INSIGHT, Chapter 3, section 6.5

In chapter 3, in this last Canon, the Canon of Statistical Residues, Lonergan has been concerned in sections 6.1-6.4 to effect a kind of encirclement and confinement of the meaning and scope of classical laws and systems. By a careful examination of the interior workings of classical laws such as Newton's law of gravitation, Lonergan is able to reveal both the enriching fruitfulness in such laws and the limitations of those laws in explaining the real world. The same data explained by classical laws, also possess aspects unexplained by those laws, such as individuality and coincidental conditionedness. This leaves room for other kinds of intelligibility and other elements in the "being" or realities of this world to which other principles or features need to be introduced, one of which includes the statistical.

Lonergan also addresses the challenges that might arise in recognizing the enrichment and the limitations of classical laws, both rooted, to recall, in the immediacy of the imagination and its force of presence in human conscious life. It captivates our attention most.

In section 6.5 Lonergan completes his exploration of the concrete universe and its processeses. This sets the stage for then presenting the general features of the canons of statistical methods intelligently, reasonably, and responsibly used by the modern scientist.

6.5 The Existence of Statistical Residues

The Conditionedness of Classical Laws

Lonergan's argument begins with a point he has introduced many times in the last two chapters, namely that classical laws are abstract, though enriching, and if they are actualized in this universe, conditions need to occur such that these become actualized. For example, the law of falling bodies is not "actualized" unless a body is actually falling. There are conditions that lead up to the point at which a body is falling and there are conditions that influence the actual falling of the object as well, or even conditions that can stop an object from falling, as well as condition that can change the mode of its falling (such as friction, and a different medium in which the object falls – water say, instead of air).

In general, every enactment of a classical law thus have is positive and negative conditions. The positive condition are those required for the law to become realized. The negative conditions are those which would prevent the law from becoming realized. Perhaps at the last moment, just as the ball was about to be released, I put my hand up, and stop its "fall".

The Diverging Series

The second step in his argument that statistical residues exist is to setup in our imaginations an image of the positive and negative conditions that allow or hinder the application of a classical law. This he does by symbolically painting an image of the diverging series and its properties.

Every event (understood via insights that underpin terms and their relations), has a set of conditions that make it possible, and anti-conditions that would hinder its realization. Likewise, each of these conditions in turn, and the "anti-conditions" have their conditions and anti-conditions, and on and on and on.

This divergence of conditions seems to be the case for almost anything that we can think about. If one notices that a water molecule had come to exist through some combination of an electrical storm and the presence of oxygen and hydrogen molecules (H_2 and O_2). Notice, that this particular event (a chemical reaction that forms H_20), has many conditions that lead up to it, and conditions which could hinder it. The particular path of the lightening and its flow of electrons. The particular paths of the H_2 and O_2, which could easily be shifted by various electro-magnetic forces (collisions, etc.). All of these rapidly shifting conditions would need to be introduced in order to say why this H_2 and this O_2 and this energy (electricity) came together in just the right manner to cause these two particular molecules to form into a water molecule. Any number of conditions that would have been different would have resulted in the failure of these two sets of atoms to form this particular water molecule.

Notice how much I had to use the word "this", because an event is a concrete this. We are not speaking statistically, such as whether water might be form in the presence of hydrogen and oxgen, but whether this very specific, particular hydrogen molecule and oxygen molecule (these run around in molecules (as two bond hydrogen atoms or two bonded oxygen atoms usually, not as atoms), and the resultant very specific, particular water molecule.

One can turn to the very specific, particular molecules in Kreb's cycle, or the very specific instance of some molecule absorb through a particular location in the stomach that had gone through a process of digestion, or the very specific instance of ….. Reality truly seems to follow Lonergan general scheme of the diverging series of conditions and anti-conditions. The ideas of some kind of ultimately converging and cyclical series of conditions never finds facts for support either in smallest situations of the universe nor in the largest.

The Non-Systematic Aggregate

Once he has set up the image into the diverging series, he then argues to the coincentality of that series.

The diverging series forms not an intelligible whole, but an aggregate, a matter of fact aggregate of events that are not systematically related as a whole by classical laws.

In other words, there are many events that take place in this universe which have no overarching explanation that unites them systematically.

It is this non-relationship between events in the universe that allows for an objective, real meaning to statistics. Statistics deals with frequencies of events that are not as such systematically related. If these events were systematically related, then these events would in some fashion condition each other (perhaps one would be the condition for the other), and if that is the case, then as long as the conditioning exists, and is understood, there really is no meaning to the probability of the event. One would know precise when one event would come to be in relationship to the other. But if these are not related systematically, then the frequency tells us something about the situation which knowledge of the event alone, and classical intelligible cannot accomplish. Hence, if events can form a coincidental aggregate, then actual and ideal frequencies has an objective meaning. The diverging series forms such a coincidental aggregate as Lonergan argues, and it certainly seems to be not only the better account, but the only account that actually has evidence. The universe as a cyclic series of conditioned events is a mere hypothesis with no evidence in the end.

What statistics can regard

I would like to add a bit of a nuance to the world that statistic explores. Notice that Lonergan was focusing upon a defined event. At the same time, the range of "objects" toward which the question "How often?" or "What is the rate?" can be applied is anything that is conditioned and the conditions form a diverging series. Thus, any event, any existing thing, any web of events and their frequencies (systems and schemes of recurrence), and development can be examined statistically. One can ask about the probabilities of a planet staying within a certain orbital path. One can ask about the probability of some ecosystem emerging into existence or staying in existence. One can ask about the statistical probabilities of some development coming to term, or some range of divergences within the development.(eg. Minor and major flexibility of development as Lonergan discusses later in INSIGHT). Even the statistical can be examined statistically. One can ask about the probability of flipping a coin and getting within plus or minus "X" or "Y" of the ideal frequencies (which creates a stastical cloud much as is meant by "electron clouds." Anything which is embedded in a coincidental aggregate is potentially an object of statistical inquiry and intelligibility.