

## Lecture 5, Part I: Ch 2, §3, Systematic and Non-Systematic Processes

[0:00]

- Review of the meaning of heuristic and the four heuristic structures:
- Heuristic as a kind of spontaneous, intelligent kind of anticipation.
- From 'eureka'; relates to searching and finding
- Heuristic: desire for possession *versus* desire leading to self-transcendence.

[5:46]

- Heuristic Notions and Heuristic Structures
- Lonergan's heuristic approach to science and its deep implications.
- Offers model of modern science as intelligently heuristic, not deductively logical.
- Foregrounds the creative, innovative, rule-changing aspects of insight.

[12:12]

- § 2. Review of Classical Heuristic Structure
- The unspecified correlation yet to be specified.
- The scissors metaphor and sets of heuristic notions at all stages.

[14:09]

- Student question: Are heuristic notions restricted solely to the natural sciences?
  - Classical heuristic models do show up in other domains (e.g., structural linguistics, comparative law), though a somewhat different methodology is followed.

[17:15]

- Student question: How active or passive is a human being is with respect to a sudden insight?
  - The activity of insight is receptivity, yet the subject does act.
  - But the intelligently inquiring subject actively prepares itself to receive insight.

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- Student question: Does the work of self-appropriation contribute to likelihood of insight?
  - The work helps you to recognize and own the process, to refine it and relinquish whatever does not contribute to it.

[25:55]

- § 3. Concrete inferences from Classical Laws ['Correlations']
- Three presuppositions: the laws, the situation, and insight.
- Modern science does not necessarily entail determinism.
- Crucial to Laplacean determinism, to the idea that science yields prediction and control, is Laplace's assumption that the events of the universe can be brought under "a single formula."
- Given the multitude of correlations/laws, insightful selection and combination is needed for any concrete inference, but it is not necessary that all such combinations yield a single formula.

[33:05]

- Correlations: Selected and Combined.
- Particularizing insights needed to select and apply general laws to specific cases. Illustrated with Galileo's combination of two of his laws in his studies of projectile paths.

[40:08]

- Another illustration of concrete inferences from classical correlations by concrete insights that select, combine and apply: Newton's application of his "laws" to planetary motion.
- Classical laws highly conditioned by context; example of falling bodies.
- How Newtonian laws gave rise the Enlightenment belief in modern science.
- But these same laws are merely indeterminate in themselves.
- Because the same Newtonian "laws" can be combined to yield elliptical as well as other planetary orbits.

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- Two Kinds of Overlooked Insights
  - (1) Practical, reactive insights; determined by the situation.
  - (2) Theoretical, constructive insights, a free exploration of the potentiality of laws.

[47:06]

- Surprise that Newton's laws, applied the three-body problem, encounters a mechanical system so complex it has no general, "single formula" as its solution.
- How by assuming certain symmetrical, imaginative models can bring a simplicity to complex problems, rendering them solvable.
- Overlooking the insights made by imaginative models.

[52:07]

- Definition of Process and Systematic Process.
- A process in general is a series of events.
- Systematic Process: Every moment determined by how original imaginative model was set up.
- A single intelligible unity to the unfolding of all events.
- Inherent "abstractness" of classical laws open to either systematic or non-systematic processes.
- Common assumption that all events in the universe can be deduced from one, single "Unified Theory" overlooks the inherent "abstractness" of classical laws, and the need for additional concrete insights.

[57:13]

- Classical correlations yield systematic processes *only* "other things being equal"; but classical laws themselves do not determine whether or not "other things" are or remain equal.

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- Examples of systematic processes: Planetary orbits, moons orbiting Jupiter, plate tectonics, pendular motion, the seasons, a beating heart, etc.

[1:06:16]

- The real meaning of closure.
- False meaning of "closure": no self-contained systems exist, contrary to Laplace.
- Lack of simplicity or systematicity hinders our ability to make predictions based on classical laws.
- More adequate meaning of closure.

[1:09:25]

- Influenced by Newton's physics, even Kant saw both nature and society as a *system* of laws.

[1:11:17]

- Discussion of non-systematic processes.
- By violating the assumptions of imaginative model, a nonsystematic model can be constructed.
- Modern science's oversight of its own insights.
- Failure to see that the universe might not be systematic.

[1:13:05]

- Student Questions
  - Question about whether Lonergan's discussion of a non-systematic process implies that a *particular* process (e.g., moons orbiting Jupiter) we once thought was systematic might someday turn out to not be systematic?
  - No, Lonergan's point is not about this or that process, but about the entire universe – that the classical laws do not imply that the universe as a whole is systematic and deterministic, even if some of its constituent processes are systematic.
  - Additional question about my knowledge and physical laws independent of my knowledge.
  - Discussion of the grounds for judgment follows later in the course.

[1:18:31]

- Discussion of the universe as a creative non-system, with regions of systematic processes.

[1:20:13]

- Student Question: Is it possible that we use 'nonsystematic' to mean 'we just don't know yet'?"
  - A nonsystematic processes may be deducible in each of its events, yet still the whole collection of events can be randomly patterned.

[1:21:35]

- Examples of non-systematic processes: raindrops hitting windshield, sprouting of dandelions, etc.  
No single intelligible unity, and no single formula to express why that specific *set* of dandelions sprouted there in that pattern.

[1:24:50]

- Lonergan argues that there can be no proof that the universe is systematic, based upon the "laws" of science alone; yet he believes that the universe actually is non-systematic, although he offers no proof for this.