**RATIONALISM AND EMPIRICISM**

**A. PYTHAGORAS**
Pythagoras lived at Croton in southern Italy with a group of followers in about 530 BCE. He was a famous mathematician, but his most interesting discovery is the mathematical basis of musical harmony. He concluded that nature was almost literally made of numbers, and that the study of maths by reason was a way of exploring the essence of nature.

**B. PARMENIDES**
Parmenides and his younger companion Zeno live in Elea in Italy in about 450 BCE. Zeno devised a series of paradoxes (including the famous Achilles), which showed that motion is logically impossible, and an illusion. Parmenides proposed that reality was entirely different from appearances, and that reason showed it to be simple, symmetrical and motionless.

**C. ATOMISTS**
Democritus lived in Abdera on the north coast of the Aegean in about 420 BCE. He proposed that absolutely everything (including the gods and our minds) is made of minute invisible atoms. His follower Epicurus (c. 300 BCE) inferred from this that all knowledge comes from sense experience (which is infallible), and the aim of life is pleasure.

**D. PLATO**
Plato (428-347 BCE, in Athens) was influenced by Pythagoras and Parmenides. He developed his famous theory of Forms (or Ideas), which says that ideas are the true reality, not physical things. Ideas have an eternal unchanging existence, and they are the essence of nature. The gods understand the Forms, but cannot influence them. Humans have a mind which can penetrate the world of ideas (using dialectic), and we should use our reason to get behind the world of physical appearances, and thus understand true reality, and become wise. In his 'Meno', Plato claimed that children have innate knowledge of geometry.

**E. THE ENLIGHTENMENT**
When René Descartes (French, 1596-1650) relaunched philosophy with his *Meditations*, he insisted that his senses were open to all sorts of doubts (they might, for example, be dreaming, or be interfered with), and so we must rely on reason. His wax example shows this most clearly, as reason even tells about a physical object in front of us. The other notable rationalists were Baruch de Spinoza (Dutch, 1632-1677) and Gottfried Leibniz (German, 1646-1716). The rival empiricist view was put by British philosophers: Thomas Hobbes (1588-1679), John Locke (1632-1704), George Berkeley (1684-1753) and David Hume (1711-1776). Hume's golden mountain example illustrates the main idea - that all our ideas are built up from experiences.

**F. SIX CONCEPTS**

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>A Priori</th>
<th>A Posteriori (Empirical)</th>
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<tbody>
<tr>
<td></td>
<td>Known just by thought, without experience (e.g. an object can't be in two places at once)</td>
<td>Known through experience (e.g. faster objects do more damage)</td>
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<tr>
<td>Reality/Truth</td>
<td>Necessary</td>
<td>Contingent (e.g. a square's diagonal is √2 times its side)</td>
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<td></td>
<td>Has to be true</td>
<td>Happens to be true (e.g. he sleeps diagonally in his bed)</td>
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<tr>
<td>Language</td>
<td>Analytic (Tautological)</td>
<td>Synthetic (e.g. bachelors tend to drink beer)</td>
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<td>Only gives information about the meanings of words (e.g. bachelors are unmarried men)</td>
<td>Gives information about reality</td>
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**G. MAIN BELIEFS OF RATIONALISTS**
Rationalists believe that reason is the essential route to truth, which exists in the world of ideas. Our minds can access ideas directly by a priori reasoning, and innate ideas exist within our minds before we start thinking. Some of these innate ideas can tell us about the world, and are therefore a priori synthetic truths. Our senses are open to scepticism and can’t be trusted. Maths is more reliable than observation. Truth must be defined as a relationship between ideas. Many truths (about general facts, rules of thought, and relations between abstract ideas) cannot be only be known by reason, not the senses.

**H. MAIN BELIEFS OF EMPIRICISTS**
Empiricists believe that only experience can reveal the truth. There are no truths about the world in pure ideas. Reason and maths are instruments for organising our experiences. Truth is a relationship between our ideas and the external world. Ideas are not innate, but are built up from experience. The mind is more or less blank (a tabula rasa) until experiences create our knowledge. If philosophy wishes to be respectable, it should support scientific findings, not try to contradict them with reasoning. Because they neglect experience, rationalists are said to drift off into long-winded nonsense. Reasoning would be impossible without experience (even reasoning about geometry or arithmetic). Hume implies that there are two separate areas of knowledge - relations of ideas (which are a priori, necessary and analytic), and matters of fact (which are empirical, contingent and synthetic).
I. INNATE IDEAS
Since rationalists believe in the power of reason to give us knowledge, they think a lot is possible without experience. So what do you think about? The answer is innate ideas. These are held to be born within us, or develop as we grow. Things that are self-evident to us seem to be innate. Candidates for being innate are basic maths and geometry, colours, the ideas of goodness and God, and the basic grammar out of which we build language. When a teacher explains something to us, we 'recognise' its truth, rather than having it forced on us. Plato, in Meno, tried to prove that slave boys have an innate understanding of geometry. John Locke (an empiricist) attacked the whole notion of innate ideas, asking, for example, how we are supposed to tell whether a given idea is innate or not.

J. A PRIORI SYNTHETIC TRUTHS
A key belief for rationalists is that when knowledge is acquired a priori (just by thought), it may just tell you about ideas, but it can also give you information about the external world. For example, pure reasoning about arithmetic can give you information about physical objects, and the study of geometry teaches you about space. Empiricists tend to reject this, saying that a priori knowledge may well be possible, but it only tells you about the world of ideas. Whether those ideas happen to apply to the real world must be tested by experience.

K. TABULA RASA
Instead of believing that the mind began full of innate ideas, John Locke proposed that it begins as a tabula rasa (a blank page). Experience writes on the page, and all of our knowledge is built up that way. Most people feel this must be wrong, because nothing would happen to the experiences if they fell on a totally blank page. There must be some principles of organisation to link the experiences. Hume proposed resemblance, contiguity and causation as the links. Kant proposed a more elaborate framework of mental categories, including space and time. Modern examples like the Necker Cube (right) seem to show that our brains impose an interpretation on experience. Rationalists, of course, hold that experience itself means nothing, unless the mind understands and assesses it (like Sherlock Holmes interpreting a clue).

L. MATHS AND LOGIC
The debate offers three possible views of maths and logic. Extreme empiricists (e.g. Mill) claim that maths is actually a feature of the physical world, and is learnt from objects. Most empiricists (e.g. Hume and Ayer) say maths is analytic (i.e. tautological), and so is merely a set of definitions, telling us nothing about the world. Rationalist tend to see maths as a priori synthetic, meaning that pure thought about it reveals the nature of external reality to us (as Pythagoras had suggested).

M. TRUTH
Whether you think knowledge comes from reason or from experience will affect your concept of truth. Empiricist tend to favour the correspondence theory (truth is when you belief matches the facts) or the pragmatic theory (truth is what works in practice). Rationalists tend to favour the coherence theory (truth is when a set of beliefs fit together in a rationally satisfactory way). All theories have problems, and many philosophers have retreated to a minimalist theory (where truth is just one part of the language putting a tick against another part).

N. CAUSATION
The process of cause and effect has traditionally been thought of as an unseen but necessary force which holds reality together (maybe originating in God - the 'First Cause'). However, empiricists like Hobbes and Hume demanded evidence for this 'necessity' in nature, and there isn't any. Hume said that causation was merely a 'constant conjunction' between events (such as smoke and fire). Effects are contingent, not necessary, and we should never be surprised if a new effect occurs. Rationalists point out, though, that a cause is more than a mere coincidence, and so reason shows us that there is some hidden 'cement' holding the universe together, especially if we are to infer universal laws like gravity.

O. INDUCTION AND SCIENCE
Induction is the reasoning process in which we extract generalisations and laws from a series of observations (e.g. All swans are white). As in Descartes' wax example, rationalists are happy to say that we use our reason to assess the variety of evidence and patterns we have observed, and so arrive at a truth which goes beyond what we have observed. Empiricists, however, are much more cautious. How can you say All swans are white, if you haven't seen all the swans? If we do make big claims on the basis of a little evidence, there doesn't seem much reason involved. David Hume said even animals and small children do induction, and we just automatically get into the habit of expecting certain things, based on the fact that there is a 'constant conjunction' between them.

P. IDEALISM AND SOLIPSISM
Rationalist are inclined to be suspicious of experience, which may even be a total delusion. This leads to a retreat from so-called 'reality', and it is suggested that we should think of reality entirely as a set of ideas and mental experiences. After all, how can we actually know what those experiences refer to? However, this may well imply that we can't even be sure that other minds exist, and hence solipsism (only my mind exists) would be true. Empiricists (e.g. Berkeley) can also retreat from 'reality' in this way, saying that we should treat experiences entirely as mental events, and not speculate pointlessly about what they are experiences of. The belief that reality consists only of ideas is called Idealism.