

# The Science of Mobile Being

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1

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*)

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2

## Exploring the motions of matter (viz., “mobile being” or *ens mobile*)

- What is matter?
  - Some think it is:
    - spirit
    - God
    - a collection of atoms
    - an illusion
    - etc.

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3

## Exploring the motions of matter (viz., “mobile being” or *ens mobile*)

- What is motion?
  - 6 species:
    - Generation
    - Corruption
    - Local movement (locomotion)
    - Alteration
    - Augmentation
    - Diminution

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4

## Exploring the motions of matter (viz., “mobile being” or *ens mobile*)

- What is philosophical physics?
  - Does it study *ens mobile* from the perspective of being?
- What is modern physics?
  - Is it best termed “experimental physics” or “mathematical physics” or something else?
  - Maritain suggests the term *empirical*.
- How are they the same?
- How are they different?

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5

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6

## Intellectual Insight is Used.

- Abstraction (*abs-* = “away from”, *traere* = “to draw”)
  - V. E. Smith's definition: “the operation of the mind disengaging the essence of a sensible thing from that which is non-essential or only incidental in its make-up”
- 3 orders of abstraction:
  - Physical
  - Mathematical
  - Metaphysical

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7

## 1<sup>st</sup> Order: Physical Abstraction

- V. E. Smith: “the mind [...] leave[s] aside individual sensible matter but not common sensible matter”
- Boethius (+ c. 524): “[Philosophical] [p]hysics deals with motion and is not abstract or separable; for it is concerned with forms of bodies together with their constituent matter, which forms cannot be separated in reality from their bodies. As bodies are in motion—the earth, for instance, tending downward, and fire tending upward—form takes on the movement of the particular thing to which it is annexed.” (*De Trinitate*)

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8

## 2<sup>nd</sup> Order: Mathematical Abstraction

- V. E. Smith: “the common sensible matter is relinquished, but not the quantity”
  - Quantity presupposes wholes and parts.
- Boethius: “Mathematics does not deal with motion and is not abstract, for it investigates forms of bodies apart from matter, and therefore apart from movement, which forms being connected with matter cannot really be separated from bodies.” (*De Trinitate*)

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9

## 3<sup>rd</sup> Order: Metaphysical Abstraction

- Both quantity and quality are abstracted away.
  - Being remains.
- Boethius: “Theology [what we call ‘metaphysics’] does not deal with motion and is abstract and of things inseparable, for the divine substance is without matter or motion.” (*De Trinitate*)

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10

## empiriological vs. philosophical physics

- Both have same material object (*ens mobile*)
- Different formal object
  - Empiriological physicist understand *ens mobile* as quantified
  - Philosophical physicist understands it *qua mobile*.
    - Empiriological physics:
      - formally mathematical, materially physical

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11

## empiriological vs. philosophical physics

- Descartes reduced physics to mathematics
  - Matter = extension = length, breadth, width
  - E.g., Tegmark's “Mathematical Universe Hypothesis”
- Yet, one must start with the senses before establishing mathematics and metaphysics
  - *Nihil est in intellectu quod non prius in sensu*
- Summary:
  - Empiriological physics studies quantity.
  - Philosophical physics studies *ens mobile*.

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12

## experience vs. experiment

- Etymologically related:
  - Latin: *experiri* to try, put to the test
- But very different:
  - Experiment = controlled experience.
  - Experience is more qualitative and inclusive.
  - Experiment must end in an experience
    - E.g., seeing a pointer reading
- Philosophical physics is based on experience

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13

## All knowledge begins with being.

- So we start with metaphysics?
  - Descartes thought philosophy of nature derived from metaphysics.
  - Others think metaphysics is an extension of the philosophy of nature.
- Both views are incorrect.
  - Let's see why.

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14

## All knowledge begins with being.

- St. Thomas *De Trinitate* q. 2 a. 3 ad 7: “Sciences which are ordered to one another are so related that one can use the principles of another, just as posterior sciences can use the principles of prior sciences, whether they are superior or inferior: wherefore metaphysics, which is superior in dignity to all, uses truths that have been proved in other sciences. And in like manner theology—Although all other sciences are related to it in the order of generation, as serving it and as preambles to it—can make use of the principles of all the others, even if they are posterior to it in dignity.”

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15

## All knowledge begins with being.

- St. Thomas *De Trinitate* q. 3 a. 1 ad 2: “The truth of things may also not be evident because of defect on our part, as in the case of divine and necessary things which, according to their own nature, are most knowable. Wherefore, to understand them, we are not capable of immediate intellection, from the very beginning, since it is in accordance with our nature to attain from things less knowable and posterior in themselves, to knowledge of those that are themselves more knowable and prior. But since from none of those things that we know last do we have any knowledge of those that we know first, it is needful for us even at first to have some notion of those things that are most knowable in themselves; but this cannot be except by believing. And this is evident even in the order of the sciences; since that science which is concerned with highest causes, namely, metaphysics, comes last in human knowledge; yet in sciences that are preambles to it there must be supposed certain truths which only in it are more fully revealed; therefore every science has some suppositions that must be believed in order to carry on the process of learning.”

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16

## All knowledge begins with being.

- So how does knowledge begin with being?
- Isn't this a vicious circle?
- No, ∴ the philosophical physicist works with a coarser notion of being.
  - It's the same reason different sciences study different formal objects.
- E.g., children call every man “daddy” and only later distinguish that every man isn't their father.
  - General → particular knowledge
  - More universal → more specific
  - More known → less known

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17

## All knowledge begins with being.

- Radical inductivism
  - All we know are particulars.
  - Induction: individual → universal
  - But if we don't know the universal, how could we know a particular instance of the universal, i.e., the individual?
- Radical deductivism
  - All we know are universals.
  - Deduction: universal → particular
  - How would we know particulars, then?
- ∴ knowledge must begin with being.

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18

# References

- V. E. Smith's *Philosophical Physics* ch. 1
  - Please read 1<sup>st</sup> half, up to pg. 25
    - We will send you a PDF file of those pages.
- Boethius's *De Trinitate*
- St. Thomas Aquinas's *Division and Method of the Sciences*
  - a.k.a. his commentary on Boethius's *De Trinitate* questions 5 & 6