

**PLATO**

**Plato** (ca. 427–347 B.C.) was Socrates's most famous student. In fact, Socrates never wrote a word about his philosophy—it was written by Plato. This is a most significant fact since the early Platonic dialogues were designed primarily to show the Socratic approach to knowledge and were memories of the great teacher at work. The later dialogues, however, represent Plato's own philosophy and have little to do with Socrates. Plato was so upset by the execution of Socrates for impiety that he went on a self-imposed exile to southern Italy, where he came under the influence of the **Pythagoreans**. This fact has important implications for Western people and is directly related to all approaches to epistemology, including learning theory, that have occurred since.

The Pythagoreans believed that the universe was governed by numerical relationships that influenced the physical world. In fact, numbers and their various combinations *caused* events in the physical world. And both events, the number and the empirical event that it caused, were real. Thus, to the Pythagoreans, the abstract had an independent existence and was capable of influencing physical objects. Furthermore, physical events were thought to be only manifestations of the abstract. Although number and matter interact, it is matter that we experience with our senses, not number. This results in a dualistic view of the universe, in which one aspect can be experienced through the senses and the other cannot. Following this notion, the Pythagoreans made great strides in mathematics, medicine, and music. Through time, however, they developed into a mystical cult, allowing only a few individuals to become members and share their wisdom. Plato was one such individual.

Plato's later dialogues reflect complete acceptance of the dualistic universe in which the Pythagoreans believed. He developed a theory of knowledge based on the Pythagorean notion that the abstract has an independent and influential existence.

**Reminiscence Theory of Knowledge**

According to Plato every object in the physical world has a corresponding abstract "idea" or "form" that causes it. For example, the abstract idea for *chair* interacts with matter to produce what we call a chair. The idea of *tree* interacts with matter to form what we see as a tree. All physical objects have such an origin. Thus, what we experience through our senses is a chair, a tree, or a house, but not chairness, treeness, or houseness. The pure idea or essence of these things exists independent of matter, and something is lost when the idea is translated into matter. Therefore, if we attempt to gain knowledge by examining things that we experience through the senses, we will be misled. Sensory information provides only opinion; the abstract ideas themselves are the only bases of true knowledge.

But how do we obtain information about the ideas if we cannot experience them through the senses? Plato said we experience them through the "mind's

eye." We turn our thoughts inward and ponder what is innately available to us. All human beings have in their mind complete knowledge of all the ideas that make up the world; thus true knowledge comes from introspection or self-analysis. We must learn to divorce ourselves from sensory information that can only deceive or, at best, remind us of what we already know.

How does one come to have knowledge of the ideas? Here Plato becomes mystical. All humans possess a soul. Before being placed in the body at birth, the soul dwells in pure and complete knowledge. Thus, all human souls know everything before entering the body. Upon entering the body, the knowledge of the soul begins to be "contaminated" by sensory information. According to Plato if humans accept what they experience through the senses as truth, they are doomed to live a life of opinion or ignorance. Only by turning away from the physical impure world to the world of ideas, pondered by the mind's eye, can we hope to gain true knowledge. Thus, all knowledge is **reminiscence**, or recollection of the experience our soul had in the "heaven which is beyond the heavens." Plato advises the astronomer to "let the heavens alone" and use "the natural gift of reason" (*Republic* VII, p. 296).

As we have already seen, Plato was a nativist because he felt knowledge was inborn. He was also a rationalist because he felt this knowledge could only be made available through reasoning. As we shall see later, other rationalists were not as extreme as Plato in their negative attitude toward sensory information. However, it was Plato's philosophy that dominated Europe for the first 12 centuries of the Christian Era. It is largely through this early influence on Christianity that we still have remnants of Platonism in Western culture today.

**ARISTOTLE**

**Aristotle** (384–322 B.C.), one of Plato's students, first followed Plato's teachings quite closely and later broke away from them almost completely. A basic difference between the two thinkers was in their attitude toward sensory information. To Plato, it was a hindrance and something to be distrusted, but to Aristotle sensory information was the basis of all knowledge. With his favorable attitude toward empirical observation, Aristotle compiled an extraordinarily large number of facts about physical and biological phenomena.

Reason, however, was in no way abandoned by Aristotle. He felt that sense impressions were only the beginning of knowledge—the mind must then ponder these impressions to discover the lawfulness that runs through them. The laws that govern the empirical world are not knowable through sensory information alone but must be discovered by active reason. Thus, Aristotle believed that knowledge was gained from sense experience *and* reasoning.

There are two major differences here between Aristotle's and Plato's theory of knowledge. First, the laws, forms, or universals that Aristotle was looking for did not have an existence independent of their empirical manifestation, as they did for Plato. They were simply observed relationships in nature. Second, for Aristotle, all

knowledge is based on sensory experience. This, of course, was not the case with Plato. It is because Aristotle contended that the source of all knowledge is sensory experience that he is labeled an empiricist.

In elaborating his empiricistic view of knowledge, Aristotle formulated his **laws of association**. He said that the experience or recall of one object will tend to elicit the recall of things similar to that object (law of similarity), recall of opposite things (law of contrast), or recall of things that were originally experienced along with that object (law of contiguity). Aristotle also noted that the more frequently two things are experienced together, the more likely it will be that the experience or recall of one will stimulate the recall of the second. Later in history, this came to be known as the law of frequency. Thus, according to Aristotle, sensory experience gives rise to ideas. The ideas stimulated by sensory experience will stimulate other ideas in accordance with the laws of similarity, contrast, contiguity, and frequency. Within philosophy, the contention that the relationships among ideas can be explained by the laws of association is called **associationism**. An example of how ideas become associated through contiguity is shown in Figure 3-1.

Besides making empirical investigation respectable, Aristotle made several other contributions to psychology. He wrote the first history of psychology, which was entitled *De Anima*. He wrote extensively on the human sensory apparatus, which he listed as consisting of sight, hearing, smell, taste, and touch. He contributed greatly to later conceptions of memory, thinking, and learning. As we saw above, his associative principles of similarity, contrast, contiguity, and frequency later became the bases for the doctrine of associationism, which is still very much part of modern learning theory. In view of his immense contributions, we can forgive him for locating the mind in the heart and treating the brain as a system for cooling the blood. About Aristotle's great influence on learning theory, Weimer (1973) said,

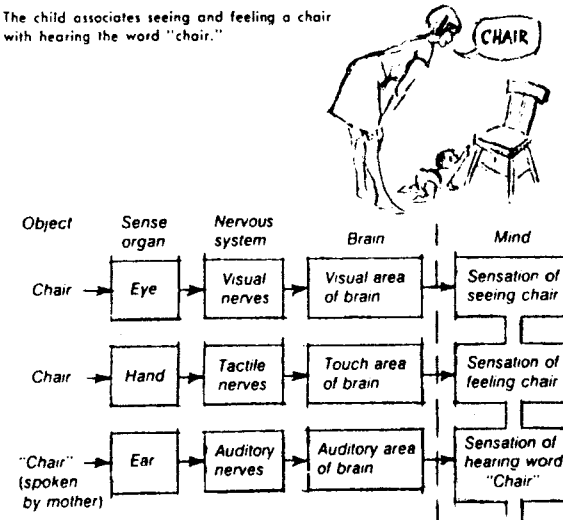
A moment's recollection . . . shows that Aristotle's doctrines are at the heart of contemporary thought in epistemology and the psychology of learning. The centrality of associationism as the mechanism of the mind is so well known as to require only the observation that *not one single learning theory* propounded in this century *has failed to base its account on associative principles*. (p. 18)

With Aristotle's death died the hope for the development of empirical science. In the centuries following Aristotle there was no follow-up to the scientific study that Aristotelian thinking had promoted. The collapse of the Greek city-states, barbarian invasions throughout Europe, and the rapid spread of Christianity stunted the growth of scientific inquiry. Early medieval thinkers depended on the teachings of past authorities instead of seeking new information.

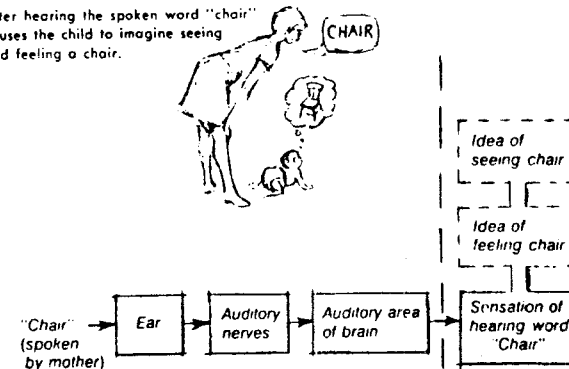
Plato's philosophy was an important influence on early Christianity. The conception of man that prevailed during these times is described by Marx and Cronan-Hillix (1987):

Human beings were regarded as creatures with a soul, possessed of a free will which set them apart from ordinary natural laws and subject only to their own willfulness and

The child associates seeing and feeling a chair with hearing the word "chair."



Later hearing the spoken word "chair" causes the child to imagine seeing and feeling a chair.



**FIGURE 3-1** An example of how seeing and touching a chair and hearing the word *chair* become associated through contiguity. (From *Introduction to Modern Behaviorism*, 3rd ed., by Howard Rachlin. Copyright © 1991 W. H. Freeman and Company. Reprinted with permission.)

perhaps to the rule of God. Such a creature, being free-willed, could not be an object of scientific investigation.

Even the human body was regarded as sacrosanct. Anatomists had to double as grave robbers, and that made anatomy a highly risky, or very expensive, occupation. The