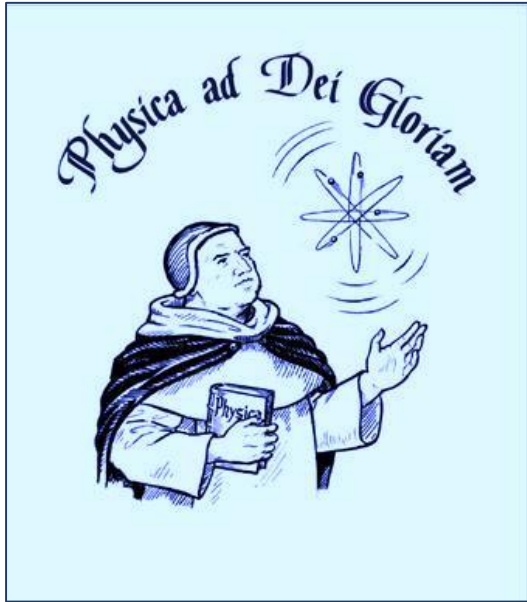


Science before Science Study Group

Week Ten



*St. Thomas Aquinas,
Pray for us.*

*St. Albert the Great,
Pray for us.*

Prayer before Study

Almighty God, You who are the creator of all things and our loving Father, send us Your Holy Spirit to illuminate our minds so that we can understand how You have revealed Yourself to us through the world around us.

Grant to us
keenness of mind
capacity to remember,
skill in learning,
subtlety to interpret,
and eloquence in speech.

May You guide the beginning of our work, direct its progress, and bring it to completion.

We ask this through Thy Son, Jesus Christ, Our Lord.

Amen

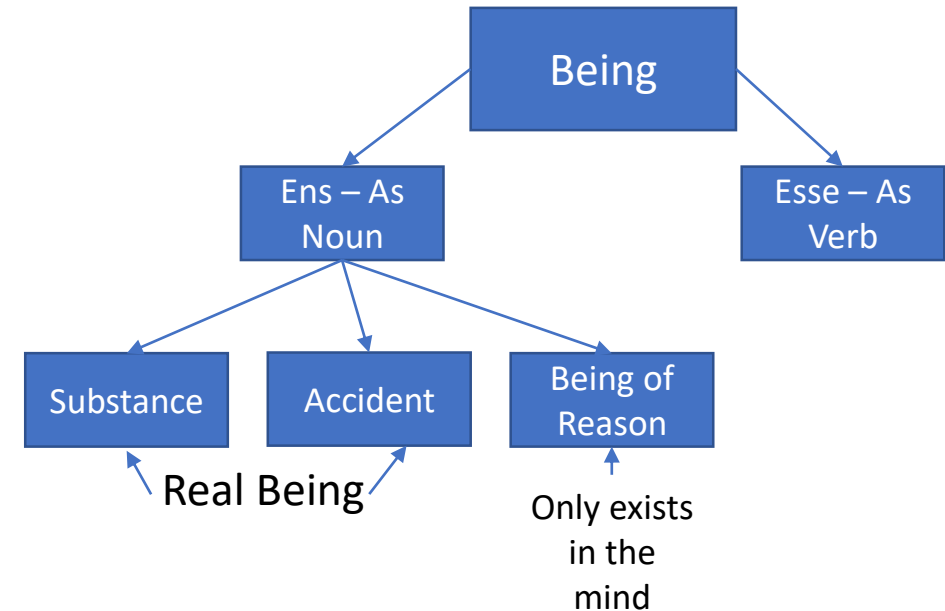


Summary of Chapter 4 - What is Truth?

- Intellectual knowledge in many ways analogous to sensorial knowledge
- Sensorial knowledge –puts us in contact with particular things by phantasms
- Intellectual knowledge – puts us in contact with universals by way of ideas abstracted from phantasms
- Therefore all knowledge comes to us through the senses
- Ideas are that *by which we know* things as opposed to *that which we know*
- If you forget this – you become a philosophical idealist and get locked up in your mind

Summary of Chapter 4 – What is Truth?

- Immaterial nature of intellectual knowledge
- The Primacy of Being – the first thing we know
- Being as a noun (*ens*) and a verb (*esse*)
- Real Being and Beings of Reason
 - Exists, could exist, only exists in the mind
- Intelligibility and Essence
- Existence precedes essence
- What is truth?
- Transcendentals
 - Being, truth, unity, thingness, identity, goodness, beauty
- Principle of sufficient reason



Storyline

- Truth is the conformance of the mind to reality
 - Gödel's theorem's points to the radical connectedness of reality
- Being is an ocean – a mystery
- Being is primary – not a choice we make
- It is so huge we need to look at it from different directions
 - The transcendentals
- *Being is* to the extent that it *is one* – more unified the more intelligible
- All things are true to the extent that they are – they have an essential form that can be received by a knowing mind
- Potential relation for me since I don't know everything
- Must be relation to a knowing mind
- Principle of Sufficient Reason – must have reason in itself or in another
- Actually leads us to St. Thomas' 4th proof of the existence of God
- Perfect conformity to reality - Truth

Questions

- What is the opposite of homogeneous?
 - Heterogeneous
- By what do we know particular things?
 - Phantasms (or images)
- By what do we know general things?
 - Ideas
- How do we manipulate phantasms?
 - Our imagination
- What is another word for non-physical or non-material?
 - Immaterial

Questions

- What are the two types of knowledge that we have been discussing?
 - Sensorial and intellectual
- Do things exist as particular or general or both?
 - Particular
- What is truth?
 - Truth is the conformity of the mind with reality.
- Are ideas and phantasms pure or instrumental signs?
 - Pure signs
- What is the opposite of univocal?
 - Equivocal

Questions

1. What is the principle of contradiction?

Something cannot be and not be at the same time and in the same way.

2. What is the principle of causality?

Nothing can change itself.

3. What is the principle of sufficient reason?

Everything contains the reason for its existence in itself or in another.

Chapter 5: On Animals, Men and Robots

- What is an animal?
- What is man?
- Will a robot ever be able to think?
- What is a robot?
- Are there other thinking beings besides man and God?

Summary for this week's session

- Do animals have an intellect? Koko the gorilla. Dolphins. Cats. Clever Hans.
- Common senses tells us that no. Is it being blocked?
- Some animals have advanced sensorial knowledge – seem to play back videos – capable of man activities
- Look at language which manifests ideas – can animals transfer meaning?
- Animals have sensorial knowledge and not intellects
- Qualitative difference between having and not having intellect – not a difference of degree
- Animal is an organism with capacity for sensorial powers
- Plant is a organism with nutritive powers
- Plant to animal is a qualitative jump
- Organism is an organized unity – all power are subsumed by higher powers
- What about man and the physical laws we have from modern science?
- Can we do an experiment to prove the effects of the immaterial?

Can Animals Think?

- Some evidence that is put forward
 - Koko's sign language
 - Doorbell ringing by a cat
- Need to make proper distinctions – What do we mean by think?
 - Have intellect?
 - Apprehending the form of the thing? In general?
 - Should be able to do science
 - Ask simple questions relative to essence of things
 - Why is sky blue? Why are there bad men?
- We do not find this among animal in the wild

Can Animals Think? (2)

- Let's assume animals have an intellect
 - Since we do not see the evidence – there must be a block or impediment (physical or non)
- If there is a physical block
 - Still should see some rudimentary evidence
 - Steven Hawking had severe physical impediments
 - Stoke victims – Koko's trainer suggested the intellect of a gorilla is hindered
 - Chief power would be most ineffective power?
- Non-physical block
 - A universal decision by all animals not to use the intellect?
 - Absurd not to use prime power

Can Animals Think? (3)

- Common sense – animals lack intellect
- Animals do not perform actions associated with intellect
 - Engineers, artist, musicians, teachers, comedians, etc.
 - A bird's nest 500 years ago is the same as it is today!
- Let's us look at particular evidence before closing the book!
 - Orangutans – Dr. Anne Russon – imitating human being:
 - Chopping firewood, washing laundry and dishes; sawing logs; sharpening axes; one even tried to start a fire!
 - She said they never rehearsed these thing and it was as if “they were playing back mental videos”
 - They were supposed to have learns over 1000 signs!

Can Animals Think? (4)

- Let's determine if animals have ideas
 - Language manifests ideas; words are associated with things or ideas
- Two ways of learning words
 - Direct association – e.g. a mother points to a dog
 - Dictionary method – e.g. the point where axis of rotation comes out in the northern hemisphere
 - Example: my 3 year old son did not know what a wallet was. I defined it, then pulled the wallet out and he properly identified it.
- Dictionary method is key!
 - An instrumental sign is given meaning by an instrumental sign (i.e. one word defines by other words)
 - Remember ideas are pure signs, pure referential value, pure meanings
 - If animals can *transfer meaning from one sign to another* then they have ideas
 - This is not *transfer of meaning* – e.g. I bring my son his bike and tell him it is a vehicle and then say a vehicle is “a device for anthropoid locomotion” he could identify the set of words without knowing what they meant (using signal ability only or sensorial knowledge)
 - But using abstract ideas (the idea of an idea and the idea of God or of justice) would make the case that animals can think
 - Despite immense research there is no evidence of *transfer of meaning* capability in animals.

Signs – Pure and Instrumental Signs

- Instrumental Sign – A ‘construction ahead’ sign
 - Primarily the sign is *that which we know*
 - Secondly represents that there is likely men ahead working on the road
 - We do not properly know the second one!
- Pure Sign – Something that brings us into contact with something else
 - It is something *by which we know* something else
- Phantasms and Ideas are Pure Signs

Can Animals Think? (5)

- If not intellectual knowledge, can we explain using sensorial knowledge?
 - Is awareness of particulars by phantasms
 - Some behavior can be accounted for by stimulus response type (mechanical) behavior
 - Apes ape human activity – as Dr. Russon – running back the sensorial images. They don't need to understand
 - Cat ringing doorbell, associated with getting food or getting inside for warmth.
 - These things could be done mechanically but it's clear that cats and apes are aware
 - Koko shows what advanced sensorial knowledge can do – i.e. more sensorial ability than a cat.
 - Reported dolphin ability to identify circles of different colors but only comparing particular things
 - Clever Hans – a horse – fooled even renowned psychologists – but taking cues from audience and others
- Animals are living things with sensorial knowledge but not intellectual

Can Animals Think (6)? Self-Aware?

- In its primary sense – *is an animal aware of its ability to know?* **NO**
 - Animals only know by phantasm and hence only particulars
 - If an animal were to know it knows – it *would not only know* this cat, this grass, this tree, etc but it *would know all of these as diverse particulars as instances of a general thing*. It would be able to form the idea of sensorial knowledge as particular.
- In secondary sense – of being aware of their body and its particular unified actions. YES
- There is a *qualitative difference* between having an intellect and not. It is not a *difference of degree*.

Definition of Animal and Plant

- Aristotle and St. Albert the Great were great biologists
- Aristotle identified four primary abilities of living things
 - Nutritive or vegetative
 - Locomotive
 - Sensorial
 - Intellectual
- Man has them all!
- Plants have nutritive
- Animals have sensorial but not intellectual abilities
 - Also has vegetative since sensorial cannot occur with nutritive life (to maintain itself)
 - Animal is an organism (i.e. Heterogeneous parts organized immanently for the action of the whole)– has real unity – vegetative and sensorial must work together in some way
 - Vegetative is subordinated to the sensorial
 - Sensorial is higher being than the vegetative; and subsumes it into its sensorial
- Animals have locomotion
 - why? To preserve its life – to flee from danger; to get food; to communicate with other animals
- An animal is a organism with capacity for sensorial powers
- A plant is a organism with nutritive powers only

Sensorial Knowledge – More or less developed

- Monkeys can make rudimentary “tools” like “umbrellas” and “chairs”
- Even more advanced animals could make fire or spears – without understanding what a spear is or what fire is
- Plant to animal is a qualitative jump
 - From not having to having sensorial powers
 - From purely physical to partly immaterial power
- Animal to man is another qualitative jump
 - To intellectual power that is completely immaterial
 - The intellectual power includes the sensorial powers and both include the nutritive powers

Recap of Man and Animals

- Substantial form of Man called soul is immaterial (non-physical) because man's intellect is
- Intellect is because we have ideas which are general not particular – whereas a material (physical) thing is always particular
- Recall material things are form-matter composites
- Animal substantial form has sensorial and vegetative powers.
 - The vegetative powers make use of physical laws and do not violate them
 - The sensorial powers make use of the vegetative

Man and Physical Laws

- Recall because man is a being, a unity, there must be order between his various powers or he would not be.
 - The more order the more he is
- There must be one power that regulates or orchestrates the others
 - The less in order his powers the less he is
- Intellect is the chief power of man; it is more because it is immaterial
- How does the being of man subsume the physical laws?
 - Like gravity, electrical/magnetic, etc?

More Depth is Needed...

- Knowledge comes with correlative power
- Sensorial knowledge with (internal sense) evaluative power and appetitive power which causes the organism to feel revulsion or attraction
- Intellectual knowledge comes with the appetitive power called the will
 - The will perceives what the intellect learns (it utilizes the ideas of the intellect so must be immaterial)
 - Something good attracts and something bad repels
 - The will is drawn by what appears good only
 - No particular good binds the will to choose it
 - The will can choose another – free will (undeniable datum of experience)

Physical versus Will?

- Physical law demands material causality
- Some of the problem comes from incorrect placement of the science
- Questions about man's soul
 - How will it regulate physical powers?
 - How can it do it without violating strict causality
- Regulation of the powers
 - The will controls the lower powers by immanent action
 - E.g. fireman saving life of a woman doesn't change nature of his instinctive revulsion of fire, uses it to keep from getting burnt
- Immanent versus External action
 - Form-matter composite – the immaterial form acts from the inside
 - Not as one body acts on another as in physical interactions
 - Before discovery of magnetic field a chip of iron veers from its path – violation of the known physical laws – but we later find the magnetic field and include it in the physical law
 - Metaphorically one can say that the intellect becomes a new law of the behavior of man's physical parts

Will and Material Causality

- The action of the will violates causality *only if one confines causality to causes proceeding from material (physical) things*
- The will does not obviate the need for the lower powers
 - The sensitive, vegetative, material powers
 - The higher powers work through the lower
 - The immaterial laws augment the physical and they don't work without them
 - The material works externally; the immaterial works from within
- Correction of cultural belief
 - Immaterial is part of the working of the universe
 - Incorporate new phenomenon when necessary into laws of physics (magnetic example)
 - We must learn to do a similar thing with the immaterial
 - Immaterial is not supernatural - only God is supernatural – everything else is part of nature
- The will and modern science
 - Scientist fixes the material conditions of his experiment; excludes immaterial
 - E.g. electrons minimally “violating” physical laws (p. 118 – 120)

Specialize Experiment to Detect Immaterial?

- Trying to see action of immaterial soul in an atom or group of atoms
 - More silly than trying to see vegetative life there
- Life is an organism
 - “a complex immanent organization of heterogeneous parts”
 - It is a relation among parts not found in isolated parts
- We know intellect is immaterial from its effects
 - To demand it be forced into a part is like straining an elephant and expecting it to still remain an elephant.

Organism

Life is an organism which is a complex immanent organization of heterogeneous parts; it requires a relation among parts and so is not found in isolated parts. It at least has nutritive and reproductive functions.