Science before Science Study Group

Week Seven

Begin with Prayer

Prayer before Study

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

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

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

We ask this through Thy Son, Jesus Christ

Amen

Summary up to Last Week's Meeting

- Our faith in modern science is a blind faith – we are not even aware that it is a faith!
- Talked about improper knowledge, infra-scientific knowledge and proper knowledge
- Science generates a nihilistic thinking – that we are not as important as we once thought ourselves to be!
- What is missing is the science before science – philosophy!
- We cannot avoid it – even saying that we don't need philosophy is a philosophical debate!
- Philosophy is a real science and requires real work!
- Logic-chopping error – letting clarity be primary and not reality! Like Kant and others!

Summary of Last's Week's Study Group

- The senses are the means through which we know everything
- All of modern sciences is based on information we get through our senses
- Modern science as taught today destroys our trust in the senses (ironically!)
- Our culture is full of wrong thinking about the senses and common sense
- The senses have not given us false information – sometimes we have erroneously deduced false information from them.
- Little errors in the beginning cause big errors later on – mistrust of the senses is not a little error but it is one we make!
- The Big Physics at the base of our culture must give primacy to the real!

Chapter 3 (continued on page 40) Sensorial Knowledge – A Radical Discovery

- What is sensorial knowledge or knowledge that come to us through our senses????
- Example: I pick up a cold glass of water.
  - The glass warms up and my hand cools down
  - I have the sensation of my hand cooling down
  - Is that all? NO! The sensation is not all that I experience.
  - I am aware of the coldness of the glass
  - I apprehend the coldness of the glass
  - In some way – I have become the coldness of the glass
  - I have ‘knowledge’ of the coldness
  - I have changed after this event – a unique species of CHANGE
- Let us talk more about CHANGE

What is Change?

- After things themselves – the next thing we know is change
- Things are – but they also become!
- One of the earliest philosophical problems
  - Heraclitus (c. 500 BC) – thought change was the only reality
  - Parmenides (b. 540 BC) – thought being was the only reality
- Parmenides went to opposite extreme of Heraclitus
  - But had abstracted the notion of BEING
  - Jumped to pure BEING – completely ONE, ABSOLUTE, UNCHANGEABLE, ETERNAL, INCORRUPTIBLE, INDIVISIBLE, containing every PERFECTION
  - Most would call this GOD

What is Change? (2)

- Problems
  - We do not have such direct knowledge of God
    - We only know things that change
  - Here we have an example of Parmenides enamored with the clarity of his idea
    - at the expense of reality - he rejected change
    - He tried to force all of reality into it
- We must account for both being and change.
  - Being is anything that ‘be’s’ - Not like in science fiction – be careful of vocabulary

What is Change? (3)

- Let us look at change again!
  - We discussed when we did the Kid's Intro to Physics
- What kinds of change can we have?
  - Look at properties
    - We can have changes in any of these properties
    - We can also have substantial change (when the thing is lost and become another thing)
  - Changes in quantity, quality or an extrinsic property
    - Change is size or shape
    - Change in color, texture, or other quality
    - Change in place – is important as we talked in the Kid's book

What is Change? (4)

- Change environment – concomitant changes could be
  - Change in hotness/coldness
  - Change in color
  - Change in texture
  - E.g. putting into a very cold environment

What is Change? Technical Language

- Change is analogous to
  - Statue
  - At first, unformed mass
  - Sculpted into the image of someone, say Einstein
  - We call the unformed mass – MATTER
  - We call the shape – FORM
  - First the form of unformed mass of stuff and afterward the form of Einstein
  - Its matter is kept
- We use this ANALOGY to talk about Accidental change
  - Apple changed from green to red
  - It kept its matter but changed its ACCIDENTAL FORM

What is Change? Technical Language

- Accident – means “that which of its nature it must inhere in something else”
  - not an unintended or random occurrence
  - Not unimportant – it is a property
- Going from the statue analogy to real physical change
  - A qualitative shift in meaning
  - Form has a more general meaning – includes all the properties not just shape
    - Property = accidental form
  - Conceptually different
- Aristotle defined nine categories of accidents (QQ RARe POET)

What is Change? Technical Language

- The subject in which the accidents inhere
  - **Substance** – is that which primarily exists!
  - Two examples: death of an animal and my eating of an apple
- Two different types of changes
  - Narrow type of change – accidental
  - Change in substance – **substantial change**
- **Prime matter** – underlying stratum that persists during change
  - Has no existence on its own
  - Matter involved with accidental change – we call **secondary matter**
- In substantial change: The substantial form was lost and replaced by a different substantial form

What is Change? Technical Language

- **Essence** is primarily the substantial form of the thing
- The **Nature** of a thing = essence
  - Don’t confuse with common usage (sub-human reality or average)
- Meaning of **FORM** – not that in common usage
  - A mere formality – no
  - A mathematical formalism – no
  - Form over function – no
  - In a different form – no
  - The statue analogy is best for where the common and technical language resonate

Thinking Philosophically

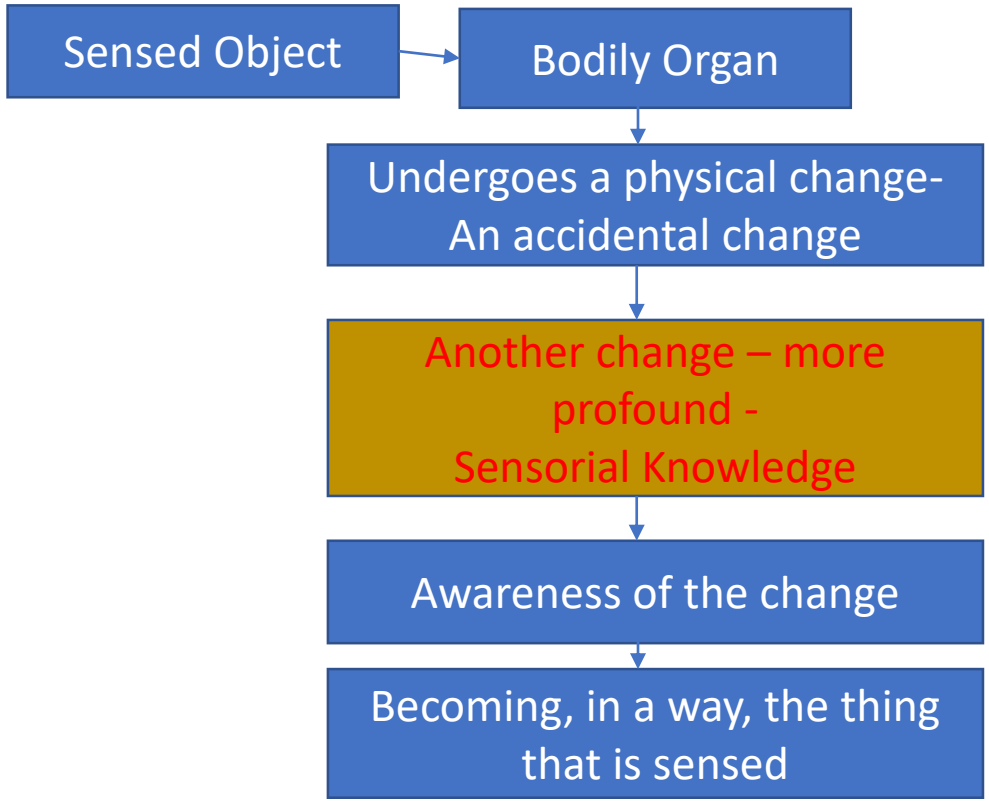
- Not to rely on your **imagination**
  - Ability to recall and manipulate sensorial information
- Thinking does not need images
  - Images and phantasms actually impedes abstract thinking
- We saw when we define ‘before’ in science before science
  - Not a boxcar on a train – like the imagination would provide
  - Meant prior in an abstract sense – ‘required by’ or ‘implied by’
  - So with ‘accident’ – not an extrinsic thing attached to a substance
    - But something that cannot exist on its own!
  - Also with form and matter – mutual causes of a substance
    - Without either we would not have a substance

Solution to problem of Parmenides

- Parmenides was first to understand the PRINCIPLE OF CONTRADICTION
- “Something cannot *be* and *not be* at the same time and in the same way”
- Parmenides reasoned that if something is, than to change it must have something that *is not* as well as what *is*. Violating the principle!
- Changeable being *is* by its FORM and *is not* by it union with PRIME MATTER
- Changeable being *is* in one respect and *is not* in a different respect. So the principle of contradiction is not violated.
- Material thing is actually something (FORM) and is potentially something else (MATTER) – potentiality is much harder one to understand – as Parmenides find.

Returning to Sensorial Knowledge

Sensorial Knowledge



Like the change we have been talking about

Bodily organ experiences a physical change (but not conscious of the change)

Apprehend the form of the thing sensed

Power of Sensation

Puts in conscious presence

Receives form in a unique way

Becoming the thing sensed

Without changing in ordinary way

In part an immaterial power

Shocking!
Unavoidable!
The core of Sensorial Knowledge

Sensorial Knowledge – Particular and General

- Involves material and immaterial processes
- The senses are that through which we know everything
- However – first principles don't come through the senses!
  - Sensorial knowledge – does not give us universals
  - Does not transcend any particular thing
  - Principles apply generally!
- Where does knowledge of such things come from?
  - This knowledge is other than sensorial knowledge!
  - It is a higher knowledge
  - Sensorial knowledge comes first for us
  - But principles and other truths are higher and, in that sense, first!
  - Things like substance (very physical when viewed from the imagination) is 'seen' by a higher power or ability

Our new philosophical knowledge

- We have been using common everyday things
  - Use of concrete examples
  - Do not involve modern science – no atoms, genes or black holes
  - This is necessary not incidental
  - We must move from what is more known to what is less known, not the reverse
- To use results of modern scientific research
  - Put into doubt the things we are saying
  - Research depends on a whole network of theory and experiments and being correctly interpreted
    - A much less firm ground

Coming up in Chapter 4 – What is Truth?

- Gödel's theorem
  - Need to refer to the real outside the system
  - Interrelatedness of all things
- Ideas are not Images
  - Intellect is totally different and higher nature than sensorial power
- Intellect puts us in touch with universals
  - The unity of knower and the known
  - We know things and not ideas
  - Immaterial nature of intellectual knowledge
- The Intellect
  - No physical organ that operates during the process of apprehending dogness
  - Intellectual knowing is purely immaterial (non-physical)-ideas are general and must be a power of something immaterial
  - Man's substantial form must be immaterial

Review Questions - Memorize

- What is a physical thing?

A physical thing is something and can become something else

- Physical things have two parts – what are they?

Matter and form.

- What is matter?

Matter is what it is potentially

- What is form?

Form is what a thing is actually

- What are the two kinds of changes?

A change of substance and a change of accident (property)

Review Questions - Memorize

- What is a substance?

A substance is something that has its own existence. (e.g. a cat, a man, a tree, etc.)

- What is a property or accident?

A property or accident is something that exists in a substance. (e.g. color, texture, hotness or coldness, shape, impetus)

- What is the mnemonic for remembering the nine properties of physical things ?

The nine properties of physical things can be remembered using the nmenonic
QQ RARe POET

- What are the nine properties?

The nine properties are quantity, quality, relation, action, reception, place, orientation, environment, time

Review Questions - Memorize

- What is the principle of non-contradiction?

The principle of non-contradiction is:
Something cannot BE and NOT BE at the same time and in the same way

- What is change?

Change is the process of what can be becoming what is

- What is the most important type of change?

The most important type of change is change of place

- Why is change of place the most important type of change?

Change of place is the most important type of change because unless something can move, things cannot interact with each other

- What is the principle of causality?

The principle of causality is:
Nothing can change itself

- What is impetus?

Impetus is the power or quality of something to move itself.

- What is force?

Force is the quality or power of something to change the impetus of another thing.

Review Questions

- What does plana mean in Latin?

Plana is the Latin word for field.

- Is plana a property or substance?

Plana is a substance.

- Can you identify a property of the plana?

Light is a property of the plana.

Another property of the plana is the gravitational field.

- What are the two parts of the scientific method?

The two parts are (1) it looks at the world through the property of quantity and (2) it make use of symbols and rules to make laws that can make predictions.

- Why is quantity the first property of physical things?

Quantity is the first property because we can think of quantity without all the other properties.

Review Questions

- Empiriometric is another name for what?

  Empiriometric is another name for the scientific method

- What does ‘empirio’ mean?

  ‘Empirio’ means the world of the senses

- What does ‘metric’ mean?

  ‘Metric’ means ‘as measured’