

Research Methodology
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Lecture - 13
Historical Perspective: Emergence of Materialism and Idealism Part 01

Today we will start to give a brief outline of how human thoughts, the main lines of human thoughts, have developed over the ages. My attempt will not be to recount the entire historical process or even history of science. What I will basically do is to recount how various lines of philosophical thoughts have evolved in society, and how these have influenced the advancement of science. And in the course of discussion, let us start with almost the time of advent of humanity.

As you know, the species Homo Sapiens Sapiens arose some 2 lakh years back. The timings are not yet very well confirmed, but more or less you can assume that. Anatomically modern humans evolved around that time, and what are known as behaviorally modern humans—humans that could make tools, had articulated speech and some kind of a social organization—that appeared something like 40000 years back. So, our story starts from then.

From that time, i.e., 40000 years back, till now, out of this period, three-fourth was spent in a kind of society that was basically hunting gathering society. So, their source of sustenance was hunting and gathering. Three-fourth, so it is very large span of time. Over 30000 years.

In this time, people had to move from place to place in search of food. In one forest if food got depleted, they had to move to another place. So, it was basically a moving, nomadic kind of life, no settle life, no village, no cities. So, the human society was in that stage.

And there are certain very clear findings of anthropologists regarding societies of that time. By studying modern people who are still in that stage (there are aborigine people who are still in the hunting gathering phase of society), by studying them, people have come to the conclusion that, in that kind of a society, everybody had to do almost every

function. Everybody had to take part in hunting, everybody had to do everything. So, there was no division of labour as it is called today.

And there was no concept of any personal property. Everything belonged to everybody. The things that they brought from the forest, the hunted animals or the fruits, whatever, if we cannot eat them now, they will rot. So, there was no question of storing them and naturally there was no question of somebody becoming rich, somebody becoming poor. So everybody were, basically on the same footing. So, that was the kind of society at that time.

At that time people were constantly in touch with the nature around them: the trees, wind, water, thunder, mountains, rocks, things around them. They had to be constantly in struggle with the natural forces around them because they had to eat and they had to avoid being eaten and that was a constant struggle. So, they had constant interaction with the natural things around them.

Naturally, their thoughts revolved around the natural things, material things around them. And that is why anthropologists term their mode of thinking as 'primitive materialism'. 'Primitive' because it was primitive, but 'materialism' because it concerned material things that we saw around them: the tigers, the lions, the trees, the fruits, the mountain, the river—material things around them. The whole thought process revolved around these.

It is true that, at that time, they were afraid of certain things, afraid of the thunder, afraid of, say, rain, afraid of various things, like rocks falling on them from a mountain which might kill them.

So, they would try to, sort of, please these things, so that they do not cause harm. They chanted, they painted their faces, they danced in peculiar ways, and all of that was aimed at pleasing what they figured were the natural forces that might cause harm. This is not any form of idealism. These are, effectively, a primitive form of materialist thinking.

In the next stage, we see the advent of agriculture. We need not go into how it started, but it started more or less around 10,000 years back, in some places 8000, some places 7000, but around that time. In the Tigris Euphrates plains in the main, but it spread to other places quite soon.

Now, when agriculture started, there was a radical transformation of the social structure. Firstly, in order to do agriculture, you have to sow the seed, you have to reap the fruit, and naturally you have to be there. So, you have to be settled in a place. So, settled like developed. And settled life means villages. And as the number of people increased, slowly it would take the shape of towns, and settlements.

As I said earlier, the things that they ate in the hunting gathering phase, those things, unless you eat them, they would rot. So nobody could store them. But in the agricultural phase, the agricultural produce, in the main food grains, could be stored.

As a result of which, some people subjugated others, got control of the food grains and also the land, and thus there were some people who had the food grains and the land, some people who had did not have the food grains and did not have the land. So, what is known as 'class division' started.

Not only that, there were always fights between clans and tribes. Earlier, if a clan won over another clan, the members of the vanquished clan did not have any use for the victor clan. But now, after agriculture started, they could be used, they could be forced to work on the land, and naturally in that stage we find, for the first-time, people being chained and forced to work on the land. Therefore, what is known as 'slavery' started.

The clan chiefs thus defeated other clans, increased their territories, and finally, through that process, slowly we find the birth of kings and kingdoms. Earlier there was no king, no kingdom. But now there was the birth of kings and kingdoms.

With the kings and kingdoms, their army, and the machinery of subjugating other people, slowly a stable form of society emerged in which there were slaves, there were people who owned this slaves, and there were some aristocrats, there were some kings, nobles—that kind of a society emerged.

Not only that, as agriculture started, it is easy to see that, in one piece of land or one kind of area, not all possible food stuff can be produced. Some places are good for producing grains, some places might be good for producing meat, some places might be good for producing fish and so on and so forth.

So, naturally, there was a need for exchange. Initially these were in the form of exchange only. That means, when I produce my food grains, I give it to you and when you produce your cotton you give it to me. So, that was kind of barter, exchange.

But soon, the kings started acting as intermediary, as sort of guarantee that if you give up your food-grains now, at a later time he is guaranteed to give you the meat or cotton or whatever he or she produces. Slowly, this means of exchange gave birth to money. Money was the guarantee given by the ruler, the king, that if you give up something now, you will get something else later. What you have now in exchange, is that piece of paper or that coin, which is a guarantee from the ruler. He guarantees that you get the worth of it. So, money came into being.

As trade started, large volume of things had to be transported from one place to another. Earlier things were transported on people's head. But now, larger volumes of things had to be transported, and so the natural inventions happened. The wheel was invented, carts were invented. Before the advent of agriculture, there was no wheel, there was no cart, but after that we see advent of wheels and carts, and relatively larger volume of transport.

When people were just roasting meat or eating fruit, they did not need any cooking. But food grains had to be cooked and naturally they needed pots. So pottery is started. And as you understand, pottery needs some kind of a fire and one needs to make earthen pots by some kind of turning process. So, pottery involved many different processes including fire burning, and through that various different processes of pot making started.

Pottery actually was the basis of many different inventions including metallurgy because in the kilns where the pots were made, something was burnt. It is a reducing atmosphere, and a reducing atmosphere can reduce any ore that can be present. Through that process people noticed that copper, tin, zinc, if mix together makes a relatively stronger metal. Thus Bronze Age started.

In the Asia minor area, iron ore is available on surface. There, the kilns were often made of these materials, this kind of clay. People noticed that sometimes iron would be obtained simply because the whatever they were burning had carbon in it—reducing atmosphere, so iron could be formed. And that technology soon spread in many parts.

Thus, the Iron Age started. So, metallurgy also was a product of the invention of agriculture.

Earlier people had to count only the number of animals in the forest, say 2 animals, 3 animals. So, the numbers were essentially 1, 2, 3 and 'many'. But now, people were in possession of farm animals: cows, sheep, goats. So, one had to have keep a count of them. So, larger numbers had to be counted.

Not only that, when agriculture started, land had to be measured and land does not always come in whole-number units. So, fractional numbers had to be conceived. So, at this stage, we see the advent of larger numbers, fractional numbers. Not only that, the kings and nobles who had relatively larger amount of property, they had to keep track of their property: how much is coming, how much is going; so accountancy was needed.

And they needed to keep track means they needed to write down how much they had, how much of what they had, and through that attempt, through accountancy, writing started in different forms, in different places. And for that purpose, one had to learn how to add, subtract, multiply, so arithmetic in rudimentary form started.

Not only that, even geometry started. Because they had to store the grains in the granaries and depending on the geometric of shape of the granaries, you have to figure out how much grain is stored there. That requires some idea of geometry. And so, all these developments happened over a time after the advent of agriculture. Thus, around, say, 600-700 BC, we see a stable form of society in the Iron Age, with all these things that I have just mentioned, in place.

In the next stage, we have to look at certain civilizations. The most important amount them was the Greek civilization. Its start happened not in mainland Greece, but in the islands and in the coastal areas of modern-day Turkey which is adjoining Greece—in those places.

Those places were not rich enough to be subject of invasion, but at the same time connected to the earlier civilizations in say Egypt, in Mesopotamia, in India, so that they could cull the knowledge that were developed there.

So, ultimately in Greece we find refinement of knowledge. Most importantly, it was a slave-owning society. So, there were some people with enough time in their hand because they did not have to engage in day-to-day activities of earning a livelihood; the slaves did that job. So, there were some people free enough to think and think only. And in that time, we see, the advent of many philosophers.

In the early phase, important among them was, for example, Thales, Anaximenes, Empedocles, Pythagoras and people like that. I am not going to describe the philosophical points they made. But what I will just point out is that they thought about questions like 'what is everything made of?'. That was a natural question that everybody had, and everybody were thinking about it.

Thales thought that every body, everything is born out of water. The things that we see solid are essentially born out of condensation of the water. Anaximenes thought that everything is made out of air, and water that we see around us is essentially condensed form of air, and other things are even more condensed form of that. So, everything starts from air. And he thought that the sun, the moon, are all floating in air. Empedocles thought that everything is made of four constituents, earth, water, air and fire. That idea went on for a long time.

So, with this you notice that it was subjective mode of thinking. They were thinking on their own and coming to their own conclusions. But noticeable is the fact that the basis of their thinking were the things around them: air, water, fire, earth—material things. So, at that stage also, the basis of their thinking was materialistic, even though subjective.

But in the next stage, as the slave-owning society matured, many people had nothing else to do other than thinking, a condition was created that was conducive to the creation of idealism and I will come to that. How and when it started its difficult to pinpoint, but we see some characters, some important people who to gave it a shape.

For example, Pythagoras—everybody knows the name of Pythagoras because of Pythagoras theorem, even though the Pythagoras theorem was not really due to Pythagoras. We now know that that the ancient Egyptians knew about it; they could not have constructed the pyramids without idea of the Pythagoras theorem. The Indians knew about it, at least a statement is there in the Sulvashutras. The Chinese had even proved the Pythagoras theorem. So, Pythagoras did not really invent that theorem or

prove that theorem, but he was responsible for many other advancements of mathematics.

For example, figuring out that there are not only rational numbers, but there are also irrational numbers was the contribution of Pythagoras. He created a group of mathematicians as sort of a secret sect who did mathematics in an isolated place and it was shrouded in mystery. They would not let anybody know what kind of mathematics you are doing. We know about what they did from other people's writings.

But we know that their mathematics was of a sort of mystic kind. They assigned certain mystic qualities to individual numbers, 3 having a particular quality, 2 having a particular quality, and similarly. For example, they thought that 10 is a perfect number, ideal number, perfect number. So, anything in the heavens have to be 10. But at the time only 9 of the heavenly bodies were known: five planets, Earth, sun, moon, and the 'celestial sphere' as it was called was also considered. So, that way, there were 9 bodies. And in order to make it 10, the Pythagoreans imagined something called a counter-earth that is there, but that is never seen from the northern hemisphere. That is there as another heavenly body.

They thought there some ideal geometrical shape. And they figured that the circle is an ideal geometrical shape and therefore, anything in the heavens should move in circles. So, the things were moving in circles they thought. Every heavenly body must be a sphere, perfect sphere. So, you see, how things are—that was not the subject of thinking, rather how thing should be. Because there is some ideal shape, ideal geometrical figure, some ideal number, so they tried to impose those ideal things on physical reality.

The Greek civilization was divided into three phases, the first phase is called the Ionian phase, second phase is called the Athenian phase (when the centre of activity moved to Athens), and the third phase is called Hellenistic period.

After the demise of Alexander, his empire broke down and then one general took the relatively Eastern part and another general took the Western part including Egypt, and center of learning shifted to Alexandria. That is called the Hellenistic period.

In the Athenian period, the great philosophers Socrates, Plato and Aristotle were there. I will start with Plato because what I am trying to point out has bearing with him. He

picked up the lines of thought of the Pythagoreans that there are ideal shapes, ideal numbers, etc., and then Plato said that there are ideal everything.

For example, a rose. If you really take a rose and examine very carefully, then you will find some imperfections in it, here and there. But you can always think of a perfect rose—a perfect, beautiful rose. So he was making the point that you can think of a perfect rose, an ideal rose. That is something ideal, and what is really existing is something inferior to that. And similarly, he said that you can think of a ideal society, you can think of an ideal ruler, you can think of an ideal everything. Those things that come to your idea, are more powerful than things that actually exist, these are more real than the real things.

Now, this line of thinking had very far-reaching influence on posterity, because once it is accepted that whatever you can think of, that can be trusted, that can be believed, that can be propagated and so in the age following Plato, there was a plethora of different belief systems sprouting.

Some man thinking of something, telling others, getting some followers that started a line of thinking. Another person had some other thought. So, different kinds of believe systems. And the way of thinking at that time, as I told you, was subjective. So, there was no question of checking if any belief is correct or not. So, there was no check, everybody believed. So, there were various belief systems.

It is not true that this form of idealism that Plato generated—that idea is prior, matter is secondary—this was not the only line of thought, because there were also people in ancient Greece who were trying to do hard science. Aristarchus and Hipparchus were astronomers. With naked eye astronomy, they were trying to figure out the structure of the heavenly bodies. Archimedes, for example, worked out the laws of the simple machines like levers, pulleys and things like that. These were grounded in reality. So, there was the current of materialism still there, but the current of idealism was slowly gaining ground and taking the shape of various belief systems.

And after the Greek period, the Hellenistic period, we know the Roman empire took shape, which ruled almost the whole of Europe for a long time. And finally, the Roman empire disintegrated. There were a series of invasions from different places: the Goths,

the Vandals and people like that, ravaged Rome, and finally, the Roman empire disintegrated.

By that time, a few things had happened. Most important thing that happened during the Roman empire around 70 BC was the slave revolt. The slaves revolted under the leadership of Spartacus. There was a slave army formed and that army challenged the Roman legions and there was a war for about a year and finally, the slave army was defeated and all the slaves taking part in the revolt, about 100,000 slaves, were killed.

Even though that was a failed revolt, it started a change in the society. People were wary of another slave revolt and slowly the form of society changed. Earlier the slaves were made to work in the fields and there were slave owners who also owned the land. But now the land owners changed their strategy. They gave parts or pieces of land to different people and said that 'you till this land and ultimately when there will be some agricultural produce, I will take two-third and you take one-third'.

And through that, another form of society, called feudalism, started. So, slavery gave way to feudalism in much of Europe. In the slave society, the slaves had no incentive in increasing production. But in a feudal society, the surfs who tilled the land, actually the poor people, they had some reason to try to increase the production, because their one-third share will also increase. So, through that, it was a relatively advanced form of society, even though people were still in wretched condition, but still it was a relatively more stable form of society.

In that stage, we see a new kind of society taking shape, where the villages would be self-sufficient in most respects. All the things that are necessary for the villages would be produced in the village itself. Every village will have a cobbler, an ironsmith, a carpenter, and people tilling their lands, producing vegetables as well as the cereals. So, everything that is needed in that village would be produced in the village or close to the village.

As a result, self-sufficient village economies developed. And if it is self-sufficient village economy, then trade and commerce subsided. And as trade and commerce subsided, there was very little exchange between areas. Then a closed form of economy developed and a closed form of culture also developed. So, culture also became stagnant.

Since about, say, 900 AD, at the time of Charlemagne, a kind of society developed that was a stable kind of society, a society ruled by the dual rule of the king and the church which propagated certain beliefs. Out of the belief systems that were created earlier, some belief systems were integrated into the new church belief systems. In that kind of society, the process of thinking was 'believe, do not question'. So, a belief system developed.

The belief system was very strong. There was a belief regarding the structure of the universe. The Aristotelian thoughts, the Ptolemaic thoughts—were all integrated into that belief.

The structure of the universe was that the Earth was believed to be at the center of the universe because that is the abode of the humans, man, which is the product of God. So, it is at the center of the whole universe. Around that, the moon is going in circles, the sun is going in circles, and beyond that, according to the Aristotelian belief, there would be crystal spheres on which the planets would be embedded and God would be moving that crystal sphere. So, that planets would be moving in peculiar ways. That was integrated into the belief system.

And at the end of the whole thing was the closed dark canopy, the ultimate sphere on which the stars were embedded. And that is the area of the perfect, and unchangeable, nothing can change there. So, that was the belief, and 'believe, do not question' – that was the kind of thinking.

In the year 1054, a very peculiar thing happened: a star exploded. And the star that exploded was in our galaxy, not very far from our solar system, and naturally it become very bright at some point of time. So, over a period time, it would become brighter and brighter star, and at its peak it was almost as bright as the moon.

But we do not see a single writing, a single person of that period writing that I have seen that. Why? Because they cannot see that, there cannot be any change in that sphere. It is the realm of the perfect and unchanging. That was the belief, and nobody believed their own eyes. We know about that incident in 1054 from writings in China which is at the same kind of latitude.

That system, that closed kind of system, the belief system, was propagated for about 1000 years and finally, that started breaking up, started being questioned during the period of the Renaissance.