Notes for Unit III B (Rationalism and Empiricism)

C. With Reference to Material on Rationalism and Empiricism

10. a priori: in philosophy, this phrase refers to what is logically prior to or independent of sensation.

11. a posteriori: in philosophy, this term refers to what is subsequent to or dependent upon sense experience.

12. Universal: what pertains without exception to all members of a given class.

13. Particular: refers to a single individual or some members of a given class.

14. Necessary: what must be the case and cannot be otherwise.

15. Contingent: what may be the case but need not be the case.

16. a priori knowledge: knowledge of what is necessary and universal.

17. a posteriori knowledge: knowledge of what is particular and contingent.

18. Analytic statements: statements which are tautologically true or false; i.e., by virtue of the meaning of the terms of the statement.

19. Synthetic (non-analytic) statements: statements the truth or falsity of which rests on matters other than the meaning of the terms in the statement.

20. Rationalism: Humans can have non-analytic a priori knowledge. (Or, thinking alone can give us some knowledge of the world.)

21. Empiricism: all human knowledge is a posteriori except for what is true analytically.
Rationalism and Empiricism –

The problem here is whether we are capable of having some knowledge of reality independently of/not derived from sense experience/sensation. The rationalist thinks that we can; the empiricist does not. The empiricist claims that all knowledge is derived from sensation/sense experience.

Note the connections between universal, particular, necessary, and contingent knowledge.

Universal and particular knowledge are logically opposed to one another. Ditto for necessary and continent knowledge.

There can be universal necessary knowledge (e.g., the Pythagorean Theorem)

There can be universal contingent knowledge (e.g., no democracy in history has lasted more than 500 years). This may be true of all democracies to date but it is not necessary that it is true. There is nothing in the nature of a democracy that entails any democracy must end within 500 years.

There can be particular contingent knowledge (e.g., Some Democrats voted for Republican candidates in 2004)

There cannot be particular necessary knowledge.

A major problem for philosophers is to account for the possibility of universal necessary knowledge. It does not seem that such knowledge can be derived from sensation.

Empiricism The mind at birth is a tabula rasa (blank slate) that is, there is no content/there are no ideas in the mind. At birth the mind has various ‘innate’ capacities to operate on or process ideas but it has no ideas within it. All of the ideas that we have come through sense experience. General knowledge comes from sense experience through induction. That is we have experience of some members of a class and then try to extrapolate to what is true for other members of a class. But this is always probable or likely knowledge. For example, in any public opinion survey there is always a margin of error since one can never know with certainty that the sample for the survey is completely representative of the total population.

At best inductive generalization can give knowledge that has a 100% probability of being true. For example, weather forecasters sometimes state that there is a 100% probability of rain. But weather forecasters make such a prediction by gathering current weather data and compare it with past weather data using a particular forecasting model. The prediction simply means that in light of these factors, there is every reason to think it will rain and no (good) reason to think that it won’t rain. But this does not and cannot mean that it must rain.

Hence, rationalists (and empiricists as well) claim that that universal knowledge based upon sensation is always contingent or probably in nature. Rationalists argue that the only way we can have such knowledge (e.g., with mathematical knowledge) is if it is derived independent of
sense experience. That is, rationalists deny that the mind is a tabula rasa at birth – for the rationalist there is content to the mind independent of sense experience (e.g., innate ideas).

Empiricists oftencounter that people don’t just derive math theorems using pure reason, they use examples, e.g., the drawings to which one might refer in doing a proof in geometry.

Rationalists will counter that (1) some people are quite able of doing complicated mathematical reasoning without the use of such examples; (2) there are some types of math knowledge for which no sensory examples exist (e.g., trigonometric identities). But more fundamentally the rationalist counters that the empiricist argument involves a post hoc, ergo propter hoc fallacy. (after this therefore on account of this). It does not follow that someone has gotten better AS A RESULT of an antibiotic simply because someone gets better after taking an antibiotic Simply because a person might understand how to do a math proof after looking at an example doesn’t mean that the knowledge is derived from the example. For the rationalist, there is a major difference between using an example to ILLUSTRATE a theory and deriving the theory from the example (data).

As we discussed in class: labs play an essential role in the physical sciences since the experiments performed in the lab verify and validate the scientific theories. Scientific theories must be empirically validated in order to be accepted. But no mathematics class has a lab since no math proofs are validated by examples. It would be foolish to think one could establish the Pythagorean Theorem by drawing and then measuring a sample of triangles to see if the theorem held. First of all, one could never so precisely measure an actual triangle that would could establish that the result confirmed the Pythagorean Theorem (there would always be a margin of error). Second, one couldn’t possibly measure all triangles. If one tried to generalize the Pythagorean Theorem on the basis of induction, the most one could say is that it is likely the case. But we claim that it is necessarily true for all possible plane right triangles.

At this point, it looks as if the empiricist must reject the idea that we obtain universal and necessary knowledge through mathematics. Some empiricists have taken this view -- most notably the 19th c English philosopher John Stuart Mill. But most empiricists have adopted another alternative. They note that some propositions are true in virtue of the meaning of the terms of the proposition: e.g., “All bachelors are unmarried.” These statements are analytic statements or universally and necessarily true by the definition of the terms. This knowledge is a priori – one doesn’t have to have any experience of bachelors to know that the proposition is true. For the empiricist all universal and necessary knowledge is analytically true. But the cost here is that such knowledge is not about reality but about how we define terms. So, many empiricists argue that mathematics is simply an invention of the human mind.

This is where we leave this problem for the class. The major rationalist response is to deny that mathematics is merely invented. Rationalists, such as Plato, believe that we discover knowledge about reality through mathematics. If that is so, then it would seem that we would have to gain such knowledge independently of sense experience.