of sugar in a glass of water, it will dissolve i.e., shift spontaneously from a state of high energy (low entropy and high order under the form of a cube) to a state of low energy (high entropy/chaos under the form of molecules of sugar spread in the water). If then we want to reverse the process and get back a cube of sugar, we will need to inject energy from outside (warm the glass) to make the water evaporate to separate the sugar from the water and then rebuild the cube with what remains in the glass.



The beauty of the concept of Entropy is that it can be applied to any domain, from astrophysics to microbiology, from philosophy to social sciences, from psychology to business, etc. In disaster management for instance, entropy fluctuations illustrate the fact that unless some actions are taken urgently, the state of emergency or chaos will keep growing spontaneously (increasing its entropy) and the situation will eventually collapse completely (run out of energy). Our daily job/duty can therefore be seen as injecting energy in that scenario to reduce its entropy and in some way to put order in the chaos that otherwise would spontaneously keep spreading and leading the situation to collapse. Factors like lack of readiness, congestion, data disarray, redundancy, incompatibility, inertia, lack of collaboration, high levels of stress, conformity to convention, uncertainty, etc. increase entropy/chaos within crisis/disaster environment and lead spontaneously and rapidly to its collapse, while factors like bold and unconventional action, rapid and unhesitating responses to unforeseen, unpredictable challenges that are supported by cross-boundary collaboration and convention-independent critical thinking, situational awareness, imagination, and creativity and supported by unwavering leadership decrease entropy (bring order) and lead the collapsing environment back to the pre-crisis effectiveness and performance.



Do you recognize some of those factors in the Vision, Mission, Values and Behaviors that CCCL advocates daily?