Insight-2 — Phase 2 — Empirical Heuristic Structure

Chapter 2, Section 3: Concrete Inferences from Classical Laws II — June 14th, 2019

Two Objectives for Today:

1. Systematic vs. Non-Systematic Processes (Assimilate the Difference)

2. Making the Difference Real in Our Own Lives (Adjusting to the Difference)

There are lies, damned lies, and statistics.
— Mark Twain

Lonergan's Logic

How to provide equally strong support to both classical and statistical empirical heuristic structures? His starting point is the question of the extent to which classical laws cover all empirical data.

1. Classical laws involve two insights, the first connecting the data to the law and the second the law itself. But Lonergan's question involves a third insight, the connection between the law and the empirical world.

2. There are two ways to explore this third insight: common sense and theoretical. Common sense will not investigate until the need arises to do so, while those with a theoretical cast of mind will postulate possible situations and anticipate what conclusions there are to be drawn from them. This shift removes the discussion from the realm of data and to that of the abstract.

3. Once in the theoretical realm, the questions shifts from the expression of classical laws in the form of functions to the nature of the world processes in play in the empirical world. Now it becomes possible to work out the primary features and properties of the kind of world process revealed through classical empirical heuristic structures.

In essence, Lonergan states that there are three key properties of systematic world processes:

a. The whole of a systematic process has a single intelligibility, either in the form of a single insight or a single set of insights.

b. Any situation can be deduced from any other without having to pay attention to the intervening gap in time.

c. Systematic investigations involve not only a ease in collecting abundant and significant data, but with the occurrence of a supreme moment in which everything comes together in a unified whole.

When this happens, sweeping deductions and accurate predictions become possible. It is a deterministic world process.

4. Now, statistical heuristic structures are already well-known and accepted methods of empirical investigation. Such data are not susceptible to classical investigations, therefore there must be another kind of world process that is at play. To work out the properties of this world process, Lonergan simply negates the three properties of systematic processes

So non-systematic processes:

a. Never can be expressed in a single unifying perspective.

b. Unfold over time in ways that do not allow for temporal gaps.

c. Are characterized by the lack of convergence.

When this happens, random and unpredictable events are not only possible but probable. It is a non-deterministic world process.

Why is this important? Well, systematic processes are dependable and predictable over large spans of time and space, while non-systematic processes are not only fluid but unpredictable in ways that allow novel situations to arise. When the distinction between the two world processes is clear, than one has a better grasp of what is or is not possible.

The other thing is that systematic processes based on classical laws can be operationally extended into the idea of recurring schemes of operations. This shift allows for human creativity when it comes to developing new schemes (metaphysics: potential, form, act). So a separate form of novelty based on expanding or creating recurring schemes of operation is available for human creativity.

When a recurring scheme of operations is not only effective but adds to human wealth, then it is important to act in such a way to support these forms—especially when such forms may be under attack by those with different terminal values. This is part of the "good of order", in which the form itself is of value.

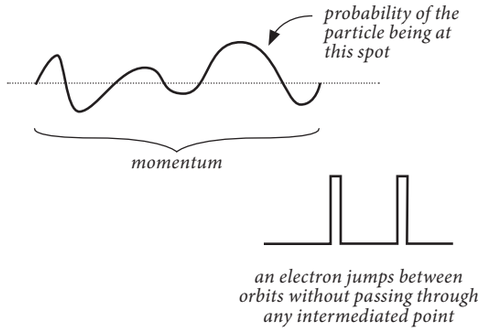
So when it comes to estimating the scope and constraints on rational action in changing institutional structures, this separation of stability and change creates two ways of being in the world. For each person expresses this same "duality" in a core central form/self that defines the person and the conjugates that occur when the person shifts from one context to another. Intellectual, moral, and religious conversion occur within this central self, a stable systematic recurring scheme of operations, while such radical changes play out in a variety of conjugate forms as people take up one or another role in society in ways that seem non-systematic in nature.

Lonergan's world view of emergent probability combines both systematic and non-systematic processes in one unifying perspective. As such it provides important clues as to what is actually going on. For example, the fundamental institutional changes currently taking place can only be properly understood if both the conditioning and sublating effects of higher and lower levels of intelligibility are taken into account: the lower levels of energy/matter recurring schemes of operation and the higher level of the transcendent, i.e., the Divine Mystery.

Quantum Mechanics

When it comes to the world of the very very small, the macro world's dynamics no longer hold true. Here, statistics really comes into play. For the problem is one can never know the momentum of a subatomic particle and its position at the same time. Furthermore, light acts in two apparently contradictory ways: as a wave and as a particle.

The "x" to be known is a probability wave form. Such a wave form provides a map of the most likely position as well as the momentum of particle.



Traditional Societies

Traditional societies live in a universe that changes but has no direction, i.e., cyclical rather than linear time (the creation of the Jews). The are constructed and maintained around commonly agreed "forms" or "conventions" that not only establishes the social position of every person within it mun provides the basic standards for evaluating each situation.

But what happens within a society geared toward linear time, where changes is not only frequent but in many cases irreversible? This requires a different sense of "self", one in which the individual is not only a participant but a potentially creative individual who can not only conceive the possibility of new ways of doing things (forms) but work to bring this ideal forms to life.

Such a "self" may be grounded in the drive toward authenticity that results from an inbuilt need to follow the transcendental injunctions. One lives in one's society in a very different way.

Schrödinger's Cat

Erwin Schrödinger was born in Vienna on August 12, 1887 and was awarded the Nobel Prize in Physics in 1933. He is best known for his work regarding quantum theory, particularly about his thought experiment involving a cat in order to explain the flawed interpretation of quantum superposition.

The Copenhagen Interpretation of quantum mechanics essentially states that an object in a physical system can simultaneously exist in all possible configurations, but observing the system forces the system to collapse and forces the object into just one of those possible states. Schrödinger disagreed with this interpretation.

So what does this have to do with cats? Schrödinger wanted people to imagine that a cat, poison, a Geiger counter, radioactive material, and a hammer were inside of a sealed container. The amount of radioactive material was minuscule enough that it only had a 50/50 shot of being detected over the course of an hour. If the Geiger counter detected radiation, the hammer would smash the poison, killing the cat. Until someone opened the container and observed the system, it was impossible to predict if the cat's outcome. Thus, until the system collapsed into one configuration, the cat would exist in some superposition zombie state of being both alive and dead.

Of course, Schrödinger claimed, that was ridiculous. Quantum superposition could not work with large objects such as cats, because it is impossible for an organism to be simultaneously alive and dead. Thus, he reasoned that the Copenhagen Interpretation must be inherently flawed. While many people incorrectly assume Schrödinger supported the premise behind the thought experiment, he really didn't. His entire point was that it was impossible.

While it is true that modern experiments have revealed that while quantum superposition does work for tiny things like electrons, larger objects must be regarded differently.

— *Infogalactic*