

Class 2 - Foundationalism

I. Rationalist Foundations

What follows is a rough caricature of some historical themes in epistemology.

The account is not so much false as it is broad.

But it will serve our narrative purposes.

Some of this discussion will be familiar to most of you, but I hope to get us on equal footing to start the course.

In the modern era, there were two kinds of foundationalist projects.

The rationalists, epitomized by Descartes, sought to secure knowledge on the basis of human reasoning.

The empiricists, epitomized by Locke and Hume, sought to secure knowledge on the basis of human sense experience.

Both kinds of projects are, of course, failures.

Our interest in the projects concerns, first, the methods and goals of their proponents, and, second, the specific reasons for the inadequacies of their approaches.

We start with Descartes.

Most students begin studying Descartes by reading the *Meditations*.

Descartes motivates the *Meditations* by presenting three skeptical hypotheses: sense illusion, dreaming, the demon deceiver.

Having called into doubt apparently all of his beliefs, Descartes seeks a “single Archimedean point” on which to construct his new edifice of knowledge.

The starting point, as all readers of the second Meditation know, is his knowledge of his mind: “I am, I exist, as long as I am thinking.”

This single starting point is well-known as the Cogito.

In the rest of the *Meditations*, Descartes unpacks himself, peering into the mind which is his essence.

In his mind, free of the distractions of his physical body, he finds, first, a method of securing all the rest of his knowledge, and, further, all the details of that new structure.

Descartes’s edifice, it turns out, contains elements of both the new Galilean science as well as some orthodox religious beliefs (though the religious dogma was not uncontroversial to the theologians of his era).

Our central concern in discussing Descartes regards his method.

Descartes’s positive project is presented somewhat differently, and most accessibly for our methodological purposes, at the end of the replies to the second objections.

Here, Descartes distinguishes between the analytic mode of presentation he used in the *Meditations* and the synthetic mode, with which we are most familiar in geometry and logic.

Analysis shows the true way by which a thing has been discovered methodically, and, as it were, “a priori,” so that were the reader willing to follow it and to pay sufficient attention to everything, he will no less perfectly understand a thing and render it his own than had he himself discovered it. However, analysis possesses nothing with which to compel belief in a less attentive or hostile reader, for if he fails to pay attention to the least thing among those that this mode [*ratio*] proposes, the necessity of its conclusions is not apparent; and it often hardly touches at all on many things that nevertheless ought to be carefully noted, since they are obvious

to anyone who is sufficiently attentive.

Synthesis, on the other hand, indeed clearly demonstrates its conclusions by an opposite way, where the investigation is conducted, as it were, “a posteriori” (although it is often the case there that this proof is more “a priori” than it is in the analytic mode). And it uses a long series of definitions, postulates, axioms, theorems, and problems, so that if something in what follows is denied, this mode may at once point out that it is contained in what went before. And thus it wrests from the reader his assent, however hostile and obstinate he may be. But this mode is not as satisfactory as the other one nor does it satisfy the minds of those who desire to learn, since it does not teach the way in which the thing was discovered (92).

The central difference between synthetic presentations of geometry and metaphysics, Descartes claims, is that the foundational claims in geometry gain universal agreement, whereas the metaphysical foundations are less obvious to the folk.

The firmness of the foundation of Descartes’s edifice is already in question.

II. Euclid’s Foundations

To better understand the structure of Descartes’s synthetic presentation, it might be useful to look at Euclid’s *Elements*, on which it is based.

There is an excellent, perspicuous version [on line](#).

The Elements starts with definitions, adding five geometric postulates and five more general logical axioms, or common notions.

From the postulates and axioms, all the remaining propositions are derived.

The definitions are mainly unproblematic, since they do not assert the truth or existence of any of the objects to which they refer.

Definition 12 says that an acute angle is an angle less than a right angle.

It does not claim that there are any acute angles or right angles.

It can be taken as the claim that if there are such angles, then the acute ones are less than the right ones.

This conditional (or Boolean) interpretation may be better seen in contemporary logic.

$$(\forall x)(\forall y)[(Ax \cdot Ay \cdot Cx \cdot Ry) \supset Lxy]$$

The common notions in Euclid’s *Elements* are not particularly geometric.

They are more properly called logical.

To call the common notions into question would be appropriate in a Cartesian project of founding all of our knowledge.

But, since the logical axioms apply so broadly, any questions about them would not be worries about the geometry of the Euclidean project, but about our beliefs more generally.

Concerns about the foundational project of *The Elements* really focuses, first, on the status of the geometric postulates, and, second, on the derivations of the myriad propositions from the definitions, postulates, and common notions.

Geometers have studied both questions for millennia.

Philosophers tend to focus on the former ones.

In particular, Euclid's fifth postulate, the parallel postulate, tuned out to be not quite as secure as the others.

Indeed, Euclid seems to have recognized worries about the parallel postulate.

He does not invoke the fifth postulate freely; rather, he waits until he absolutely requires it.

Euclid's parallel postulate states that if a straight line falling on two straight lines makes the interior angles on the same side less than two right angles, the two straight lines, if produced indefinitely, meet on that side on which are the angles less than the two right angles.

We frequently study the parallel postulate in an equivalent form, known as Playfair's postulate, which says that given a line, and a point not on that line, there exists exactly one line which passes through the given point parallel to the given line.

Both the parallel postulate and Playfair's postulate, it turns out, are equivalent to the claim that the sum of the angles of a triangle is 180 degrees (π).

Consider an interstellar triangle formed by the light rays of three stars, whose vertices are the centers of those stars.

The sum of the angles of our interstellar triangle will be less than π due to the curvatures of space-time corresponding to the gravitational pull of the stars and other large objects.

Space-time is not Euclidean, but hyperbolic.

In hyperbolic geometry, instead of there being one line that we can draw parallel to the given line in Playfair's postulate, there are an infinite number of lines.

Hyperbolic geometry is just one of two classes of non-Euclidean geometries.

Riemannian, or spherical, geometry, results when one replaces Playfair's postulate with the claim that there are no lines parallel to the given line.

Non-Euclidean geometries were developed in detail in the nineteenth century after two millennia of trying to prove that the parallel postulate follows from the other postulates.

That is, geometers were uncomfortable taking the parallel postulate as a given.

They wanted it to be derived from other givens.

But, the other givens seemed pretty much unassailable.

III. The Synthetic (Geometrical) Version of the *Meditations*

The synthetic version of the *Meditations* was based precisely on Euclid's *Elements*.

Like Euclid, Descartes provides definitions, postulates, common notions, and derived propositions.

The resulting system looks different from the one in the *Meditations*, though the derived propositions are the same.

Again, since our interest is in methodology, we need not focus on the content as much as the manner of presentation.

Comparing the two systems might be salutary.

Descartes starts with a set of definitions:

- thought, idea
- objective reality, formal reality
- substance, mind, body,
- God, essence, distinctness

We can see, especially in the definitions of objective and formal reality, that Descartes is setting up the proofs of God's existence.

Already in the definitions, we have worries.

If, as in *The Elements*, the definitions do not beg questions of existence, then we can proceed to examine the postulates.

On the other hand, if the definitions already assume the existence of anything, then the whole project is suspect.

Some definitions are not contentious and, like Euclid's definitions, avoid begging questions of whether any objects have the properties defined.

Two substances are said to be really distinct from one another when each of them can exist without the other (95)

Definition 9, though, is worrisome.

When we say that something is contained in the nature or concept of something, this is the same as saying that it is true of that thing or that it can be affirmed of that thing (95).

If you have examined responses to the ontological argument, especially Caterus's response to Descartes, or even Gaunilo's response to Anselm, you know that this claim is contentious.

(Here are some [readings on the ontological argument](#).)

Caterus asks us to consider the concept of a necessarily existing lion, which contains existence necessarily, without entailing that there exist any lions.

That is, we can not, on the basis of the concept containing existence affirm the existence of any lion.

It is also worth noting that Definitions 1 and 2 have proved to be particularly contentious.

By the word "thought" I include everything that is in us in such a way that we are *immediately aware* of it... By the word "idea" I understand that form of any thought through the immediate perception of which I am *aware* of that very same thought (94).

The very possibility of unconscious thoughts clearly undermines any claims to obviousness, and thus acceptability, of these definitions.

Freud, Adler, and Jung aside, contemporary cognitive scientists are interested in phenomena like [blindsight](#), in which visual processing occurs unconsciously.

Descartes takes seven postulates:

1. Frailty of the senses
2. Security of pure thought
3. Self-evidence of logic, including the logic of causation (but see the Common Notions, as well)
4. Connection between ideas and objects (compare to Definition IX)
5. The idea of God includes necessary existence.
6. Contrast clear and distinct perception with obscure and confused perception
7. Security of clear and distinct perceptions

He takes ten common notions:

1. We can ask about the cause of any thing.
2. Each instant is independent of every other, so that creation and preservation are indistinct.
3. Nothing can be uncaused.
4. Whatever reality is in a thing is formally or eminently in its first cause.
5. Our ideas require causes which contain formally the reality which exists objectively in the ideas.
6. There are degrees of reality: accidents, finite substances, infinite substance.
7. Our free will aims infallibly toward the good.
8. Whatever can make what is greater can make what is less.
9. It is greater to create (or preserve) a substance than an accident.
10. The ideas of all objects contain existence; only the idea of a perfect object contains necessary existence.

Propositions

1. Ontological argument
- 2-3. Cosmological arguments
4. Distinction of mind and body

Notice that the foundation in the Second Replies is quite different from that in the *Meditations*. In particular, the single, Archimedean point of the *Meditations*, the *Cogito*, is almost completely absent from the synthetic presentation.

If we were to sketch the foundation as presented in the *Meditations*, it might look:

Cogito - God - Clarity and Distinctness - Free Will - Mathematics - Mind/Body distinction

The most-important standard objection to Descartes's project concerns how we know the truth of Descartes's claims.

Descartes argues that he has a rule for determining whether he knows any given claim.

A claim is known to be true if it is clear and distinct, like the *cogito*.

Surely in this first instance of knowledge, there is nothing but a certain clear and distinct perception of what I affirm. Yet this would hardly be enough to render me certain of the truth of a thing, if it could ever happen that something I perceived so clearly and distinctly were false. And thus I now seem able to posit as a general rule that everything I very clearly and distinctly perceive is true (AW 47).

Given any mark, or rule, for certainty, how do we know that we have the correct mark?

Appeal to the mark itself is circular.

We can not say that we clearly and distinctly perceive that clarity and distinctness is the right criterion without begging the question.

Descartes argues that the goodness of God secures the criterion of clear and distinct perception.

But that argument seems to rely on the use of the criterion in the argument for the existence of God.

This problem, called the problem of Cartesian circularity, is one of the more vexing and interesting in Descartes scholarship.

I believe that Descartes did not believe that circular reasoning is always fallacious; see my "Embracing the Cartesian Circle."

Whatever the fate of Descartes's project regarding circularity, the cogito does seem to contain some kind of undoubtable truth.

If we can grasp what it is that makes the cogito unassailable, perhaps we can find such surety elsewhere.

Still, the synthetic, geometric version of the *Meditations* hardly mentions mathematics or the *cogito*.

Further, the order of the foundation is different.

Remember that Descartes is presenting what he takes to be obvious and incontrovertible definitions and first principles as the foundation of all that will follow.

These first principles are, as Euclid's postulates, supposed to be given to us immediately.

We do not have time to discuss the weaknesses of all the postulates, common notions, or propositions.

It is not in our interest, here, to spend time on all of them.

Further, there are interesting exegetical questions about the different presentations.

Our goal was to examine how Descartes relies on some immediately obvious and given principles.

Whether those principles are the cogito or the definitions, postulates, and common notions, we can see both Descartes's foundationalism and the weakness of the foundations.

IV. The British Empiricists

Locke, while differing from Descartes in some aspects of his methods, also seeks firm foundations and clear and distinct knowledge.

Rather than base that knowledge on rational insight, Locke bases it on sense experience.

He takes the human mind to be a *tabula rasa*, a clean slate, on which is written all of our experiences.

Some of our beliefs are directly derived from sensation.

For example, I know that sugar is sweet because I taste it.

Others of our beliefs are produced by reflecting on our ideas.

Science and mathematics, for example, are the results of combining and abstracting ideas present in memory or consciousness.

Locke thus avoids relying on Descartes's contentious proofs of God's existence, his allegations about the connections between ideas and objects, about formal and objective realities, and about causation.

These simple ideas, the materials of all our knowledge, are suggested and furnished to the mind only by those two ways above mentioned, viz. sensation and reflection (Locke, 34).

Hume agrees.

But though our thought seems to possess this unbounded liberty, we shall find upon a nearer examination that it is really confined within very narrow limits, and that all this creative power of the mind amounts to no more than the faculty of compounding, transposing, augmenting, or diminishing the materials afforded us by the senses and experience (*Enquiry*, §2).

The challenge for the empiricists was to account for all of our beliefs on the basis of this foundation.

Some empiricists denied that we had as much knowledge as Descartes thought.

Thus, what we must build on our foundation is in question.

Berkeley, for example, denied the existence of a material world.

Hume denied any knowledge of God, and other metaphysical claims.

When we run over libraries, persuaded of these principles, what havoc must we make? If we take in our hand any volume--of divinity or school metaphysics, for instance--let us ask, Does it contain any abstract reasoning concerning quantity or number? No. Does it contain any experimental reasoning concerning matter of fact and existence? No. Commit it then to the flames, for it can contain nothing but sophistry and illusion (*Enquiry*, §12).

Hume's skepticism was widespread and profound.
Scientific generalizations ordinarily do not limit themselves to past observations.
They go beyond sense evidence by making universal claims.
All such scientific generalizations are thus unjustified, for the strict empiricist.
Physical laws like Newtonian gravitation or the gas laws go beyond experimental evidence.
They posit causal connections between events, but we have no sense impressions of the terms used.
We have experience of the events, but not their causes.
Effects are distinct from their causes and we have no access to the causes.
Thus, as a consequence of empiricism, we can not establish the truth of laws of nature.
We do not know that the sun will rise tomorrow.
The laws could suddenly shift, from what we think they are.

Our inability to know physical laws, indeed anything about unobserved or future phenomena, on empiricist principles is generally known as the problem of induction.
We can see the problem of induction in our desire to make inferences like PI.

PI PI1. I have seen one billiard ball strike another many times.
 PI2. Each time the ball which was struck has moved, motion was transferred.
 PIC. So, the struck ball will move this time.

The problem is that the conclusion of PI does not follow from its premises.
You can see that PIC does not follow if you consider what would happen if the laws of physics shift.
PIC could be false, while PI1 and PI2 remain true.
To make the argument valid, we could add a third premise ensuring the uniformity of nature

PI3 The future will resemble the past.

If we add this principle of the uniformity of nature as a third premise, then PIC will follow.
But, we can not learn PI3 on the basis of sense experience.

By limiting the extent of what we call knowledge, the empiricists improved their chances of deriving all knowledge from sense experience.
But, empiricist principles deny that we have very much knowledge at all.
Perhaps the most secure area of knowledge, mathematics, seems most distant from sense experience.
Mathematics seems especially distant from sensation in the post-Cartesian world, since the development of analysis led to algebra replacing geometry as the foundation of mathematics.
Descartes over-reached on his foundation, but was able to build a massive structure, including all of mathematics and the new science, as well as the old religion.
The empiricists appear to have a firmer foundation, but a smaller edifice.

The foundationalist traditions of the modern era had their last gasp in the early twentieth century, with the work of the logical positivists, which we will discuss on Thursday.