

STUDY UNIT #5: ***ABSTRACT KNOWLEDGE AND LANGUAGE***

In previous study units we learned how early man enhanced his ability to survive and enjoy life by *knowledge acquisition*, *technological innovation*, and the *division of labor*.

He acquired knowledge to guide his actions. He innovated technology to expand his abilities. He participated in the division of labor to be more productive. Knowledge provided him with mental power. Technology provided him with physical power. The division of labor provided him with productive power.

Now we'll take a deeper look at the unique and powerful nature of human knowledge, including human language.

Our language consists of hundreds of thousands of different words, such as the ones you are reading right now. There was a time, long ago, when early man had no words to communicate with or think with. Then, thankfully, at some unknown place and time in the past, man began inventing words. Human language was born!

For all we know, early man might have used hand signals at first to communicate simple information, but our focus here is on spoken words. We do not know which human species invented the first words, or when, but scientists believe the spoken word has been around for at least 40,000 years, ever since the time of Neanderthal man. It's possible that the first words were invented long before then.

Entity Concepts

Like animals, early man perceived a world full of specific, particular, individual things, or what we call entities: a *leopard*, a *monkey*, a *bird*, a *frog*, a *bee*, a *caterpillar*, a *snake*, a *fish*, a *tree*, a *rock*, and so on.

Although early man observed many differences among individual entities, he also observed that some of the entities were very similar to each other when contrasted to other entities. For example, two birds when contrasted to each other could be shown to be different in many ways: one bird, say, was slightly bigger and more colorful than the other. But when *contrasted* to a snake, the two birds appeared very similar to each other. For example, both birds have two feet, a beak, and two wings; their shapes were very similar; both can fly. The snake has neither wings, nor feet, nor a beak; nor can it fly. Likewise, early man observed that the differences between two snakes were minor when contrasted to the differences between a snake and a chimpanzee. In other words, some entities differ slightly from each other while other entities differ significantly.

Two leopards can be different in countless ways: one might be bigger, faster, and have more spots than the other. However, such differences are *insignificant* when compared to all the things leopards have in common: *all* leopards have spots, climb trees, eat humans, fear fire, and much more. Such statements of general knowledge—knowledge that is true of all leopards—are extremely valuable to have when encountering a new leopard in the jungle. Such is true for two crocodiles when compared to a fish, or two rocks when compared to a leaf. After all, you can't crack a walnut by hitting it with a leaf.

In order to have knowledge that is true of all leopards, or all crocodiles, or all rocks, early man needed to *classify* individual entities according to similarities and differences. He regarded the leopards he saw as *essentially similar* to each other and as *essentially different* from all other entities, such as chimpanzees. He did likewise for warthogs, birds, spiders, trees, bananas, rocks, etc.

Other animals also seem to classify entities. A leopard reacts differently to deer than it does to lions; it will chase a deer and avoid a lion. But early man did something unique, something only his unique brain would allow. In his mind, he created a mental “file folder,” called a *concept*, for each class of things that are similar, such as large cats with spots that live mostly in trees. Eventually, perhaps hundreds of thousands of years later, man gave the concept a name, or what we call a *word*, such as “leopard.” (Of course, early man didn’t use “leopard,” an English word. We don’t know what word he used to name leopards. English words are used herein for convenience.) Once he invented a word, he used it to name every member of the class. More will be said later about words.

We call concepts *mental file folders* because they are analogous to physical file folders. A physical file folder, or simply *file*, is a piece of thin cardboard folded in half and large enough to hold many sheets of paper inside. It is intended to hold information on a specific topic, such as “mushrooms” or “chimpanzees.” It has a label sticking out with a word or words indicating what the file contains.

Files for different topics, such as fish, birds, and trees, are stacked side by side with their labels sticking up. Every time you learn something new about mushrooms, say, you put or *file* that information into the mushroom file. Information on fish goes into the fish file, and so on. Then, later, when you need some knowledge of mushrooms, such as how to cook them or identify which are poisonous, you look in the mushroom file. The function of a mental file folder is to store knowledge about a class of things, such as knowledge about zebras: “Zebras have stripes.” “Zebras graze on grass.” “Zebras are a source of meat.” By now you should have hundreds of such file folders in your mind.

Forming a single concept for a class of entities allowed early man to store knowledge about every member of that class. And when he needed such knowledge, he could easily and quickly retrieve it from the “mental file” or concept in his mind.

It’s important to understand the difference between a *concept* and a *word*. The two are related but are not the same. The *concept* “dog,” for example, stands for every dog that has ever existed or will ever exist. It also refers to the mental file in which knowledge about all dogs can be stored. The *word* “dog,” however, is merely a name chosen for the concept. It is a single name that applies to every member of the class of entities we call dogs. It serves to distinguish all dogs from all other entities. Words are man-made symbols used to name classes of things. The word “dog” allows one to quickly access one’s mental file on dogs and to communicate knowledge about dogs. There are different languages, such as English and French, with different words for the same concept. For example, the word for “dog” in French is “chien.” Both words refer to the same class of entities. Different symbols or words can be used to name the same class of things.

It’s also important to understand the difference between a concept and a *proper name*. A proper name, such as Christopher Columbus, New York, California, Canada, and so on, is a symbol created to name an *individual* thing, not a class of things. Whereas proper names always begin with a capital letter, words do not, unless they begin a sentence or are used in a title.

Note that not all the entity concepts that early man formed refer to solid objects. He needed and formed entity concepts for “fire,” “river,” “wind,” “water,” “air,” “rain,” and so on. Grammatically speaking, entity concepts serve as *nouns* in a sentence, as opposed to verbs, adjectives, and prepositions. Grammar—the science of making proper sentences out of individual words—is discussed later.

{Stop! Do the review exercises for this section, Part A, in the student exercise book.}

General Knowledge versus Particular Knowledge

The process of forming concepts and storing knowledge in concepts is part of what we call *conceptualization*. The knowledge one stores in a file can be either particular knowledge or general knowledge. *Particular knowledge* is knowledge expressed about one or a few members the class, such as: “That zebra, the one those two lions just killed, was quite old.” Or: “Those three boys are bullies.” Such knowledge is not necessarily true of all zebras or all boys. *General knowledge* means knowledge true of every member of a given class of things, such as: “Zebras have stripes and four legs. When frightened, zebras can stampede and trample people.”

While both types of knowledge are beneficial, *general knowledge* is especially and uniquely beneficial because it can be applied to every member of a class, not just one member. For example, general knowledge about leopards, such as “leopards kill people” or “leopards are afraid of fire,” can be applied to any new leopard one encounters. When encountering a leopard that one has never seen before, one can immediately apply all one’s general knowledge of leopards to a particular leopard in order to determine what to do. If one encounters a new leopard, one will immediately infer that it’s dangerous and then take the appropriate action to avoid being killed by it.

General knowledge saves a lot of precious “brain space” or “mental storage space.” Imagine having a separate mental file on every individual entity. If twenty leopards live in your area, then you’d have twenty files on leopards. And in each one you’d have: “This individual thing is afraid of fire.” Acquiring general knowledge is a way to condense knowledge because it avoids duplication. The more storage space you save in your mind, the more space you have available for new knowledge.

How one discovers general knowledge is a big topic that will be discussed in later study units. For early man, acquiring general knowledge initially involved observing the same behavior exhibited by some members of a class of things, such as some leopards, and then generalizing that all members of the class behave that way. Note that this particular method of generalizing doesn’t always work, particularly when applied to people. For example, if the first three boys you meet are mean, it would be wrong—illogical—to conclude that all boys are mean. We know that boys can choose to be mean or nice.

As with the concept “leopard,” early man formed many entity concepts—warthog, crocodile, zebra, spider, snake, tree, rock, hand axe, etc.—in which to store knowledge about the countless entities he encountered. Together these mental files are analogous to a large filing cabinet where individual files rest side by side with labels on them to indicate their contents. If early man came across a large, black snake, he could quickly access his mental file on snakes and quickly retrieve the knowledge he needed, such as whether the

snake was poisonous. Or, if he discovered something new about snakes, he could store this new knowledge in his “snake” file. In this manner, early man expanded his knowledge of entities, thereby enhancing his ability to survive. No other animal can do this!

Early man eventually realized that he needed *narrower classifications* of entities. For example, the concept “bird” was too wide by itself. Some types of birds, such as eagles, are significantly different than other types of birds, such as doves. He needed narrower concepts or *sub-classifications* such as “eagle,” “dove,” “duck,” “vulture,” “seagull,” “parrot,” “woodpecker,” and so on, in order to be more precise in his thinking and communication. After all, vultures and eagles are different in significant ways: a vulture circling overhead indicates a dying or dead animal to scavenge; an eagle circling overhead merely indicates that it is looking for a small, living animal to swoop down on and snatch with its large talons.

The narrowing of a concept into subclasses is analogous to creating many smaller files out of a big file. Sometimes a file becomes so full of information that it’s hard to find what you are looking for. Such narrower concepts allowed early man to store knowledge that is true of all members of a subclass of entities, such as all vultures, but not true of the main class, such as all birds. And it allowed early man to communicate more precisely. Instead of saying “birds are circling near the valley,” it’s much more informative to say: “vultures are circling near the valley.”

In addition to subdividing concepts, early man also realized he needed wider classifications or *super-classifications* of concepts, such as “tool,” “animal,” “plant,” “insect,” and so on. This is analogous to putting many small folders inside a larger folder to keep them together because they have much in common. There are many things true of all insects, such as the fact they are very small. Instead of saying “I make hand-axes, knives, scrapers, punches, chisels, etc.,” he can briefly say: “I make tools.” Super-classifications allowed early man to organize his knowledge better and to communicate more briefly, thereby saving precious time.

{ Stop! Do the review exercises for this section, Part B, in the student exercise book. }

Parts of Entities

In addition to concepts of entities, early man needed concepts of parts of entities, such as “head,” “arm,” “eye,” “trunk,” “root,” “wing,” “handle,” “hill,” “shore,” etc. He observed that while the head of a man was quite different than the head of a lion, the two heads had many things in common, such as a mouth, eyes, and ears. Concepts of parts are very similar to concepts of entities. Even though the head is attached to the body early man’s ability to abstract allowed him to treat it in his mind the way he treats entities such as rocks and wolves.

Concepts of parts would have allowed early man to store knowledge of parts of entities, and to communicate more precisely: “the leopard’s paw,” “the elephant’s trunk,” “the scorpion’s stinger,” “the man’s face,” “the child’s tooth,” “the tree’s leaves,” “the axe’s handle,” “the river’s bank,” “the alligator’s jaws,” etc.