

# Theory of Knowledge

7. Our senses tell us that a table is a solid object; science tells us that a table is mostly empty space. Thus two sources of knowledge generate conflicting results. Can we reconcile such conflicts?

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In the physical world, we use our senses to perceive the tangible material presented to us. We can see colors; hear sounds, touch surfaces, smell odors and taste flavors, but we can feel nothing beyond our limited senses. Beyond the surface of sense we turn to science for explanations, to offer reason for phenomenon past our understanding. The conflicting results that we obtain from our senses and our science can be reconciled, by accepting that our senses cannot fully comprehend science.

We will first analyze the table using our senses. Using our eyes, we can see with reasonable confidence and accuracy that the table is indeed solid; it possesses no visible hole, its surface is continuous-the definition of a solid. Using our hands, we can feel the table, and verify that it is uniformly solid, because we can feel the texture of the wood; we can feel how heavy the table is. With great difficulty, we could even taste, hear, or smell the table to prove its solidity. With our five senses, we can say without a doubt that the table is solid, but science presents a different view. Tables are composed of wood, and in wood's most fundamental state, are millions to billions of atoms. Each atom is then broken down into the three subatomic particles: the proton, neutron and electron. The protons and neutrons form a tight, compact ball at the center of an atom called a nucleus, which is responsible for almost all of the atom's mass and weight. The electrons circle the nucleus in orbitals at the speed of light, randomly accelerating and decelerating around the outer areas of the atom. The electrons orbit the nucleus close to the outer limits of the atom, leaving a (relative to the size of a subatomic particle) large space between the electrons and the nucleus. Because most of the mass of an atom is located at the center of the atom, the atom is made up of generally empty space, the area between

the nucleus and the orbiting electrons. These subatomic voids remain where they are, on the subatomic level, a plane far beyond what our eyes can see. We can at once see that the table is solid and know that the atoms comprising the table are mainly empty space, because we cannot view the empty space. We only see the solid image of the atoms in our solid image of the table, integrating our knowledge obtained from sense and science in our vision of reality. The difference in the information gathered from our senses and the knowledge obtained from science is not comparable. The definition of a solid is a substance that is not a liquid or a gas, and the table in question is a solid. Science may tell us that the table is composed up of primarily empty space, but that does not change the fact that the table is solid. A 50000 ton cargo ship has many empty areas of just air to keep the ship afloat, but these vast quantities of empty space does not affect the ship being classified as a solid object. Language is therefore important when questioning our senses, or when questioning science. The general accepted definition of a solid to the common person is an object that does not possess any holes, and is not lacking any material. The scientific definition of a solid is just an object that does not fit into the other states of matter; liquid, gas or plasma. The difference between sense and ~~science~~ is brought about by the difference between definitions.

We cannot rely primarily on our senses to obtain information about the physical world. For centuries, humans have woken up to see the sunrise in the east, travel across the sky in the day, before setting at night in the west. Hundreds of philosophies, theories, beliefs, and mythologies have been created to explain this phenomenon. The Egyptians had faith in their mystical sun god Ra, the Romans believed that Apollo drew the sun across the sky in his chariot, and the Catholic Church published the geocentric model of

the solar system, in their belief that the sun was revolving around the earth. These people, the Egyptians, Romans, and Catholics, had these beliefs because they were relying on only their senses; they were not using any methods of science to base their observations off of. Now with more advanced techniques in physics and astronomy, we can much more confidently state that the sun, not the earth, is at the center of our solar system. We know that the planets of the sun revolve around the sun in elliptical orbits independent of each other through observation, questioning, and through minor experimentation, that offering live sacrifices does not keep the sun in the sky, and that the sun is not resting at night. The different knowledge presented by our senses and our sciences here are so different that one might not think they are agreeable with the other. After all, no matter where a person stands on the earth, the sun will always be orbiting the earth from east to west. This is reconciled with the fact that our senses cannot comprehend science. We can only see from our vantage point, our perspective offers us the view that the sun is moving around the earth, instead of the other way around. From our same point of view, for as far away as we can see, the horizon is always visible, and the surface of the earth always appears to be flat. With this knowledge intellectuals and philosophers believed for hundreds of years with their senses, that the earth was not round. Using their eyes only, hundreds of thousands of people knew for a fact that the earth was flat, that falling off the edge would land them in a nightmarish hell. Scientifically now, we know that the earth is round. Experiments have been performed, data has been collected, and thousands of ships have sailed the oceans- never falling from the sky. The skies themselves were thought to be naturally blue in color; every way we look at the sky, our eyes tell us that the sky is blue. But with advancements in physics and optics, the branch of physics that explains

light properties, science tells us that the skies are actually blue because they are a reflection of the light off of our oceans, not because they are actually blue. All objects of color follow similar properties; an orange appears orange because it absorbs all colors of light except orange.

There are some people who disagree with these agreements dealing with sense and science. There are people who don't believe in atoms, who don't believe in the heliocentric model of our solar system, who don't believe in anything they can't physically see with their own two eyes, who believe solely in holy scriptures. Such people are able to live a life of scientific denial because they do not want to face the facts offered through scientific reasoning. For these people, however, the differences between sense and science cannot be reconciled, because they choose to hide from what they don't understand.

These basic examples of how our senses present us with conflicting information from science are just the beginning of an endless disparage between perceivable fact and empirical fact. Science and sense may disagree on almost ~~everything we can see, hear, or touch~~, but they don't have to disagree on the same things. The table that was first in question was proved to be a solid object, and science proves nothing to the contrary, just that the table is comprised of mostly empty space. The difference in these facts is that they are not regarding the same problem, just the medium of the problem. As people laughed ~~at~~ Copernicus and Galileo for promoting a heliocentric model of the solar system, ~~laughed at~~ Columbus when he claimed the earth was round, and laughed at other "radicals" who proposed extreme avant-garde theories, they were not laughing at the accuracy of the scientific statements; they were just ridiculing what they could not grasp.

The two sources of knowledge, sense and science, may present conflicting results, but these results can and be reconciled, if the knower is not afraid of what he can or can not sense, and if the two separate areas of knowledge are being applied to the same question. We can try to achieve knowledge through our senses with no objective way of proving so; we all have different eyes, ears, and hands. Science is an objective method of obtaining the truth, science is verified through constant experimentation, observation, concrete evidence, and rejection of false information. Science is not a drastically polar opposite source of knowledge from sense, but is rather a way of knowing that amplifies our senses, allowing us to perceive those facts that we cannot detect with our senses.

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