Class 9 - February 15
Leibniz, *Monadology*

I. Leibniz Background

We started the term looking at Descartes's work, to which all of the philosophy we will study is, to some degree, a response.
Descartes attempted to accommodate the new science into an orthodox, theological world view.
We then looked at the work of two philosophers, Hobbes and Spinoza, who presented very different views of the world, philosophers who were eager to dismiss the religious orthodoxy.
Leibniz rejects the materialism of Hobbes, the atheism (or at least naturalism) of both Hobbes and Spinoza, and, the view, found in both Hobbes and Spinoza, that everything is necessary.
Indeed, Leibniz's attempt to rehabilitate a standard view of contingency and human freedom is central to his work.
Still, there are Spinozan elements to Leibniz's work which we can see especially in his claim that every living thing reflects the entire universe, and its past and future.

While Leibniz's philosophy is closer to that of Descartes, broadly speaking, they differ on many details.
In particular regarding bodies, Descartes had argued, as part of his embrace of the new science and its mechanics, that bodies are essentially extended, unthinking, divisible, individual substances.
In contrast, Leibniz rejects the infinite divisibility of matter, holding that there are atomic components of the world called monads.
Leibniz rejects Descartes's claim that the ultimate constituents of the material world are passive, believing that in order for them to be substances, they have to have within them a source of action.
Leibniz thought that the claim that bodies are unthinking leads to the impossibility of thought.
For Leibniz, the fundamental components of the world are not inert divisible matter, but active, mind-like substances.

> Each portion of matter can be conceived as a garden full of plants, and as a pond full of fish. But each branch of a plant, each limb of an animal, each drop of its humors, is still another such garden or pond (M67, AW 281b).

Still, Leibniz's work is, like Descartes's, an attempt to recapture much of the prevailing, and preceding, theological view of the world.
Leibniz's reactionary views include embracing both efficient and final causes.
According to Aristotle, there are four different kinds of causes:

> C1. Efficient cause: the source of a change (basically our contemporary notion)
> C2. Final cause: the goal, or telos, of an object or event
> C3. Material cause: the constituent matter of the object
> C4. Formal cause: what it is to be an object

Galilean physics denigrated C2-C4, focusing on C1 alone.
Leibniz, seeking a return to an admittedly anthropocentric view of God's role in the universe, looked to rehabilitate the notion of a final cause.
According to Leibniz, bodies act according to laws of efficient causation, but souls act, like God, according to laws of final causes.

It would be best to join together both considerations, for if it is permitted to use a humble comparison, I recognize and praise the skill of a worker not only by showing his designs in making the parts of his machine, but also by explaining the instruments he used in making each part, especially when these instruments are simple and cleverly contrived. *And God is skillful enough artisan* to produce a machine which is a thousand times more ingenious than that of our body, while using only some very simple fluids... (D22, AW 237b-238a)

These two systems of final and efficient cause work together, in parallel.

Our study of Leibniz's work will focus mainly on two, comprehensive presentations of his philosophy, the *Monadology* and the *Discourse on Metaphysics*.
These two works cover much of the same material, though with different emphases.
In the next three classes, we are going to examine five elements of Leibniz's world-view:

      1. Monads;
      2. The Complete-World View of Substance;
      3. The Mind/Body Distinction;
      4. Theodicy; and
      5. Freedom and Harmony.

Next Thursday, we will look at Leibniz's controversy with Newton over the nature of space and time.
Like Descartes, Leibniz was an profoundly influential mathematician.
Leibniz and Newton independently developed the calculus of infinitesimals, without which the physics of the late 17th century and beyond would not have been possible.
Newton and Leibniz fought for credit for the development of calculus, and the powerful Newton prevented Leibniz from gaining university employment in England, which he had sought.
The correspondence conducted between Leibniz and Newton's secretary Samuel Clarke regarded the question of whether space is an absolute receptacle in which matter is contained (Newton) or whether there is no space independently of the relations among material bodies (Leibniz).

We start with the fundamental substances of the world, which Leibniz calls monads.

II. Monads

If the basic metaphysical question is, "What is there?", the consensus answer among the moderns is, "Substance."
Then, they haggle over the details.
Differences among them regarding the specific nature of substance characterize their different theories.
For Descartes, there are two kinds of substance, each with its own essential trait: mind (consciousness) and body (extension).
For Hobbes, there are only bodies.
For Spinoza, there is only one instance of a substance: God, or Nature.

Leibniz accepts the multiplicity that we ordinarily assume, and which we see in the work of Descartes and Hobbes, rejecting Spinoza's unity.
But, he adopts Spinoza's views on the ubiquity of mind, and his claim that substance has to have an internal agency.
For Leibniz, substance is an active unity, always perceiving, and which can will.

In the *Discourse*, Leibniz characterizes the monad as a substantial form, a soul or a haecceity, the thing which underlies or collects all its properties.
In the *Monadology*, Leibniz argues for the existence of simple substances on the basis of the obvious plurality of things.
Since there are composites, these must be made of parts.
A Cartesian piece of extended matter could be divided into further pieces of matter.
You can never get to simple parts by taking extended bodies as substances.
Leibniz argues that if there are no simple parts, there can be no composites.
Thus, there must be some basic elements.
He calls these basic elements monads.
The relation between these simple substances and the bodies or composites that we see is like the relation of a rainbow to drops of water and refracted light.
We think of bodies as coherent wholes, but they are really just accidental unities of real substances.

So far, Leibniz sounds like the Greek atomists, like Democritus, or the 17th century atomists, like Gassendi.
The difference between atoms and monads, though, is striking.
For the atomists, the simple objects are essentially undifferentiable; they are all alike.
Leibniz denies the similarity of atoms.
We can see two reasons for this denial.
First, Leibniz takes each monad to be an active, rather than passive unity.
Second, he denies that there can be identical objects on the basis of his principle of sufficient reason.

In the first case, Leibniz argues that machines could never think.

> *Perception*, and what depends on it, *is inexplicable in terms of mechanical reasons*, that is, through shapes and motions (M17, 276b).

Leibniz considers walking inside the mechanical parts of a thinking substance, like a brain.
All we would see would be moving parts.
We would see no memory, no thought.

Consider Ned Block's Chinese Nation example, normally used to argue against functionalism in the philosophy of mind.
The brain is essentially a collection of neurons which discharge impulses from one to another.
Neurons fire, and induce other neurons around them either to fire or not to fire.
The story is obviously more complicated than that, but the differences are a matter of degree, not of kind.
Neurons transmit information like electrons passing along a circuit board.
Imagine that we have mapped the brain, and it contains one billion neurons.
(This is a fiction, but only by a factor of about a hundred - there are about a hundred billion neurons in the brain.)
We can set up the people of China to act as our billion-neuron brain, with walkie-talkies connecting each person to surrounding people.
We give each person the instructions to transmit information in the way that our neurons do, to other people, as our mapping of the brain indicates.
The Chinese-Nation brain can even be attached to human-looking robot with receptors that function like our sense organs.
Information can be transmitted to the Chinese brain and back to the robot via radio signals.
The result would be a creature that looked and functioned just like us with an artificial processing system

made out of the people in China.
Leibniz imagines just this sort of case, and concludes that such contraptions could not support thought.

> When inspecting its interior, we will only find parts that push one another, and we will never find anything to explain a perception (M17, AW 276b).

Since there is no thought in a mechanical body, Leibniz argues, there must be some essentially active, essentially perceptive, component to the basic elements of the world.
We need active components in order to account for minds.
The perceptions of these monads will distinguish them, thus denying the atomist's uniformity.

The second reason that Leibniz rejects the materialist's atomism relies on his claim that there could be no two objects that did not have some internal difference.

> It is also necessary that each monad be different from each other. For there are never two beings in nature that are perfectly alike, two beings in which it is not possible to discover an internal difference, that is, one founded on an intrinsic denomination (M9, AW 276a).

This latter claim, that there can not be two identical objects in the world, is known as the identity of indiscernibles.
It follows, Leibniz argues, from his two great principles, contradiction and sufficient reason.

> Our reasonings are based on *two great principles, that of contradiction*, in virtue of which we judge that which involves a contradiction to be false, and that which is opposed or contradictory to the false to be true...And *that of sufficient reason*, by virtue of which we consider that we can find no true or existent fact, no true assertion, without there being a sufficient reason why it is thus and not otherwise, although most of the time these reasons cannot be known to us... (M31-2, AW 278a).

I'll call the principle of contradiction PC and the principle of sufficient reason PSR.

Alternatively, for Leibniz, we can take PSR as holding that there is no effect without a cause.
As Leibniz notes, though, these reasons can be obscure, hidden from our view.

PSR, especially in its second version, seems almost definitional, and uncontroversial.
But, since Leibniz wields PSR to substantial conclusions it is worth noting that he thinks of it as following from a more substantial thesis, his conception of truth as a claim in which a predicate is contained in a subject.

III. PSR, PC and Truth

Leibniz discusses his theory of truth in the *Discourse*.

> All true predication has some basis in the nature of things and...when a proposition is not an identity, that is, when the predicate is not explicitly contained in the subject, it must be contained in it virtually (D8, AW 228).

Note that Leibniz is dividing all true propositions into basic ones, in which the predicate is explicitly

contained in the subject, and derived ones, which follow by analysis.
Finite analysis leads us to necessary truths.
But infinite analysis is required for contingent truths, so can only be completed by God.

> There must also be a *sufficient reason* in *contingent truths*, or *truths of fact*, that is, in the series of things distributed throughout the universe of creatures, where the resolution into particular reasons could proceed into unlimited detail because of the immense variety of things in nature and because of the division of bodies to infinity. There is an infinity of past and present shapes and motions that enter into the efficient cause of my present writing, and there is an infinity of small inclinations and dispositions of my soul, present and past, that enter into its final cause (M36, AW 278b).

The difference between truths known by finite analysis and truths only knowable by infinite analysis grounds Leibniz's account of free will, which is central to his rejection of Spinoza's philosophy.
For now, we should pursue the method of analysis.
The basic truths are known according to PC, since their denial is an explicit contradiction.
The denial of complex claims will lead to a contradiction once we analyze the complex claim into its simpler components.
So, consider:

M. David is a married bachelor.

There is no explicit contradiction, here.
Another way to put the point is that M is not logically false.
But, if we substitute 'unmarried man' for 'bachelor', we transform M into M'.

M'. David is a married unmarried man.

In M', the contradiction is explicit.
By analyzing M into M', we have revealed, explicitly, a contradiction that had been merely implicit.
The methodology of analysis, without Leibniz's heavy metaphysics, is the foundation of twentieth-century analytic philosophy, having been adopted by Frege, and later Russell, Wittgenstein, and the logical positivists.
The twentieth-century analytic philosophers relied on the new tools of mathematical logic to help perform rigorous analyses.
Contemporary analytic philosophers have mainly abandoned the central claims of analysis, especially that the proper method of philosophy is analysis of complex expressions into their component parts.
But, they have held on to the idea of using formal logic as a support to rigorous thinking.

From his theory of truth as conceptual containment, Leibniz derives PSR.
If some effect did not have a cause, if some truth had no reason, Leibniz argues, then there would be a claim whose subject did not contain its predicate.

IV. The Identity of Indiscernibles and the Second Argument Against Atomism

We are still looking at Leibniz's arguments against atomism, as a way of understanding the nature of monads.
Leibniz provides two arguments against atomism.

The first argument is that to take atoms as the basic components of objects entails denying the possibility of thought.
The second argument requires appeal to a further general principle, the identity of indiscernibles (II).
Leibniz argues to II from PSR:

> II1. If there were two indiscernible individuals, a and b, in our world, W, then there must also be another possible world, W*, in which a and b are "switched".
> II2. God could have had no reason for choosing W over W*.
> II3. God must have a reason for acting as he does, by PSR.
> IIC. Therefore, there are not two indiscernible (identical) individuals in our world (Adapted from SEP entry on Leibniz, §3.5).

Here's a contemporary (second-order) logical version of the identity of indiscernibles, for the sake of clarity among those who speak the language:

> II. $(\forall x)(\forall y)(\forall F)[(Fx \equiv Fy) \supset x=y]$

The claim is that if any two objects share every property, they must be the same object.

Be careful not to confuse the controversial II with its almost incontrovertible converse, known as Leibniz's law:

> LL. $(\forall x)(\forall y)(\forall F)[x=y \supset (Fx \equiv Fy)]$

LL just says that if two names refer to the same object, then the same properties hold of the referent under each name.

Given the identity of indiscernibles, simple substances must have distinct properties.
Since atoms are all alike, monads must not be atoms.

V. Monads and Perception

Among the properties of monads, the most essential is their ability to perceive, or express, the world.
Monads are representative in character; they express the way the world is.
And, they do not just express the way they are in the world.
They express the nature of the entire universe.

> Since every present state of a simple substance is a natural consequence of its preceding states, the present is pregnant with the future (M22, AW 277a).

We will return to the way in which monads represent the universe below.
For now, it is important to get clear on the concept of perception, and how these active, simple monads perceive.

Notice that monads are mind-like.

> One can call all simple substances or created monads entelechies, for they have in themselves a certain perfection...; they have a sufficiency...that makes them the sources of their internal actions, and, so to speak, incorporeal automata (M18, AW 276b-277a).

Only some monads have sense perception and memory; these we can call minds, or souls.
But all monads, being simple substances, have internal causes, independence from other monads.
They are the causes of their own activity; they are not merely passive receptors.
Leibniz likens them to substantial forms.
Since monads are like minds, their changes are representations, or perceptions.
These perceptions are pre-arranged by God, in harmony with the perceptions of all other monads.

Descartes argued that the essential characteristic of a mind is consciousness.
Leibniz mainly adopts Descartes's claim.
But since Leibniz's class of entelechies is wider than Descartes's class of minds, Leibniz's characterization of the essential characteristic of substance will have to be correspondingly broader.
All monads perceive.
The perception of a monad consists in its ability to represent, from its internal state, the entire history of the universe.

> The passing state which involves and represents a multitude in the unity or in the simple substance is nothing other than what one calls *perception*, which should be distinguished from apperception, or consciousness...This is where the Cartesians have failed badly, since they took no account of the perceptions that we do not apperceive. This is also what made them believe that minds alone are monads and that there are no animal souls or other entelechies (M14, AW 276a).

One person's modus ponens is another person's modus tollens.

> Can you really believe that a drop of urine is an infinity of monads, and that each of these has ideas, however obscure, of the universe as a whole? (Voltaire, *Oeuvres complètes*, Vol. 22, p. 434)