Space-Time

Abstract

Induction

Induction is a process that is used by philosophers and scientists to reason to create generalizations referring to particular samples of the world. In order to make an inference using induction, the physicist randomly selects an individual thing to study such as molecules and wants to know why they exist and what phenomena relate to molecules so that he can explain why that phenomena shows that molecules are real. Things on the earth such as molecules are the upper foundations for atoms, which were discovered by Democritus in Ancient Greece. Proving what facts are true requires a logical mind that is not concerned with only religion. Can I prove why all human knowledge is universal? Yes, by explaining what laws there are in nature and using data to support my ideas. But many critics would argue that our knowledge is a priori and natural law is not the same as human laws. The best way to retort on this question is to clean your data. This process causes us to reshape and rename data so that there is internal consistency. In R Programming, this is precisely what we do to ensure proper coding and handling errors and outliers. It is how we handle missing values (Renze, Matthew. *R Data Science*. Working with Data).

Venus spins slower on its axis compared to the Earth. Venus’s equator rotates at 4.05 mph but the Earth’s rotates at 1,037.6 mph. The speed of rotation of Venus is one example that can show that the laws of motion on the earth are natural laws that are caused by something. So, for many years it was thought that God must have created the Earth because the earth and the processes inside the universe seemed to be designed by God.

On Venus the Sun rises in the west, not in the east. By observing Venus in the sky, we can find a specific example of a planet in the solar system that behaves differently than the Earth’s motion and know that its motion is different from the other planets. Venus’ rotation is backward (*retrograde*) and we know this because of what we observe and how the earth spins.

This relationship between Venus and the Earth makes me wonder if we can understand time on the Earth by doing a thought experiment. On Venus a day is 243 Earth days. One cycle on Earth is 24 hours. Being on Venus for one day would feel much longer than one day on the Earth because it is longer. But on the Earth, time is different. Einstein’s *Theory of Relativity* is explainable by the revolutionary idea that time is relative. This means that time is affected by nature and states of affairs.

Suppose there are two observers watching a train driving on a railroad when a lightning bolt strikes followed by another lightning bolt. The first person is standing on a road watching the train go by and the second person is on the train while it is moving past. The *person on the road* observes the two lightning bolts crash beyond the endpoint of the tracks *at the same time* one hundred meters apart. The person standing in the middle of the train sees the lightning bolts strike at two different times, about *one second apart*. The lightning bolts do not strike simultaneously since light moves at one speed. Therefore, there is more time in between the strikes to the observer that is on the train. It shows us that light causes time. The Sun’s gravity bends starlight. If the train were moving at the speed of light, the observer might not have seen the lightning bolt strike. So how do we know that these kinds of speculations may be tangible and are true? We refer to equations that are derived from observations.

Martin Holder explains Kepler’s three laws well writing they are: 1. The orbits of the planets are ellipses with the sun in in one of the focal points. 2. The radius vector of the planet covers equal areas in equal times. 3. The squares of the revolution times are in the same relation as the cubes of the average distances (Holder, Martin. *Kepler’s Differential Equations*, University of Siegen, Fachbereich Physik, D 57068 Siegen, Germany, pp. 1). Kepler’s observations of the planets and their motion led to his discovery of the laws that govern planetary motion which includes the angular momentum of constant motion. (Milton, Daniel and Robert. *Kepler’s Laws*, How to Solve Physics Problems, McGraw-Hill Education).

This means that a hypothetical planet can be represented by a point in space (say A) that has a small angle expanding from the radius outwards in two directions that gives us the area of the angle of a triangle with the side perpendicular to the sides r and φ. As a result, we have the differential equation for angular motion which is indicated by the differential change of the planets coordinates r and φ as a function of time. Kepler’s work on Mars and Earth was published in the *Astronomia Nova* and influenced Newton and Einstein to make equations in physics using the = sign. This was done for two systems of polar coordinates, one with the sun at the origin, the other with the center of the ellipse at the origin.

Newton’s Second Law shows that f = m x a and we can go one step further to show that the differential form expresses the rate of change between two objects with constant mass, in this case the lightning bolts to argue that there is an ether that is the medium for electromagnetic waves to travel through. Holder thinks that we cannot use differential equations to understand the paths and movements of the planets. But Einstein’s famous equation shows the opposite. The measurement of energy requires an exponential form of light that causes mass to bend. This relationship is what makes time relative to the observer. One of the issues that we face is that we cannot directly observe the motion of the planets in space. But we know that the planetary bodies have orbits called ellipses that are moving at certain speeds that differ according to the planet. We can compare these two ideas to consider how there are laws on earth that relate to the laws of moving bodies that both effect how we observe and know the world.

The Ether

In physics, time is the fourth dimension that is found in the three dimensions of space. Descartes discovered that there is a fourth part of space called volume. He introduced this idea in Principia Philosophiae in 1644. This finding showed us that space is not only length (up and down) and width (left to right) but is also forward and backward. Imagine a fly buzzing around in a room and it lands on the ceiling. It walks from left to right. This takes place on the x axis. It can also walk up and down on the wall. This happens on the y axis. But the fly can also fly within space on the z axis, which is toward our visual field and away from it. This aspect of space is represented on a mathematical model called the Cartesian Plane. It consists of a few fundamental ideas. The first is that space has length. The second is that it has width. The third, according to Descartes’ *observation*, is that it contains volume. When observing the fly, we know that it must be functioning as a result of mechanical processes that cause it to survive, namely, it flies, eats, and drinks. The movement of the fly from the ceiling to the wall can be represented as a biological living thing “F” that stands for (that fly) moving from a Point on the x axis (1,0) to a Point on the y axis (0, -1). But it also moves around space in the z axis. Descartes showed that there is a medium in space that makes up the world. This was called the ether.

Einstein and Maxwell thought there might be an ether and in 1905 Einstein wrote a theory of special relativity that explained how space and time are one. This relationship can be thought of as existing to form a continuum. It proves that matter is more real than Berkeley thought because we do not exist outside of events. All events in human life always take place when there is a definite time and particular point in space.

Furthermore, that the sun’s gravity bends the mass of objects. Einstein’s equation, says that energy, mass, and light are all related in such a way that they their effects can be changed according to the nature of the event and the observer observing it occur. It pushed theoretical physics into the quantum world because it could not point to one absolute truth about time like Newton thought there was. Newton did not think about time in this way! That is to say, he thought that time was absolute and not relative like Einstein did. Einstein’s theory gave us the theoretical foundation that there are particles in matter that are made of light which are affected by interference and change the ways we perceiving events. Imagine a log that is floating on a lake. To an observer on the bridge, it would appear that the log is moving toward the sun. But to a person on the ground near the lake, the log appears to be standing still not in motion. This means that space and time are not separate like Kant thought. They are linked because objects must be moving at a constant speed in a straight line according to at least one observer. Therefore, the ether was

They thought that there might be a medium that has physical properties that fills empty space and which allows us to observe physical processes.

According to Stephen Hawking, “Einstein’s general relativity gives time a shape. How this can be resolved with quantum theory” (Contents, v) shows that there is a difference from history in real time to imaginary time. Hawking describes quantum theory as shaping time and space. I can introduce what concepts can explain what to look for in the real world to show that we can determine what is real and what is imaginary. What appears and what apparently appears to appear. The former being of reality and the latter of mind.

Some positivists think that we cannot determine what is real. Are imaginary numbers just a mathematical concept that have nothing to do with the real world? To find the mathematical models that describe *and explain* the universe we live in like Newton’s Laws of Motion, Kepler’s Laws of Planetary Bodies, Galileo’s Principle of Relativity, and Einstein’s Theory of General Relativity, we must show how quantum theory relates to time, matter, and consciousness.

Now we are considering quantum theory, which was introduced by Max Planck and it is being studied by physicists like Stephen Hawking to introduce the idea of imaginary time. This is a concept. It is time that is measured in imaginary numbers.

Ordinary real numbers are correlates on the x-axis from left to right, 0 is in the middle, positive real numbers on the right, and negative real numbers on the left. Imaginary numbers can be represented as correlates corresponding to positions on the y-axis: 0 is in the middle, positive imaginary numbers plotted upward, and negative imaginary numbers plotted downward. Thus, imaginary numbers can be thought of as a new kind of number at right angles to the ordinary numbers. They are a mathematical construct that don’t need physical realization; one cannot have an imaginary number of things. (Hawking, Chapter 2, 59, The Shape of Time, The Universe in a Nutshell).

From these truths, is there a reality of quantum mechanics that can be proven by making observations of the physical world? Heisenberg’s Uncertainty Principle, the Atomic Structure of matter, and Einstein’s beliefs about God not rolling the dice makes us think that it is possible the universe is caused by something outside of itself. This is known as the Big Bang Theory. It has a beginning in time according to Professor Stephen Hawking and in order to determine such truths about the world such as if there are properties of continuous matter, elasticity, heat conduction, we learn about the world and explain what we observe. But often our beliefs are what cause our ideas to form which is internal in the mind and has little to do with the external world. Hence the purpose of epistemology is to study the practical use of words and apply them to philosophy. To know something means to have awareness of an idea and to put something *prima facie* means to express it in terms of the meaning of signs by themselves. In this respect, physics and philosophy go hand and hand because natural law differs from how human language works and functions. Intuition and reflection are different processes than reasoning. The facts about mathematics and physics are known through reasoning. But there can be no a priori science.

Ideas in the philosophy of science develop through observation. Facts about things in the world can be proven through concepts that are generated by logic and experimentation. Therefore, ideas must be *derived* from the external world. This is where the sense datum can determine what is real and what is imagined. Can we, like Aristotle thought, discover laws governing the universe by pure thought?

There seems to be what Carl Jung calls an a causal principle that connects life and living things. This *synchronicity* is created by human minds as a result of evolution. It is in our genetic makeup. The person on the road sees

Jung, Carl. "Synchronicity," par. 849f, 25.

Einstein thinks differently than Aquinas. To Aquinas, God is outside of time. But for Einstein, God is in nature. I think that Motion: There is the idea that all the things in the world that have an effect are caused, which is a central part of Aquinas’ 5 arguments. Aquinas gives 5 proofs that God exists. The first is the Argument from Motion. It follows that things in a state of motion must be put into motion by something else.

Proof: In Newton’s Laws of Motion, inertia is the foundation of the first law: an object at rest remains at rest until it is affected by an external force. Newton’s Second Law is force is equal to mass x acceleration. It *defines* force as *equal* to change in momentum with change in time. Velocity, acceleration, and momentum (v, a, m) are vector quantities. It has two forms: a constant form and a differential form.

They are not simultaneous to the man and woman because he is standing still and she is moving towards the first lightning bolt and away from the second lightning bolt. Standing still, the lightning bolts strike simultaneously to the man observing. How can two people experience the same event differently? Einstein concludes that Newton, not Maxwell, was right. We can’t experience the same event in the same way and time is not absolute. This thought experiment shows that innate ideas are still relevant. Three hundred and eighty-five years ago, Galileo devised his Principle of Relativity and Einstein expanded on this idea.

Newton built on these theories to devise:

* Laws of motion
* Gravitation
* Absolute time

Is there a true nature of light? Einstein devised his principle of relativity, which was known as the Lorentz transformation. Lorentz saw time dilation which means the change of time as some mathematical quirk, but Einstein said it’s not. *The faster we move through space the slower we move through time*. It was the redefinition of the universe. Then in 1903 in Paris, France, Dr. Pierre Curie received a letter from Stockholm and was to be awarded the 1903 Nobel Prize in Physics for his contributions to the research of *radiation phenomena*. (Genius, Chapter Four).

Imagine you’re standing on Venus, and the ground is the wall. On Earth, the ground is below us because of gravity, but on a planet like Venus, the axis is different. It sits in space as perpendicular to the Sun. If we can show that time is not absolute, then we can prove that reality is caused by time. When we reason, we want demonstrate that there are truths about the universe that are natural truths. These types of truths are learned through science and experimentation. Induction was not discovered that are not the same types of truths as philosophical truths because they can be discovered by using the scientific method whereas philosophical truths relate to language. It seems that what we know is largely dependent on what we believe. That is to say, we know that on the Earth we can observe that the Sun, Moon, and stars rise in the east because the Earth spins toward the east. We also know that Venus spins in the opposite direction of the earth. Belief is intimately connected to observation and we can show what we mean by reference to the facts. A good hypothesis about the planetary orbits space can also be proven by knowledge itself, which is historical. Isaac Newton’s Laws of Motion are the best examples of how things move through space. This was one of the most important discoveries in science.

Suppose there is such a thing as a priori knowledge, what does it look like? I think that it would have to be mathematical like what Kant explains in The Critique of Pure Reason. Finding real truths are caused from things that are outside of us and things that are inside of us, which is an aspect of our existence that is magical. There is possibility because of contingency; no space is impossible. The key to knowledge, then, must be creating ideas that fixate beliefs. The purpose of thought is to understand what parts of an argument are true. In terms of the planets, there are objectives that scientists have so that they can understand characteristics of the planets. One example is knowing that the planets and celestial objects spin around their axes. This is called the rotation period. It takes the Earth 24 hours to spin but for some planets like Venus, their axes are nearly straight up-and-down. I think that distinguishing the motions of the planets is one way to determine why the Earth has life on it. For example, evolution is directly caused by the sun. If there was no sun, then human beings could not evolve.

On Deduction

For example, if we see some undiscovered planet that is red and name this planet AR, we conclude that on the basis of induction, this planet is in our solar system. Discovering scientific truths such as those of astronomy requires us to follow habits of action related to observation, such as observing where in the sky we think we will find the position of planet AR and describing why we think it is a new planet. If this did happen, we'd be able to describe what it is like by saying that it looks like Mars because it is the color red, it is possible that there is life on it just like the earth because it is close to the earth, etc.

How did Ptolemy know that the earth was at the center of the solar system? Induction seems to be a rule of reasoning that lead him to this conclusion. That is to say, by observing the movements of the planets (the Moon, Mercury, Venus, and the Sun), he thought that the earth was at the center of the universe and that all the planets revolved around it. Consequently, Ptolemy invented the Geocentric Theory. This was a geometric system that used circles to illustrate the paths of the planets around the earth. As a result, there were astronomers like Galileo, Copernicus, and Kepler that used tools like the telescope to determine the positions of the planets in the sky that were grounded on the basis of observation.

Then in the 1500s, before the invention of the telescope, Nicolaus Copernicus discovered that the calculations needed to predict the positions of the planets in the sky would be simplified if he assumed the sun not the earth was at the center of the universe. But many astronomers still didn’t believe him because there was no observational evidence that the earth moved. According to the

Copernicus, the earth had two separate motions. It revolved around the sun each year and spun on it axis once each day. This was supported by Galileo but he could not prove that the earth moved around the sun. For Galileo, in order for something to be scientific, it had to be shown to be the case, that is, demonstrative. If it were not demonstrated, it was merely conjecture. One of Galileo’s followers, Benedetto Castelli explained that the motion of Venus might hold the key that Venus revolves around the sun rather than the earth, Venus would be seen like the phases of the moon, sometimes as crescent sometimes as not. To the naked eye Venus was a point of light but using a telescope Galileo saw Venus as a disc. Over a period of months, Venus changed form a small disc to a larger crescent. Galileo discovered in a sun centered system this crescent would appear as Venus centered in an orbit between the sun and the earth. Venus must be revolving around the sun rather than the earth. Thus, in his book, Dialogue on the Two Chief Systems of the World, he gave a debate about the world’s systems. Is the sun the center of the universe or is the earth the center of the universe? His book made it possible to believe in a moving world and a sun centered universe.

When man comes into contact with the world, he looks for ways to make himself suitable to it. The environment dictates what he can do with his resources and sexual needs. The interconnectedness of the world to humankind must be caused by something in the past which is created by our minds. This seems to be desire. Nature is a self-governing system that has no supernatural beings contained inside of it because we can't point to those beings and say they are real. Thus, God was thought of by Newton as natura naturans, everything in nature is doing what it does. This is true because it means that there is such a thing called objectivity. As a result, we have probability theory, the idea that we can go to the field and take a sample from something and say, from our evidence, this is what will happen the next time we do that same action. But we cannot explain why there is truth to what we now know. The only way we know is by an appeal to experience through our senses.

An appeal to testimony means using reason to justify what we believe, which is what Kant discusses in his Critique of Pure Reason. In it, he explains that we have a faculty called Reason that unites the other two faculties called the Sensibility and Understanding. In the times of Kant, philosophers were moving on from the teachings of Aristotle and the Scholastics, which essentially were saying that Jesus was the Father, Son, and Holy Spirit. So, in Catholic Philosophy, there are different paradigms that emerge over the ages that seek to show what the relationship is between nature, God, and our minds. In the 17th century Cartesian Philosophy replaced the older ways of thinking. Descartes designed a philosophy that could not adequately explain why reason was related to thought and belief. That is to say, he could not say why we believe in falsehoods. So, there is a way of being that all human beings find themselves doing and that is taking action in some way.

The result of time is the combination of space and distance or nothing but the existence of time uncaused by itself. There is a cause and there is not cause to things that we can observe but so long as we are in a waking state which is consciousness things are solid so all things must be physical. It is possible that human minds are all the same but clearly something outside of us causes us to have different beliefs. If we were to take the brains out of ourselves, they would all look the same, so how we form beliefs is a mysterious part of our existence that we do not understand without appeal to testimony or social interaction. We can't rewind our lives but we can remember what we experienced and say "That is why I believe what I now do." More or less we always find new ways to justify old and new beliefs. A human being might regard itself as an animal or as a soul. If you choose animal, you are more open minded to the theory of evolution. If you choose soul, you believe that God created us in his image beginning with Adam and Eve. If there is a beginning in time, which there probably is, then it is here right now and is not known through dreams or reflection. This is because the beginning of time is only accessible through physical reality. Kant being a transcendentalist pointed to the brilliant fact that we have no knowledge of anything outside of our experience.

Deductive vs. Inductive Reasoning

What’s the difference? Deduction starts with a hypothesis and examines the possibilities to come up with a logical conclusion. For example, spiders have eight legs. A black widow is a spider. Therefore, a black widow has eight legs. Think of it like a mathematical equation: A = B, B = C, A = C. The hypotheses must be correct. Its assumed that the premises are true so the conclusion is logical and true because in deductive reasoning, if something is true of a thing in general, it is true for all members of that group.

However, even if the generalization is not true, it’s possible to come to a conclusion that sounds logical but may also be incorrect. If I say all spiders eat fish, a black widow is a spider, therefore black widows eat fish. It’s valid logically but it’s untrue because the original statement is false.

Inductive Reasoning on the other hand makes broad generalizations from specific observations. There’s data then conclusions are drawn from the data. A coin that I pull from this bag is a penny, a second coin is a penny, a third coin is also a penny, therefore all the coins in the bag are pennies. But inductive reasoning allows for a conclusion to be false even if the premises are true. For example, cobras are venomous, cobras are snakes, therefore all snakes are venomous. Inductive reasoning may not always produce a true conclusion but scientists can use it to produce hypotheses and investigate. And they use deductive reasoning to apply the hypotheses to answer specific questions about science.

Abductive reasoning is a type of scientific reasoning that is neither inductive or deductive. It usually starts with an incomplete set of observations and goes from there to the likeliest possible explanation and is used to making and testing a hypothesis to whatever is available. For example, you walk into your room and find papers all over the floor and the windows open. You conclude the wind blew the papers around because it’s the most likely scenario. Of course, it’s possible that your roommate snuck in and tossed the papers around but the window theory is the more feasible conclusion. LiveScience (<https://www.livescience.com/21569-deduction-vs-induction.html>).

Expounding on Induction: Kepler’s Observations of Paths

Kepler observed that the planets move in ellipses and he laid out his observations by giving three laws to explain *why this was true*. *The relationships between our minds and the universe can be regarded by the idea that our minds work by observing phenomena in nature and taking action to determine truths. Namely, the understanding of the motion of heavenly bodies is true when we say that the earth is not at the center of the universe but moves in an ellipse around the sun.*

Defining "Scientific"

Skepticism is the Socratic philosophy that we know nothing at all.

Fallibilism is a method that discovers what ideas in philosophy influence the ideas of physics and biology. It is the philosophy that creates scientific hypotheses in a timely manner. It is useful for the development of science and the discovery of truths since it tells us not to doubt what we already know and to utilize logic to correct errors and improve future inquiries. This is how we determine what truths there are what they mean. It is possible to learn about the world by its facts or accepting the attitude that “I may be wrong.” Descartes sought to doubt everything that he experienced in the past and thus a large part of his philosophy was determined by reflection of experience itself. This is not the right approach to discover empirical truths and so from the seventeenth century moving forwards there were scientists such as Kepler, Galileo, and Copernicus that explained principles about the world from new discoveries by observations of the planetary bodies and the laws of nature. In order to understand what matter is and what is contained in the universe, we study chemistry, physics, and biology. The chemist investigates matter and explains its constituent parts by using atoms and molecules. The physicist finds truths by learning about motion and gravity. Democritus discovered the atom and Newtonian Mechanics evolved with Einstein’s discoveries of relativity in the last 100 years. In addition to these deductions, there is Charles Darwin’s theory of evolution by natural selection and the mathematical models that Newton created in the Principia that form the basis of calculus and the laws of motion. Biologists study living organisms by taxonomy and species’ classification.

The parts of the world and universe that the philosopher studies include reality, morality, the nature of mind, and origins of human knowledge. Duns Scotus coined reality meaning “It is real,” and since the times of Descartes, philosophers such as Berkeley and Kant have wondered about what reality is. The foundations of human knowledge change from thought itself into the investigation of matter and nature. The former concept is like pseudoscience and the latter one science.

Differences between Pseudoscience and Science

Karl Popper was interested in the difference between pseudoscience and science and what encompasses human knowledge. That is to say, how do we know that something is true? Because of what Descartes thought about from the mind’s intuition and power of reflection or from other things like observation, reasoning, and logic? The second set of options are what scientists use to define the scientific method and deductive processes of reasoning.

In Popper’s book, “Conjectures and Refutations: The Growth of Scientific Knowledge, he asks, “When should a theory be ranked as scientific? “Is there a criterion for the scientific character or status of a theory?” Popper’s scientific principle is to use falsifiability to define the inherent testability of any scientific hypothesis. By believing it is possible that we are wrong, we are designing experiments so that we can disprove a hypothesis and determine what elements of the experiments are valid or invalid. If a theory is falsified, some other evolves and replaces it by explaining the new observation. Thus, a code of science is that any hypothesis and experimental data is inherently falsifiable and disprovable. No theory is entirely correct but it cannot be true unless it can be proven otherwise. Cartesian Doubt is not scientific because Descartes did not test his ideas from proofs. A scientific theory must show what facts about the world we think about so that we are testing predictions in deduction and induction to generate proofs by observations and hypotheses.

In the middle half of the seventeenth century, Sir Isaac Newton was a key member of the scientific revolution and published the Philosophiae Naturalis Principia Mathematica explaining the foundations of classical mechanics. He invented Three Laws of Motion and the Theory of Gravity. His theories are accepted as true because of what we can observe from how objects exist on the earth and why they move in space and time.

The relationship of Space and Time

Then in the nineteenth century a German born scientist named Albert Einstein invented a Theory of Relativity. Einstein thought that Mercury’s orbit moved in a different path around the sun, and was the only planet that didn’t obey the laws of Newtonian Mechanics. He explained that the sun bends light and discovered an equation to prove this which he denoted , which explained that energy is proportional to mass moving at the speed of light. He designed a number of thought experiments and became famous for his ideas about experimental design in physics. His ideas began a new stage in physics and changed the ways we think about how bodies are moving in space and time and what light does when it interacts with matter. Space-time is a world-dimension that is 3-dimensional. And I can depict biomorphs in a 2-D space to express their relations in terms of genetic positions and spatial distances while studying the real living organisms on the planet. This is one way the biologist classifies genetic relationships between species. Moreover, there are theories about the laws of the earth and universe like Supergravity Theories (1976) and String Theories (1984) that explain the inherent structure of the universe. Both theories are being used in the development of Grand Unifying Theories to explain how all the laws of physics come together according to space, time, motion, and gravity. These laws are separate from the dynamical laws of biological evolution.

Making Deductions and Inductions to explain cause and effect relationships

Prediction, Cause, Effect

Many ideas seem to be caused by the power of our minds to make predictions. The scientist knows how to control the conditions of an experiment to make new observations. Hume was a philosopher interested in cause and effect relationships and explained that we could not have knowledge of B if there was no knowledge A. Thus, A causes B. How can we make deductions and inductions (i.e. inferences) in space and time if everything is constantly changing? The idea that things are in a state of flux was first explained by Heraclitus, a Greek philosopher.

Primary and Secondary Qualities

In Locke’s Theory of Knowledge, he presents the doctrine of the primary and secondary qualities. The former being objects classified by characteristics that are part of the body. They are found in actuality and are explained by solidity, extension, figure, motion, rest, and number. The latter are contained in the objects and are not necessarily effects caused by the mind. They include the effects of objects to the body such as color, sound, smell, etc. etc. and are only found in the percipient, the person that is perceiving things. “Without the eye, there would be no colors; without the ear, no sounds, and so on (Russell, The History of Western Philosophy, Chapter 13, Locke’s Theory of Knowledge, 605-606).

Hardness and pitch cause associations between ourselves and the world. So, objects and matter are what cause sensations to form. In physics, there are natural laws that are explainable by testing. For instance, we can test for hardness by scratching minerals and examine the sonar signals of bats to know that echolocation is how they communicate with each other because they cannot see. In general, the nature of reality is a question concerning sensations and ideas. Perception changes from habits of mind. Thus, the contents of our minds are changing and are in a constant state of flux. The secondary qualities are in the world but they do not come from the mind. They are caused by the world unto the mind.

Hypotheses are formed by human observations. In modern times, scientists use Occam’s razor to refer to some states of affairs that can be explained by the simplest answer. For example, when we see a black raven in the yard, we can infer that there is one raven there. What we cannot infer is that all ravens are black since there is a chance if we go to a different place, we might see a raven that is a different color like red. Thus, physical phenomena such as animals can be proof that humans have ideas about things in the world through experience only. Some psychologists believe we have an intuition and this can be explained as a faculty that knows why something is true, such as the idea that all ravens are black. These types of inquiries into the world involve a knowledge of what exists and what possibly exists. Kant thought that phenomena were real but could be differentiated by things known in experience and things as they are in themselves.

Kant seems to mean what Plato meant in saying that human knowledge is not a product of perception. That is to say, since nature is the external world and the mind is the internal world, the mind represents the reality of nature to itself, but only to an extent. There are limiting factors to how we know truths, and since the times of Aristotle, philosophers have been challenging the causes of knowledge. To know means to become into being. Knowing is an action that shows us things exist in certain ways which end up being apparent qualities of our minds to themselves and other minds, namely, comparison, time, quantity, duration, location, and action.

It is possible that inferences are determined by things outside of ourselves such as God or politicians. The ancient Greeks thought there were gods and goddesses that controlled the things in nature and hence influenced the ancients to believe that there were godly explanations of what they observed, such as the different seasons, and who was responsible for making things change.

How humans know the difference between knowledge and perception can be studied by learning about Plato’s Theory of Ideas. Plato thought that “knowledge” had to do with concepts and was not derived from empirical sense data. Mathematical knowledge, for example, such as 4 is the sum of 2+2 is true, but propositions such as “snow is white” and “grass is green” are not clear, confusing and obscure because they can be interpreted in different ways according to the percipient. The idea that knowledge is thing same thing as perception is part of the first half of the Theaetetus, a dialogue concerning a definition of what “knowledge” means. Theaetetus says “It seems to me that one who knows something is perceiving the thing that he knows, and, so far as I can see at present, knowledge is nothing but perception.” Socrates explains that this idea is from the doctrine of Protagoras that “man is the measure of all things,” that is, that any given thing “is to me such as it appears to me, and is to you such as it appears to you.” Socrates says: “Perception, then, is always something that *is*, and, as being knowledge, it is infallible. This is a good idea from Socrates because it shows us that our ideas are fallible because of perception. This suggests that we make mistakes because we are limited in terms of how we know things about the world. Plato liked a static universe and disliked Heraclitean flux; Socrates explains that the doctrine of Heraclitus shows that everything is always changing, that is, that “all the things we are pleased to say ‘are’ really are in process of becoming.” Plato believes this to be true of objects of sense, but not of the objects of real knowledge. Therefore, there are three points to consider:

* Knowledge is perception;
* Man is the measure of all things;
* Everything is in a state of flux

From the doctrine of Heraclitus, we can infer that objects of sense, together with the definition that knowledge is perception, it follows that knowledge is of what *becomes*, not of what *is*. This idea is true I think because of what is like and unlike as being essential to knowledge, not what Russell says, that these things are not part of perception. These things as being comparison and knowledge of existence as well as understanding of number which are not effected through the sense-organs are what cause us to say that things have characteristics of perception, which has to with Locke’s primary and secondary qualities (primary: solidity, extension, figure, motion, rest, number) and (secondary: color, sound, smell). Relational propositions such as 6 is greater than 4 (6>4) *and* 6 is less than 12 (6<12) are not contradictions. They do not mean that 6 is both great and small. It’s different to say that Socrates is now taller than the youth Theaetetus *but* in a few years Socrates will be shorter than Theaetetus because we don’t know that this will necessarily happen, that Theaetetus will grow in height and be taller than Socrates. These propositions that relate two numbers as opposed to two things such as humans are puzzling because they rely on truths that can be proven and beliefs that rely on testimony. Mathematics definitely has to do with perception but human emotions effect how we conceive of objects and other humans. Percepts form from the mind’s interaction between the object and sense-organ. According to Heraclitus, objects and sense-organs are always changing. This not absolutely not true. Objects are constants. By constant I mean a thing that *exists* in that form and *is* to the percipient always the same thing. It does not change the percept. The percipient changes the ideas about the thing and saying something like, “I am in the mood for something” is much different than forming the percept of a thing that is real. Thus, reality does not have to do with the emotions as much as we think since thought can be created according to concepts and understanding how signs function.

(Russell, The History of Western Philosophy, Chapter XVIII, Knowledge and Perception in Plato, 149-154)

Einstein explained that the constitution of matter shows us that atomic particles do not rearrange themselves and we must deal with what has been proven to imagine that matter has properties that never change. Ice melts in heat this is irreversible. Dropping pencils. Rearrange them in countless ways by the constitution of molecules is impossible in reality but our minds can imagine doing this. Throw a pen over your computer and imagine it hitting the screen in one second until tomorrow.

Inference and Properties, Russell’s Theory of Descriptions

In general, human beings are good at asking questions and making inferences. When we were evolving at an early stage, we interacted with objects to manipulate the world around us. Using tools became critical for intelligence and reason. The mind evolved to be cognizant of itself and body. So, the body seems to have come before the mind and its awareness of itself in nature, and we see this in Genesis in the story of Adam and Eve. Descartes was right in making the distinction between the existence of the mind from the body and shows that there is a substance that is immediately perceptible but only by us. For instance, cats have brains and a nervous system but they do not appear to have minds that know certain truths. If there is one reason to believe in God it is that we have minds that seem to know truths about the physical laws of the universe.

Yet the reality of nature shows that perceptions must come from the individual’s mind and not nature. Berkeley thought that there was a Mind of God, which was a source where all ideas come from. It is true the contents of the mind are potentially caused by God’s Mind or a Substance. Spinoza and Descartes talked about these ideas. There can’t be images in the mind unless there is an external world caused by something other than ourselves, which we call God.

Therefore, God is self-caused and this presents a difficulty to philosophers and scientists because we want to question the world in terms of cause and effect relationships, which Hume did in An Enquiry Concerning Human Understanding. The relation between human beings and things in the world is what seems to cause ideas to form. Hobbes called them impressions. We can expect that what is going on now has something to do with the past but we do not know what will happen in the future. We can never know the future. It is a limit of our psychology. This is Hume’s Problem of Induction. In light of this, we can generate predictions and hypotheses to explain that human psychology is distinct from cosmology and the laws of physics.

The philosopher seeks to explain the world by sufficient concepts that justify percepts. This is a process that might show there is an inherent nature of our minds that relates to the world and universe. Scientists ask the question what the universe is. That is how we generate a set of theories to answer the questions of why there should be a universal model for physics. Hence, philosophers ask the question what things are falsifiable or not.

For instance, when we look at a couch, we know that it will be soft. When we see a radio, there is sound that comes from it. When we touch a table, we know that objects like cups, plates, and other objects go on it. This is the idea that observations and the senses go together to make a coherent theory of truth. This is the general foundation of the mind’s information. In this way, we make sense of the world because of sense data and we show what concepts relate to perceptions. This will be important in discussing the relations of scientific hypotheses to Induction, Hempel’s Logic, and Raven’s Paradox.

Descartes thought that we might be dreaming. The meaning of dreaming is sometimes unclear because a dream does not necessarily imply sleep. Oftentimes I day dream about what could be the case. This is called hypothetical deductive reasoning. In other words, why would God exist and allow such evil things in the world to happen? This is a common argument. It makes no difference to our deductions. Where in the world do we look to discover truths if God exists? One way to determine if something is true is to explain why there is a cause and effect relationship between two or more things.

Logic is a method to develop ideas in philosophy and illustrate ideas and their potential. Then we can use them in different ways. Consider the inference rules and replacement rules and how we can utilize them in propositions. For example, in modus ponens we have a basic truth value that states if something occurs, something will follow. That is to say, if p then q. If I see the word red (p), I think of an apple (q). Now consider this. At one time, the mind asserted the letter A in early infancy when it was learning language and could pronounce it by saying “Ah.” As time went on, it knew what shape A was and could create ideas that contain A in it, such as the word “Apple.” It is in the nature of a human mind to develop sound-habits to associate ideas accordingly so that things make sense to itself. This is how we can create a world picture.

“The apple is red” is a true description but when we think of the color red, there are other ideas that come to mind that make it unlike something else. This is a matter of opinion. Thus, it is also in the nature of the mind to acquaint itself with its own ideas and the ideas of other things. This is what makes us logical and social animals that can survive better than others. For example, when we were hunting and gathering for food and drink about tens of thousands of years ago, we knew that there was something real about reality.

Eating, drinking, sleeping, and reproduction are critical elements for human development and time seems to affect the spatial temporal aspects of the brain. This kind of time isn’t internal but rather outside. Leibniz thought that God was a universal time-keeper, setting up the clocks so that they would directly relate to the clock in our minds. Perhaps he was correct. The necessity to develop spatial-temporal relations is an important part of human life and it is a unique so-called property that we want to know about. Some will say that my theory about our psychology does not extend to the truths about biology because properties are made up philosophical conjectures. What is a property? I think we can say that a property is like a feature of ourselves as organisms. It is the basis of complexity. A simple idea such as, “The apple is red” is a proposition different from a complex idea in the proposition, “A black bird is a raven.” Now I will briefly explain why the raven paradox in Hempel’s Logic is interesting to the truth value of propositions and what it might allow us to do to create better inferences in the future.

The Present in General

The present in general. We cannot point to it but know how to explain it through human attributes like self-knowledge, a priori ideas, beliefs, and opinions. Thus, Plato’s philosophy survives because it gives us space and freedom. Life is unlike science because there are qualities that are real. The philosophers such as Plato thought that reality was different from existence explaining that our ideas, unlike matter, were in the mind and thus he invented his own theory of ideas to show that there were different percipients having thoughts.

It seems that Plato believed that perception was a first principle that was like a substance. The term substance was invented by the Greeks and it is interpreted by modern day philosophers in different ways. I think the first way to view it is to explain that it is in the mind and may also be the mind itself. This is the basis for idealism and Descartes, Locke, and Kant’s belief that there is a soul in us.

Therefore, substance can be both an idea that we all share about nature or God or as a cogito that thinks. It is the source that contains not only knowledge but also morality and ethics. I think therefore I am points to this origin of self-knowledge but it does not satisfy empirical truths about the world of matter since we cannot justify its reality without pointing to the external world. How can we understand the world of matter in successful ways? Understanding is a process that requires us to will our thoughts into action so that our ideas are clearer and less confused. It is unlike doubt because we accept that there are certain truths about the world and universe which can be learned about through the scientific method and the study of logic, mathematics, physics, and astronomy.

Hence, Descartes thought that there were certain indubitable truths in mathematics that were independent from WHAT truths. This is odd and led him to objections in The Meditations.

Cartesian doubt evolves into George Berkeley’s idealism, the idea that there is no such thing as matter. Percepts come from mind.

George Berkeley’s Idealism

Consider what Berkeley pitched when he invented idealism. A tree can be seen when we look in the yard but is there really a tree in the yard when we are not looking? Berkeley thought no. We can say yes, and we can prove this touching the tree.

Aristotle invented science from the fundamental causes of the natural phenomena we experience and attributed science to first principles that were discovered by the ancient Greeks, namely, The Milesian School: Thales, Anaximander, and Anaximenes. Thales thought water caused the world to come into existence. Anaximander thought fire and Anaximenes thought it was air.

Some causes of our ideas

Are all human ideas caused by things in the world? Is there a significance of innate ideas? It seems that our ideas have to do with the interactions between ourselves as interpreters and objects which we call reals. Plato was the first to notice the perceptual relations between ourselves and the contents of our ideas. Russell explains that Plato’s Theory of Ideas shows us that this world is distinct from the physical world. Plato thought our ideas came from God as an Artificer. The mind can also be referred to as the percipient that perceives something real. This began with Parmenides and probably led him to stating that things can be both p and not p.

Plato’s ideas are useful for science because there is a relation that exists between minds and perceptions, the source in the head being the mind’s eye. This relation is what causes idea and logicians like Charles Sanders Peirce explained that there are categories that can denote certain types of concepts and what functions they have. These concepts are always joined by the copula is to express existence.

Thus, the contents of the world differ from the contents of our minds. The idea is that objective thinking is not like (i.e. unlike) objective thinking. In the 19th century, CS Peirce founded the philosophy called Pragmatism, which was a philosophy of science explaining that the reality of nature could be classified by subjective and objective relationships between the human mind and the universe.

Peirce wrote an Article in January 1878, How to Make our Ideas Clear. In it, he explains that we can create ideas about reality according to 3 cenopythagorean categories. The categories are Firstness, Secondness, and Thirdness. And he was looking for Fourthness.

The categories all represent different ideas. Firstness means Spontaneity, things as they appear in the present in general. Secondness refers to habits. These relate to the behaviors of the mind and body as well as living things in nature such as animals and plants. Scientists observe habits to discover how there are certain behaviors of living things that effect other organisms and the environment. They find behaviors and develop their ideas about simplicity by observing simple and complex actions.

The third category is Thirdness and relates to natural and human laws that are in nature and are observed by the mind. This is how scientific discoveries such as Galileo’s Principle of Relativity and Einstein’s Theory of Relativity occurred. Cartesian doubt is not a scientific method. It is not categorical. Galileo’s Principle of Relativity influenced Einstein’s Theory of Relativity. Galileo thought the earth was moving in an elliptical path around the sun and Einstein elaborated on Galileo’s Principle. He predicted that the sun bends light.

There is the problem of pointing the finger to what we see. There is nothing that we can reference and say that it exists unless we are pointing to it in what Peirce calls the present in general. The present in general is that which we can point to and say that there is a direct and immediate experience between our minds and the external world.

When Descartes was meditating he thought there were simulations of things in his mind which he called images. He had observed these things in the world in the past and he classified the ideas into three types and explained that they were proof of God’s existence.

* Adventitious: Comparative ideas between real things and imagined things such as the idea that a horse is an animal and a hippogriff is a horse with wings. A horse is real. A hippogriff is an imagined horse with wings. Both are concepts that require a description. I have seen a horse but I have never seen a hippogriff. It is unlikely that a hippogriff will magically appear. In another sense, we have dreams of things that are imagined. The contents of our minds at a certain point can only be investigated by testimony. If God causes us to intuit truths about our minds and the universe, then it seems that by the mind alone we can determine what sorts of ideas are real and which are imagined.
* Innate: Descartes thought that God created ideas we are born with such as mathematical expressions like 2 + 2 = 4, there are four sides to a square and three sides to a triangle. This led Kant to his synthesis saying that we get the idea of 12 from adding 7 and 5 and have no idea of 12 by itself.
* Fabricated: Ideas made up by the mind such as the belief that a hippogriff an imagined horse with wings.

Galileo’s Principle of Relativity, Einstein’s Theory of Relativity

As time went on, scientific thought was changing from Aristotle’s Physics to Newton, Galileo, and Copernicus’ theories about motion so the idea that the world was at rest was no longer accepted and there were now three laws of motion by Newton and Galileo’s principle of relativity. Copernicus’ ideas were like Galileo’s, he thought that the earth was moving in an elliptical path around the sun and they were mathematicians that were interested in science and astronomy. Galileo discovered that bodies of different weight roll down a slope at different speeds and Newton found that objects fall to the earth at a constant rate of speed. While Galileo was testing for the changes of motion on a slope, Newton was testing for the changes of motion from a high point to a low point, which led him to his theory of gravity when he saw an apple fall from a tree. He asked, what causes this to occur? (15, A Brief History of Time, Stephen Hawking).

Their discoveries are evidence that the scientific method has evolved through questioning our ideas about the world. Newton’s observation was a deduction. In the dictionary, deduction is the inference of particular instances by reference to a general law or principle. He used Galileo’s measurements about slope as the basis of his laws of motion.

In the seventeenth century, philosophers considered the foundations of human knowledge to be scientific. In the nineteenth and twentieth century, we were reducing philosophy to concepts. Truths about space and time were developing through concepts about force.

What we can do: Make Wonderful Observations

Observations provide us with a sense of curiosity to reconstruct the universe according to our metaphysical speculations. How do we know anything at all? We have bodies and the brain. This is the datum and it might exist because God created us starting with Adam and Eve some 6000 years ago. According to geologists the earth is 4.5 billion years old because of the fossil record.

I was seeing objects and living things in the world and noticed that they exist in different ways. Their behaviors are relatively contingent on the same chemicals as us, all living things need oxygen to survive. There are land animals and aquatic animals, species that live in the depths of the ocean, and other species that live in the sky. Humans are land animals. We have evolved from a common apelike ancestor some 3 or 4 million years ago and began walking like chimps and rising to walk on two legs. The first piece of evidence we have of human evolution fossil is from Africa. Her name is Lucy. Living things live among themselves and I was in the picture of this reality and I could see how I was part of something bigger. The mind partakes in life cycle processes. I think of symbiosis and observing how things live together. This is a phenomenon. Living things like clownfish evolve with other living things when they feed on small invertebrates that harm other organisms that they live with such as sea anemones. In retrospect, the clownfish is protected from predators by the anemone's stinging cells. The clownfish is different from the sea anemone because it is a fish and yet it is similar to the sea anemone because they are both invertebrates. Predators that the clownfish is protected from by the anemone's stinging cells all create a biological picture for us to observe.

Images in the Mind

Can we define what images are in the mind? Descartes thought the senses were deceptive and denied the images of corporeal things as illusions. But he thought that we might be dreaming since there were images in his mind about things he had seen before which were not in his present visual consciousness. The meaning of image can be thought of as a picture in the brain that we can imagine as real or imagined. This idea points to the fact that all real things are sensory and not real things can be imagined. It is impossible to have an image of something in our minds not like something real. This is an idea that dates back to Plato’s Theory of Ideas. The content of images we have in our minds must be from the body since we have different states of the body that are only recognized by the mind. The brain is what runs on timers. The mind seems to be the controlling agent of both the brain and body. Thus, where does time come from? Leibniz seems to have been right. There is a clock in our mind and a clock in the world perhaps set up by the Creator.

Then Einstein came along and invented his famous Theory of Relativity explaining space and time is different to the observer. Things in physics like matter and position are what cause us to perceive time differently and determine our measurements. Space and time are one thing, two dimensional because there are points that can be represented by mathematics and physics. The mathematician can use expressions and draw them on a Coordinate System. This system was named after Descartes. Descartes is the founder of analytical geometry bridging the gap of algebra and geometry. His ideas were used in the discovery of the infinitesimal calculus which was discovered by Leibniz and developed by Newton.

The Effects of time: What appears and what apparently appears to appear

Plato thought that our ideas appear appears something must cause time to come into existence that is outside of us and it has to do with motion in space. The spatial positions of genes are different from objects. This is all going on in our bodies as we speak. All human beings are constantly evolving in time.

Thus, there are no key scientific ideas that we can discover through introspection and examining the contents of our own mind. Ideas are created by the sensations of the existence of real things onto the mind and body. The fact that we affirm, deny, will, believe, and have volitions cannot be proven through science. So, people believe in religion and God and come up with remarkable stories about their lives such as when they say that they saw something spectacular and unusual occur. This may be caused from plants and other substances. When we are reasoning proper, we use signs to have a firm ground to stand on. I logic and philosophy leads us to learning about the problems of philosophy.

Logic

Logical principles are not a priori. The problem of existence has to do with continuity. We have no sense of time without a sense of space. That is to say, we cannot perceive time unless there is space. We cannot conceive of something that is not real. We can only imagine it. Not real things are inconceivable but we do have the power to imagine things that are not real. The ideas that are in our mind are not simulations of things since we only have ideas of things that are real. Other ideas about not real things are called imaginations and this an aspect of our mind that psychologists aim to understand. “I think therefore I am” points to the cogito before the external world. But since the times of CS Peirce, we know that the external world is the source of all of our ideas. This is how we form the relation between self and other and relate something to something else. Peirce called such ideas relates and explained that they point to a ground and an interpreter. There are certain things which we must hold as fundamentally true. The types of ideas that are in our mind are best explained by Locke, who explained in An Essay Concerning Human Understanding, that the origin of our ideas is from objects in the external world, which come into contact with our senses, and from these Hobbes developed the idea in The Leviathan that there are impressions that the mind makes about the objects in the world.

Everything that exists must be caused from the external world to the senses. Kant seems to have thought that the mind was a datum explaining there were ideas that justified this belief.

In the Critique of Pure Reason, Kant says “that which” is “QUOTE.” (Kant, Critique of Pure Reason, -). We must use science to know why our observations in the past are connected to what we know about the present. This process can discover facts and show why they differ from beliefs. When we relate ideas, it is by association and opinion. We know that a fact is true. Descartes’s Method of Doubt shows that always doubting is not sufficient to understand the reality of science. We must develop our ideas from experience by using descriptions. It is a process that will move science forward. Science is a tool for theory of knowledge. It is a system of principles discovered through observations. The only way to do this is to learn about it and explain why theory of knowledge must be supported by facts. The only way to do this is to say that we should not doubt what we already know.

The Raven Paradox

Hempel’s Logic was developed in his 1965 book *Aspects of Scientific Explanation and other Essays in the Philosophy of Science*, which was written after the Second World War. The work *discusses* Hempel’s ideas about explanation, confirmation, concept formation, criteria of meaningfulness, and scientific theories (Friedman, 1999, 375). Hempel describes probabilistic (statistical) explanation as having the form of an argument from premisses to conclusion but it is not a deductive argument (Nozick, 1994, 651).

Thus, an induction forms conditional hypothesis, such as the proposition, “All ravens are black.” There is a difference between simple and complex ideas as well as particular and general ideas. A raven is a bird that a scientist knows is black because of all past instances of every raven seen. It is testable since I can take a sample from a raven population and confirm (verify) that all ravens are black. It is falsifiable because if I find a non-black raven that is the color red we can disprove the hypothesis that they are all black.

Philosophers are questioning the process of generalization. Is it possible that there may be non-black (red) ravens living in trees that we have not seen yet? There is no evidence to say why this is not possible but it is unlikely. There is a contrapositive statement that “Everything that is not black is not a raven.” This is false because there might be a red raven and something that is red like an apple and furthermore you can’t prove that a red raven doesn’t exist. There are flaws in the inductive reasoning process more so than deductive reasoning because deductions relate to our ideas such as mathematical propositions of arithmetic and geometry more so than evidence of other things like animals and plants.

The world of animals, plants, and trees is complex. Biology is important because it shows us facts about the evolution of life by learning about the processes of the forms of life that have early beginnings in bacteria and evolve from more simple forms to more complex forms. There may be an innate nature that is contained in reality that we can see when we go to the park or a different country and explain phenomena and concepts such as colors and objects. These are simple ideas such as the proposition “This color is red.” “This apple is red.”

Eating, drinking, sleeping, and reproduction are critical elements for human development and time seems to affect the spatial temporal aspects of the brain. This kind of time isn’t internal but rather outside, which makes it seem impossible to find red ravens. They may be inside of an imaginary world. Leibniz thought that God was a universal time-keeper, setting up the clocks so that they would directly relate to the clock in our minds. Perhaps he was correct. The necessity to develop spatial-temporal relations is an important part of human life and it is a unique so-called property that we want to know about. Some will say that my theory about our psychology does not extend to the truths about biology because properties are made up philosophical conjectures. What is a property? I think we can say that a property is like a feature of ourselves as organisms. It is the basis of complexity. A simple idea such as, “The apple is red” is a proposition different from a complex idea in the proposition such as “Newton saw that apple fall from the tree and discovered gravity.”

Likewise, “There is a unicorn in the yard” is a proposition that is false since unicorns do not exist. But there are stories about unicorns with wings. Thus, when we are in nature, we can see there are phenomena that make us know reality is real and what to expect. This causes the contents of dreams to be different the contents of reality. If we are always doubting, we cannot discover truths about the world by using science. Descartes thought that God was responsible for creating three types of ideas which are Type 2 Complexes such as saying that “A green bird is the color green”. Complexes contain descriptions and Type 1 Simples such as when we say that “Green is green”. Thus, there is a distinction between what is apparent and what is real. If we are always doubting, we cannot discover truths about the world by using science. “A green bird is the color green”. “Green is green”. Thus, there is a distinction between what is apparent and what is real.

CS Peirce explains that when we know certain truths, there is a cessation of doubt. This means that we feel less uncertain when we know knowledge. In philosophy, the word stuff can refer to matter and the content of our own minds, such as our perception of matter and concepts we create about it. When we create concepts about the world from what we sense, we have an empirical method called science that is based on sense data. When we look at a couch with pillows, we know that it is soft. When we see a radio, we know that sound comes out of it. When we look at a table, we know that we can put cups, paper, and other objects on it because it is a flat surface. These ideas about the interactions of ourselves and things in the world relate to *inference*. We know that something is true from the foundations of meaning. How we make sense of the scientific world is from our concepts of our perceptions. The word inference means knowing what is the case from what has happened before and then reasoning to know what occurs when there is the same cause. This is a prediction. Hobbes’ idea that the mind makes impressions is true because we can see from what we sense that we have ideas about all things because of how we interact with them. When we touch a pillow, we feel that it is soft. When we turn on the radio, we hear sounds such as music. And when we look at a table, we know what to put on it because of its appearance.

The reality principle is the survival mechanism of the mind that perceives motion and knows there is a series of efficient causes extending to the past or else there would be no things existing now. This past time does not extend to infinity because time is finite since only real things exist in the present. We do not intuit things about space and time unless we are in the world of living things. All things have an efficient cause and Aquinas thought it was God since we perceive a series of efficient causes of things in the world and nothing exists prior to itself. Therefore, nothing in the world of things that we perceive is the efficient cause of itself. But Aquinas thought that if a previous efficient cause does not exist, neither does the thing that results, the effect. Dreaming was the objection made by Descartes to explain that God causes all things to exist in the earth and heavens. Aquinas thought that if the first thing in a series does not exist, nothing in the series exists. If the series of efficient causes extends ad infinitum to the past, there would be no things existing now. Aquinas is referring to a series of efficient causes.

Events in human life such as the ideas of Sigmund Freud that he wrote about in his psychoanalytic theories and case studies. That is to say, if we are thinking about something that makes us feel a certain way it might be from things that have happened in the past. Freud thought that there were hidden energy fields in the mind that could be released into psychic energy through free association and using the 10 major defense mechanisms in his therapy techniques by understanding repression, reaction formation, projection, regression, rationalization, denial, displacement, undoing, introjection, sublimation. The point is that we can see in our psychology that there are efficient causes and this began with arguments from motion with Aristotle but they are attributed to the mind because we definitely have emotions. Is there such a thing as pure thought? If there is, it must be something that is not in the world but in our minds.

Logical mechanisms have evolved to make sense of the world. Hitherto I have said that the body perceives space and time during normal states of consciousness that Descartes spoke about in The Meditations. It is clear that chance causes evolution to occur in its early stages and natural selection is the second factor that is at work which causes. The organism develops and biological processes happen such as eating and reproduction which are critical to development. But there are flaws in the processes of deductive and inductive reason which cause there to be generalizations made about the world. If I were to describe my emotions, I would have to relate to some other thing which causes me to make hypotheses and use conditional statements. Human beings evolve from genes and embryos. This is what Dawkins talks about in his book, *The Blind Watchmaker*.

Deduction

The Geocentric Model was created by Ptolemy. His idea was the earth rested in the center of the solar system and the sun and the other 7 planets moved around it. This theory was corrected by Galileo. When he arrived at the Heliocentric Model, Copernicus was explaining that the earth and the other planets move in an ellipse around the sun at constant rates of speed except for the first planet, Mercury, which has a unique rotation.

In this paper, I discuss how ideas evolve through falsifiability, deduction, and induction. In this way, fallibilism is a philosophy we use to know what things are in the world that are either falsifiable or not falsifiable through logic and experimentation. This was not always the case. Aristotle thought that there were laws governing the universe that could be discovered by pure thought. He was wrong because we check what truths are falsifiable by observing how things occur such as laws of motion. Knowledge of scientific truths are discovered by chance and method.

Galileo discovered that bodies of different weight roll down a slope at different speeds and Newton found that objects fall to the earth at a constant rate of speed. While Galileo was testing for the changes of motion on a slope, Newton was testing for the changes of motion from a high point to a low point, which led him to his theory of gravity when he saw an apple fall from a tree. He asked, what causes this to occur? (15, A Brief History of Time, Stephen Hawking).

Their discoveries are evidence that the scientific method has evolved through questioning our ideas about the world. Newton’s observation was a deduction. In the dictionary, deduction is the inference of particular instances by reference to a general law or principle. He used Galileo’s measurements about slope as the basis of his laws of motion.

In the seventeenth century, philosophers considered the foundations of human knowledge to be scientific. In the nineteenth and twentieth century, they were reducing philosophy to concepts. Truths about space and time were developing through concepts about force. DOT.

Fallibilism

Fallibilism is the philosophy that creates scientific hypotheses in a timely manner. It is useful for the development of science and the discovery of truths since it tells us not to doubt what we already know and to utilize logic to correct errors and improve future inquiries. This is how we determine what truths mean. It is possible to learn about the world by its facts or accepting the attitude that “I may be wrong.” Descartes thought it was necessary to doubt everything that he experienced in the past and thus a large part of his philosophy was determined by experience itself. This is not the right approach to discover empirical truths and so from the seventeenth century moving forwards there were scientists such as Kepler, Galileo, and Copernicus that explained principles about the world from new discoveries by observations of the planetary bodies and the laws of nature.

In order to understand what matter is and what is contained in the universe, we study chemistry, physics, and biology. The chemist investigates matter and explains its constituent parts by using atoms and molecules. The physicist finds truths by learning about motion and gravity. Democritus discovered the atom and Newtonian Mechanics evolved with Einstein’s discoveries of relativity in the last 100 years. In addition to these deductions, there is Charles Darwin’s theory of evolution by natural selection and the mathematical models that Newton created in the Principia that form the basis of calculus and the laws of motion. Biologists study living organisms by taxonomy and species’ classification.

The parts of the world and universe that the philosopher studies include reality, morality, the nature of mind, and origins of human knowledge. Duns Scotus coined reality meaning “It is real,” and since the times of Descartes, philosophers such as Berkeley and Kant have wondered about what reality is. The foundations of human knowledge change from thought itself into the investigation of matter and nature. The former concept is like pseudoscience and the latter one science.

Karl Popper was interested in the difference between pseudoscience and science and what encompasses human knowledge. That is to say, how do we know that something is true? Because of what Descartes thought about from the mind’s intuition and power of reflection or from other things like observation, reasoning, and logic? The second set of options are what scientists use to define the scientific method and deductive processes of reasoning.

In Popper’s book, “Conjectures and Refutations: The Growth of Scientific Knowledge, he asks, “When should a theory be ranked as scientific? “Is there a criterion for the scientific character or status of a theory?” Popper’s scientific principle is to use falsifiability to define the inherent testability of any scientific hypothesis. By believing it is possible that we are wrong, we are designing experiments so that we can disprove a hypothesis and determine what elements of the experiments are valid or invalid. If a theory is falsified, some other evolves and replaces it by explaining the new observation. Thus, a code of science is that any hypothesis and experimental data is inherently falsifiable and disprovable. No theory is entirely correct but it cannot be true unless it can be proven otherwise.

Cartesian Doubt is non-scientific because he did not test his ideas from predictions and proofs. Asking “Does God exist?” is not science because it is a theory that cannot be disproved. Any scientific theory must show what facts about the world we think about so that we are testing our predictions by using deduction to prove our observations and hypotheses.

In the middle half of the seventeenth century, Sir Isaac Newton was a key member of the scientific revolution and published the Philosophiae Naturalis Principia Mathematica explaining the foundations of classical mechanics. He invented Three Laws of Motion and the Theory of Gravity. His theories are accepted as true because of what we can observe from how objects exist on the earth and why they move in space and time.

Space-Time

Then in the nineteenth century a German born scientist named Albert Einstein invented a Theory of Relativity. Einstein thought that Mercury’s orbit moved in a different path around the sun, and was the only planet that didn’t obey the laws of Newtonian Mechanics. He explained that the sun bends light and discovered an equation to prove this which he denoted e = mc^2, which explained that energy is proportional to mass moving at the speed of light. He designed a number of thought experiments and became famous for his ideas about experimental design in physics.

His ideas began a new stage in physics and changed the ways we think about how bodies are moving in space and time and what light does when it interacts with matter. Space-time is a world-dimension that is 3-dimensional. And I can depict biomorphs in a 2-D space to express their relations in terms of genetic positions and spatial distances while studying the real living organisms on the planet. This is one way the biologist classifies genetic relationships between species. Moreover, there are theories about the laws of the earth and universe like Supergravity Theories (1976) and String Theories (1984) that explain the inherent structure of the universe. Both theories are being used in the development of Grand Unifying Theories to explain how all the laws of physics come together according to space, time, motion, and gravity. These laws are separate from the dynamical laws of biological evolution.

Understanding the Sensibility

Hardness and pitch cause associations between ourselves and the world. So, objects and matter are what cause sensations to form. In physics, there are natural laws that are explainable by testing. For instance, we can test for hardness by scratching minerals and examine the sonar signals of bats to know that echolocation is how they communicate with each other because they cannot see. In general, the nature of reality is concerning our sensations and ideas. Perception changes because of both things and so the contents of our minds are changing as well. Also, we are good at asking questions and making inferences. When we were evolving at an early stage, we interacted with objects to manipulate the world around us. Using tools became critical for intelligence and reason. The mind evolved to be cognizant of itself and body. So, the body seems to have come before the mind and its awareness of itself in nature, and we see this in Genesis in the story of Adam and Eve. Descartes was right in making the distinction between the existence of the mind from the body and shows that there is a substance that is immediately perceptible but only by us. For instance, cats have brains and a nervous system but they do not appear to have minds that know certain truths. If there is one reason to believe in God it is that we have minds that seem to know truths about the physical laws of the universe.

Yet the reality of nature shows that perceptions must come from the individual’s mind and not nature. Berkeley thought that there was a Mind of God, which was a source where all ideas come from. It is true the contents of the mind are potentially caused by God’s Mind or a Substance. Spinoza and Descartes talked about these ideas. There can’t be images in the mind unless there is an external world caused by something other than ourselves, which we call God.

Therefore, God is self-caused and this presents a difficulty to philosophers and scientists because we want to question the world in terms of cause and effect relationships, which Hume did in An Enquiry Concerning Human Understanding. The relation between human beings and things in the world is what seems to cause ideas to form. Hobbes called them impressions. We can expect that what is going on now has something to do with the past but we do not know what will happen in the future. We can never know the future. It is a limit of our psychology. This is Hume’s Problem of Induction. In light of this, we can generate predictions and hypotheses to explain that human psychology is distinct from cosmology and the laws of physics.

The philosopher seeks to explain the world by sufficient concepts that justify percepts. This is a process that might show there is an inherent nature of our minds that relates to the world and universe. Scientists ask the question what the universe is. That is how we generate a set of theories to answer the questions of why there should be a universal model for physics. Hence, philosophers ask the question what things are falsifiable or not.

For instance, when we look at a couch, we know that it will be soft. When we see a radio, there is sound that comes from it. When we touch a table, we know that objects like cups, plates, and other objects go on it. This is the idea that observations and the senses go together to make a coherent theory of truth. This is the general foundation of the mind’s information. In this way, we make sense of the world because of sense data and we show what concepts relate to perceptions. This will be important in discussing the relations of scientific hypotheses to Induction, Hempel’s Logic, and Raven’s Paradox.

Making Inductions in Space

How can we make inductions in space? It seems that if we study paradoxes we can learn more about how to check if observations are accurate. The foundation of clear and distinct and confused and obscure ideas is the basis for the suppositio communis. was defined by the images of things. Descartes thought the senses were deceptive and denied the images of corporeal things as illusions. But he thought that we might be dreaming since there were images in his mind about things he had seen before which were not in his present visual consciousness. The meaning of image can be thought of as a picture in the brain that we can imagine as real or imagined. This idea points to the fact that all real things are sensory and not real things can be imagined.

It is impossible to have an image of something in our minds not like something real. This is an idea that dates back to Plato’s Theory of Ideas. The content of images we have in our minds must be somatic-based (somatosensory) since we have different states that are recognized by the body and brain. There seems to be two different clocks: one in our mind and one in our body that allow us to be perceiving time. It appears something must cause time to come into existence that is outside of us and it has to do with motion in space. The spatial positions of genes are different from objects. This is all going on in our bodies as we speak. All human beings are constantly evolving in time. The idea that things are in a state of flux was explained by Heraclitus.

Measurements of Time

Kant called space and time intuitions. But they are not intuitions because we can prove that space and time are real by measurements on the clock and by calculations of motion. Motion is what influences deductions and inductions to form and there are reasons why the human eye makes us different in terms of survival rates from other species of animals in the world. For instance, if I am looking at a body of water such as a lake, I can determine the diameter of the lake by driving around its circumference from Point A to Point B. After I am done doing this, I can understand the observation of the lake by drawing a circle-like figure and writing down the numbers of the measurements of the radius and diameter. This is geodesy, the study of the shape and area of the earth.

Galileo checked by observation to see how bodies of different weight fall at different speeds down a smooth slope. The situation is similar to what Newton was investigating when bodies fall vertically. “Galileo’s measurements indicated that each body increased its speed at the same rate, no matter what its rate” (Hawking, A Brief History of Time, 15, Chapter 2). Hawking explains Galileo’s weight experiment well. That is to say, a lead weight falls faster than a feather because lead is heavier and the feather is slowed down by air resistance.

Dissertation: On Natural Order

Description:

Hierarchy

I propose that logical order in nature exists different than it does in human minds. The mind is an ordering principle that arranges facts differently according to what is observed in nature. The purpose of this paper is to investigate the physical and social processes that structure reality so that the appearance and order of objects makes sense to the mind.

Social Class

In society there are those people that have more power and others that have less power. Power in any society is granted to people that do work for a living. Work comes in different forms. Often times there are problems in society that cause bourgeoisie to not have access to the main resource that supplies other resources which in turn causes the class struggle to continue. Marx explains that their levels to the members that work in a society and each has a duty that creates the conditions of the economy. In capitalism there are not enough people to make real labor. A company looks for a certain kind of individual but this person is viewed by what he did in the past. How foolish! (in some ways). The college students in the future must have knowledge of mathematics and computer science but this philosopher wants to be a Software Engineer. It will be critical for anyone that wants to work for technology and science companies. The philosophers in ancient Greece were concerned with the relationship between reality and the human mind and

Language

As a philosopher, I want to discover Noam Chomsky’s question why we cannot infer one type of proposition from a second type. We can point to something and say that is a chair, that is a bed, that is a wall, but we cannot confirm this truth without appealing to our senses. This is one of the most fascinating things about human minds that scientists want to see. Like Chomsky, I think that language is responsible for identifying these circumstances and without it we would have no world of objective truths. Our minds when we are born are naturally religious and this may or may not be a result of a parents’ beliefs. What interests me is the power of our minds to recall things about themselves and still act like we used to but not in the same ways. Change is a big part of the life of an atheist but for some other kinds of thinkers like religious Catholics the world is more related to what the Scriptures say. A quick way to figure out what is going on when we regard life as we know it is to study what language does to our minds. If I say “There is a unicorn in the yard” a child might believe me because I said it and there are some adults that believe in unicorns possibly because there are rainbows in the sky. But it is not possible that Mohammed flew to the moon on a winged horse.

Logic

The first type of proposition is called the major premise. It is a sentence that explains how all of something is related to the property of that thing. For example, “All men are mortal” means that if you are a man, then you are mortal. This does not imply that all mortals are men. But it does imply that there are other kinds of mortals. We know them to be women. The two types of human beings are men and women which must reproduce to create offspring. Without parents, it is impossible to be born. In nature, there are elements that affect us and how we survive. Such things include the water we drink, food we eat, and shelter that we live in. Millions of years ago, it was possible to survive even if we did not have homes. Nowadays, it is impossible to survive unless we have homes. Evidence of early human fossils shows that we were manipulating tools in order to adapt to the environment. The idea that we are immortal began with thinkers like Plato who thought there was a soul that was inside of us and was immaterial and knew facts about the world through perception. This is partly true and partly not. Actually, may of the ways that we conceive of the world are a result of our parents. These patterns of thinking are called beliefs and they change over the lifespan through experience. In order to find truths, we go to experience and point to something that is real. For instance, extend your arm and touch the table. It is hard, wooden, tall, and long. These are so called properties of objects that make things real. But when it comes to other things in the life of a human being, then our perception changes. So, all of our knowledge is dependent on sensation and reflection more or less like Locke thought. The tangibility of substance is what makes human life interesting and more habitual and higher up than the life of beasts. Human beings according to Darwin were called noble savages. I think that what he meant by this is

Physical Processes wind sun rain snow hurricane tornado all explainable by descriptions

Social Processes jobs hierarchy politics income credit history bank memberships

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