Fundamental Questions of Ancient Philosophy:

- What is Being?
- What is Becoming?
- What is Knowledge? (Epistemology)

Each one of these three questions involves the notion of Platonic Forms, but for reasons of relevance we will mainly discuss the third one.

For Plato the object of knowledge must be an unchanging one.

PROBLEM: Heracletian notion of constant flux; all Sensible objects change all the time.

PLATO'S SOLUTION: Permanence and thus REAL knowledge has to be sought in such non-sensible objects as Values, Virtues and MOST GENERAL CONCEPTS. These are what Plato called FORMS or IDEAS. Forms exist not in our mind but in reality in a separate realm: the Realm of Ideas. Our mind does not invent them but discovers them!

This kind of objects can only be grasped by the rational mind through purely abstract thinking without any use of the untrustworthy senses. (Rationalism)

METHOD OF DIALECTIC: Question everything! Generalise, generalise! This process of generalising ultimately leads to true knowledge (i.e. understanding of the forms)

The concept of forms is better understood when viewed as part of Plato's Cosmology. By "cosmology" we usually mean a theory about the origin and structure of the world or universe (Cosmos)

Realm of Forms

Justice

Beauty

Equality

Circularity

Number

Soul

Highest form of **Good** encompasses all others

Space

Human: Soul Incarnate

Ball: Imitates Circularity

Cosmos

Maker models the Cosmos after the realm of ideas.

Ideas are more real than objects in the sense that they are immutable and eternal.

Maker is assumed to be benevolent, and so creates the Cosmos the best He can

Maker

Impetus of Creation

Objects in Cosmos are imperfect due to space's entropy.

Cosmos is less real than the realm of ideas as it is perceived and NOT conceived and thus may contain false perceptions (shadows)

Each Object may be imitating or expressing more than one forms to some degree.

OO Programming can be compared to Plato's cosmological scheme.

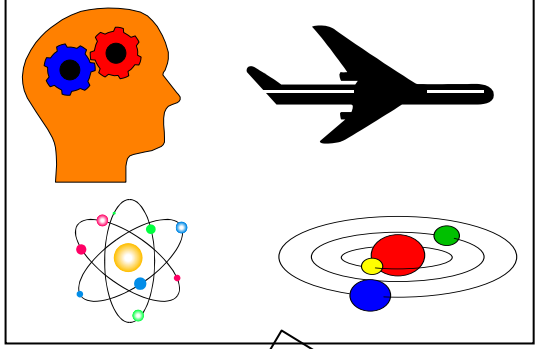
Programmer is assumed to be benevolent.

Programmer

Humans try to reach direct & complete contemplation of the forms (I.e return to that realm)

We, as programmers, hope that one day our models will be perfect.

Our World



Objects & concepts to be modelled

Computer Memory

Java Object

C++ Object

Imperfect Models of real world objects.

Theory of Forms (Plato)

- Use our rational faculties to better grasp abstract concepts.
- Use our technical skills in order to model those concepts to the best of our ability.
- Plato's rationalism is contrasted with Empiricism in that finding solutions may not be just hard work but may involve intuition as well.
- Plato would imply that a piece of buggy software is buggy because the programmer does not have adequate knowledge of the programming concepts and forms.

Empiricism (Hume)

- Empiricism is intimately tied with naturalism, which basically states that since what is real is what is (or can be) sensible, then ultimately nothing resists explanation by the methods characteristic of the natural sciences.
- This provides good motivation for the researcher, by assuring him/her that by following proven methods of enquiry, he/she will eventually uncover the mystery or problem he/she works on. (I.e. Everything is hard work)
- Beta testing of software is based on a network of experiencing(not experienced) users that in turn offer their accumulated experience with the product (bugs, logic errors, etc.) towards the goal of a better software system.

The Uncertainty Principle (Schrodinger – Heisenberg)

- It exists to remind us that there are no absolute guarantees and no perfect solutions. This, of course, does not mean that we should not aim to a solution promising high probability of success.
- It also brings into scope the important “Observer Effect”. That is, in an observation system, the observer is part of the system & thus the system is different also.
- We are imperfect beings in an imperfect world.

Incompleteness - Godel

- The implications of this theorem for us, are about the same as of the Uncertainty principle.
- There are no all-encompassing solutions or algorithms.
- The theorem may side with rationalism in that we intuitively know something to be true, although we can’t formally prove it.
- Alternatively it may side with empiricism in that we may know something to be true, through experience, although we cannot formally prove it.
- The idea here is that common sense HAS a place in Information Systems development. Formal approaches to system specification are very useful but cannot always be used.