

Motion and Empiriological Physics (part 2)

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Natural Philosophy – Physics
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O Creator ineffable, who of the riches of Thy wisdom didst appoint three hierarchies of Angels and didst set them in wondrous order over the highest heavens, and who didst apportion the elements of the world most wisely: do Thou, who art in truth the fountain of light and wisdom, deign to shed upon the darkness of my understanding the rays of Thine infinite brightness, and remove far from me the twofold darkness in which I was born, namely, sin and ignorance. Do Thou, who givest speech to the tongues of little children, instruct my tongue and pour into my lips the grace of Thy benediction. Give me keenness of apprehension, capacity for remembering, method and ease in learning, insight in interpretation, and copious eloquence in speech. Instruct my beginning, direct my progress, and set Thy seal upon the finished work, Thou, who art true God and true Man, who livest and reignest world without end. Amen.

(St. Thomas Aquinas *Oratio ante studium*)

Philosophical Physics Knows Motion Through Being

- Empiriological physics needs a frame of reference to interpret reality.
 - Viz., a way to assign itself values
- Questions regarding philosophical physics:
 - What is its frame of reference?
 - How does it know its explanations are satisfactory?
- It studies *ens mobile simpliciter*, “whole mobile being.”

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Philosophical Physics Knows Motion Through Being

- Philosophical physics studies motion to understand being and being to understand motion.
 - Just like causes help us understand effects; and effects, causes
- Principle of identity: “being is”
 - From this, the metaphysician develops his science.
- Being *qua* being is not tautological.
 - Metaphysics considers being materially or formally.
- Philosophy understand things in themselves.
 - Self-evident = *per se notum*

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Empiriological Physics is Method Only

- Existentialist Martin Heidegger: Science advances more in method than in matter.
 - e.g, Galileo’s and Newton’s theories great advances in method
- Heisenberg’s uncertainty principle and Einstein’s theory of relativity prompted a philosophical question: “What is observable?”
 - Viz., “What is passive or controllable?”
- “Passivity is a principle of difference rather than likeness.”

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Empiriological Physics is Method Only

- James and Santayana: empiriological physics’ conception of nature pluralistic
- Being unites. Act does, too.
 - It assures “objectivity, universality of conclusion, certitude, necessity, and immutability of knowledge.”
- Mechanism considers reality entirely passive.
 - Everything external
 - Denial of final causes leads to treating method as a “thing-in-itself”

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The Empiriological Physicist is Not a Complete Physicist

- Does studying how reality is acted upon teach us about nature?
- Man has little freedom in choosing his method of knowing.
- Subject matter determines method, not conversely.
- Human intelligence unites matter with method.
 - A strict empiriological physicist is not a man!
 - What would a measurement mean without any reference to what is measured?

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Empiriological Physics is Primarily Art, Not Science

- Logic is a liberal art that classifies knowledge.
 - Empiriological physics classifies, too.
 - It classifies empirical laws.
- What is the medium of the art of empiriological physics?
- Nature rebels against being treated too passively.
- Empiriological physicists have a freedom in which theories to choose to explain nature.
 - The final product is all that matters in the end.

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Empiriological Physics is Primarily Art, Not Science

- An “artist cannot consider pure passivity alone.”
 - What would be his materials? How would he make?
- How does the empiriological physicist get knowledge of nature by controlling it?
- Art is an imitation of nature.
 - Because of this, philosophers, who have remained grounded in the study of nature, will always criticize empiriological physics’s conclusions as they relate to nature.

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Empiriological Physics Frees Man From Nature

- What is freedom? It is something *for*, not something *from*.
 - Pope John Paul II says freedom is *for* “having the right to do what we ought.”
- The benefits of empiriological physics have been to free man *from* nature, hunger, material need, etc.
- “Freedom *from*” implies a lack of control
- “Freedom *for*” implies obedience, law, order.

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Empiriological Physics Frees Man From Nature

- Empiriological physics is “geared to action”, whereas philosophical physics is “geared to know.”
 - “To regard matter only for its potencies” is “to think only of [matter’s] uses”.
 - To know deals with the actual.
- Since empiriological physics classifies, it doesn’t explain.
 - Explaining “is to give causal reasons why”.
- Empiriological physicists not pure physicists

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Empiriological Physics Catalogues for the Engineer

- Kirchhoff, Pearson, and Mach: empiriological physics only describes
 - Husserl’s phenomenology a “philosophy of describing”
 - Description is uniquely human; it doesn’t exist in God nor in the angels.
- Description moves “from part to part.”
 - It describes “what happens when something else happens.”

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Empiriological Physics Catalogues for the Engineer

- Empiriological physics often resorts to probability.
 - Probability is good for practical production.
 - It is not good for scientific rigor.
- In philosophy:
 - Induction is the abstraction of universal from particular.
 - Way of discovery (*via inventionis*)
 - Deduction is method of proof.
 - Way of resolution (*via resolutionis*)

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Empiriological Physics Catalogues for the Engineer

- In empiriological physics, it's reversed:
 - Deduction is the *via inventionis*.
 - It deduces from theory the result of a particular experiment.
 - Induction is the *via resolutionis*.
 - From the results of various particular experiments, a theory is verified.
- Empiriological physics aims at discovery, not proof.
- Philosophy's "point of departure" is discovery.

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Empiriological Physics Catalogues for the Engineer

- Max Scheler: Destiny of empiriological physics is *Technik*.
 - *Technik* is German for "engineering."
- Auguste Comte: "knowledge for prediction and prediction for power"
- Empiriological physics controls by classifying and classifies to control.
- Empiriological physics "makes oblique reference to philosophy."

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The Several Ways of Considering Empiriological Physics

- (1) Pure empiriological physics
 - is an art.
 - views matter as passive.
 - Its method is control.
 - "It aspires to formalize its subject, but the achievement always stops short of its goal."
 - It is *in fieri* (in progress, always becoming).
- (2) Empiriological physics in a loose sense
 - Mingles common sense philosophy with its technical models to create "a cosmic image."

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The Several Ways of Considering Empiriological Physics

- (3) Empiriological physics in the line of philosophy
 - In its early stages, there is little experiment and more observation.
 - Here, philosophical and empiriological physics are virtually one.
 - When experiment is pursued, empiriological physics becomes "a discipline of control."
 - Philosophical physicist can relate the data of empiriological physics to his truths.

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The Several Ways of Considering Empiriological Physics

- Sense (1): This is the sense "empiriological physics" should be taken when judging it.
 - Something should be judged by what is principal in it.
 - Senses (2) and (3) mix empiriological physics with other elements.
- Sense (2): The empiriological physicist does not have a formal philosophy
 - He bolsters his technical view of the world with common sense.

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The Several Ways of Considering Empiriological Physics

- Sense (3): Philosophical and empiriological physics “cross-fertilize” and mutually enrich one another.
 - Empiriological physics lacks the means to interpret its data, so philosophical physics can help it come back to common sense and maintain a realist view of the objects it studies.
 - Man’s “higher spiritual powers” “are directed to truths [and goods] that he cannot control,” but has to obey.

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The Several Ways of Considering Empiriological Physics

- V. E. Smith’s view, described above, differs in some respects from that of other prominent philosophers:
 - Maritain
 - Empiriological physics distinct from philosophy
 - De Koninck and the Laval School
 - Empiriological physics “is taken as a continuation at the dialectical level of the demonstrative science that is true philosophy.”
 - It reads “the fine print in the book of nature” that philosophical physics can’t see.

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The Several Ways of Considering Empiriological Physics

- Empiriological physics is analogous to a *scientia media* (intermediate science).
 - Recall: the *scientia media* in this case would be “formally mathematical, materially physical.”
- Knowledge secondary to pure empiriological physics.
- Modernity is characterized by a “war” between “laboratory and life, empiriological and philosophical physics, the matter of ancient learning and the method of the modern one.”

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References

- V. E. Smith’s *Philosophical Physics*
 - Please finish ch. 5 (Motion and Empiriological Physics).
 - I will post PDF of the reading on the course website.
- Further reading:
 - Aristotle, *Posterior Analytics* (*passim*).
 - Dewey, John, *How We Think* (Boston, 1933).
- (Uncited quotations in the slides come from V. E. Smith’s book.)

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