THE SHUTDOWN PROCESS I

"You cease to exist the day you understand the truth", Sai

This essay is on the idea of determinism and completeness when trying to realize determinism. Determinism by itself emphasises the fact of complete predictability. We loosely understand that complete predictability arises from complete understanding. What is understanding and what it precisely means when we talk about it from the point of you of a scientist.

As a scientist you often have to limit (or delimit) yourself to the exactness of the interpretation of the proposal. We need to understand what exactness means and in science it is often important to define the context with precision. A context is the background or mathematically the space that allows one to embed the system in hand to study. Whitney embedding theorem describes a rule about the dimension of the space required to embed an object of a finite dimension. The rule emphasises that a minimum N dimensional space is required to embed a N-1 dimensional object.

Coming to determinism, we understand that a system needs to deterministic if we can know all its features during any instant of its evolution.

Deterministic Shutdown

What if you are tasked to deterministically shutdown a machine in exactly say 5 seconds? How would you do that? Would you be able to figure out how? What do you need to know in order to perform deterministic shutdown of a machine? What is the information that you need in order to perform deterministic shutdown of a given machine? Can you have a generic method to perform deterministic shutdown or the methodology will be machine specific. These are a few natural questions one might ask when in search of a methodology to perform deterministic shutdown for a given machine.

Once again, please remember, deterministic shutdown is a process where the machine is shutdown exactly at a desired time. The machine should not shut before or after that time for the shutdown to be deterministic.

What stops you from implementing deterministic shutdown?

Quantum mechanically it is well known that the natural measurement is a probabilistic process. This means there is always finite uncertainty when we measure. Although, this a problem because nature is not deterministic as per quantum mechanics. So, does this rule out deterministic shutdown? We don't know why natural measurement is probabilistic but, we certainly know that this can be a ramification of lack of information when try to define a probabilistic logical world.

Here we need to define and determine the logical deterministic shutdown for our machine. We don't require that our machine be from the naturally observable physical world. To shutdown a machine in theory we must have info of all the variables of the machines completely. This calls for completeness of the information about the machine and its mechanisms.

In reality we often utilize some basis to expand our systems, the completeness of the basis is an important factor in determining the system dynamics completely. This allows us to deduce that for a deterministic shutdownn we must have all the information about the machine in hand.

Now, let us think in the **reverse manner**, *if we have all the information of the machine, this means that the machine has been deterministically shutdown.* This is because quantum mechanically an observer is not separate from the experiment and hence having complete information about the experiment means having complete information of the observer. This means a completely self-aware observer on observation, observes a deterministic shutdown.