Chapter 4, section 2.1 – 2.4
Complementarity in the Known: Emergent Probability

I. Introduction

"Knowing and known, if not in identity, stand at least in some correspondence and, as the known is reach through the knowing, structural features of the one are bound to be reflected in the other." (115)

a. General Characteristics of the Known: This Creates a general "world view"

i. "Intelligibility immanent in the universe of our experience." Lonergan is concern with the direct insights into the intrinsic intelligibility of data. Thus, he is concerned with "forms" that can be grasped via our experiences. At this point, he is not concerned with efficient, agent, or final causes of things or of this universe. In a later chapter, called "General Transcendent Knowledge" he will reintroduce some of these other causes.

ii. Generic account. Lonergan is going to develop a general world view from the basis of the general features of classical and statistical laws. Specific accounts are giving by specific sciences that discover particular classical correlation and statistical probabilities.

iii. Relatively invariant: based on method rather than on the content of the method. Hence, as sciences advance and differentiate, content changes. However, the basic structure of inquiring intelligence, and its "method", stay the same. There are some changes however in the mode by which inquiring intelligence proceed. We have seen the development from the "nature" of something in Aristotle to the "indetermine function to be determine" in modern science (or unspecified correlation to be specified). And then we find a differentation taking place from classical correlations to statistical probabilities. However, what is the same from nature to correlation to probabilities is the basic structure of experience, understanding, and knowing.

iv. Not complete. Still need a notion of the thing. Lonergan will be developing a general view of this universe from general characteristics of classical and statistical laws. However, classical and statistical laws only take place in and through things, and this will need to be integrated philosophically. In chapter 8, Lonergan introduces the notion of a thing, then in chapter 15 he will develop the notion more precisely.

b. A condition series of schemes of recurrence

i. **Scheme of recurrence** = "a series of events, A, B, C, …. Would be so related that the fulfillment of the conditions for each would be the occurrence of the others"

1. *Two instances of greater complexity*
    a. An interdependent combination of schemes
    b. Defensive schemes
2. *Examples of schemes*

a. Planetary system
b. Circulation of water
c. Nitrogen cycle
d. Routines of animal life
e. Economic rhythms of production and exchange

3. *Example of defensive circles*
    a. Generalized equilibria
        i. Health of plant or animal
        ii. Plant and animal life in an ecosystem

ii. The Conditioned Series of Schemes

1. Scheme P → Scheme Q→Scheme R
    a. Examples
        i. Physical laws→ Chemical cycles→ Plants → herbivorous animals → carnivorous animals
    b. Possible, probable, actual seriations
        i. Actual seriations are the schemes that have, are, or will be actually functioning
        ii. Probable seriations are a not a single series as are actual, but rather these include entire ranges of schemes of more or of less probabilities for emerging. "At each stage of world process there is a set of probable next stages, of which some are more probable than others." (119)
        iii. Possible seriations are all the possible seriations that could be constructed from classical laws in this universe. Hence these are even more abstract and less connected to the actual universe.
        iv. Possible has greatest diversity and complexity, probable is next, and actual the least.

c. The Probabilities of Schemes

i. Probabilities of emergence and survival of schemes (not just events)

1. Emergence

a. If events are not linked to a scheme, then the probabilities of all events taking place is the product of the probabilities of each of these events.
b. However, if these are linked into a scheme, then the probability of the events taking place is more like the sum of the probabilities of the events that form the scheme. In other words, the likelihood of events with a scheme are far more likely than the occurrence of those same events not in a scheme.
c. This probability for the emergence of the scheme remains as long as prior conditions are fulfilled. For example, if a draught takes place, and the plants all disappear, so will the animals that feed on those plants. But as long as the plants continue to

exist, then the animals can continue to emerge (though notice, more conditions are need than plants for animals to emerge).

2. **Survival**: "The probability of a the survival of a scheme is the probability of the non-occurrence of events that would disrupt the scheme," or any of its prior conditions.

d. Emergent Probability

i. **The Definition:** "For the actual function of earlier schemes in the series fulfils the conditions for the possibility of the functioning of later schemes. As such conditions are fulfilled, the probability of the combination of the component events in a scheme jumps from a product of a set of proper fractions to the sum of those proper fractions. But what is probable, sooner or later occurs. When it occurs, a probability of emergence is replaced by a probability of survival; and as long as the scheme survives, it is in its turn fulfilling conditions for the possibility of still later schemes in the series." (121-122)

ii. What does it explain?

1. ***Spatial concentrations:*** Later schemes can only emerge and survive in places where former schemes have emerged. This causes a "succession of constrictions of the volumes of space in which later schemes can be found." (122)
    a. Hence plants will be found where water is recurrent. Herbivores will be present in those locations where the right kind of plants are present (since herbivores do not just eat any plant). And where the herbivores emerge and continue to be, then carnivores will emerge in the places with the right kind of herbivores.
2. ***Absolute numbers****:* "Large numbers offset low probabilities." The lower the probability of later schemes, the need for higher actual initial numbers of earlier schemes. "The size of the universe is inversely proportionate to the probability of its ultimate schemes of recurrence." (123)
3. ***Long intervals of Time:*** Time influences probabilities for emergence as does space. If spatial distributions of former schemes has narrowed, then more time will be needed for the emergence of later schemes (if they have roughly the same probabilities for emergence)
4. ***Selective Significance:***
    a. If probability for emergence and for surival are low: rare and fleeting
    b. If probabilities for emergence and for survival are high: common and enduring
    c. If probability for emergence is low and survival high: rare but enduring
    d. If probability for emergence high and survival low: common but fleeting.
5. ***Maximum and Minimum Stability***

a. Common and Enduing schemes provide greatest line of stability.
b. Rare and fleeting schemes provide the least line of stability.

6. Possibility of Development

a. For development to take place, earlier schemes must surrender materials for later schemes, hence if those earlier schemes are too enduring, the later will not emerge. Thus, earlier schemes that are common but fleeting (high probability of emergence, low probability for survival) are more suitable for development than the reverse (rare but enduring)