Chrysippus | Encyclopedia.com

(*b*. Soli, Asia Minor, c. 280 BCE;

d. Athens, c. 205 BCE), *theory of matter, logic, cosmology, psychology, Stoicism*.

The third leader of the Stoic school of philosophy in Athens, Chrysippus consolidated and expanded the influence of the Stoic school, making it one of the most influential philosophies of the Greco-Roman world. He made particularly important contributions to cosmology, the theory of matter, logic, and psychology; his doctrines became standard in Stoicism and so a major influence on later Greek natural philosophy.

Cosmology . Building on the theories of Plato (in the *Timaeus*) and Aristotle, as well as the work of his predecessors in the school, Chrysippus held that the cosmos is a unique and closed physical system surrounded by an indefinite void but with no emptiness within its boundaries. The cosmos is a physical plenum containing four basic elements (earth, air, fire, and water), but ultimately composed of two principles: an active, causal principle identified with god and reason; and a passive principle, prime matter without quality. The cosmos is spherical, with the heavenly bodies rotating around the unmoving, central Earth. It is structured by the rational, divine principle and so is both a thoroughgoing teleological system (with the interests of humans and gods paramount) and a wholly deterministic system: there are no uncaused events or states and all are in principle explicable. The cosmos is an ordering of all the matter in the cosmos; it has a beginning and an end, whereas the matter and principles persist forever. The creation and dissolution of the cosmic order is cyclical, beginning with a watery phase in which the seed of future changes is contained and ending with a fiery conflagration, after which an identical cosmogenesis begins again.

The Four Elements . Earth, air, fire, and water had been identified as the basis of all other forms of matter by Empedocles, a tradition accepted in varying forms by Plato and Aristotle. Like Plato and Aristotle, Chrysippus did not regard the four forms of matter as truly elemental: Each is a product of the two corporeal principles (god and prime matter) that are perfectly blended with each other. Each form of matter is characterized by one defining quality rather than two as Aristotle had held (fire is hot, water is moist, air is cold, earth is dry). One of Chrysippus's innovations was the theory that the cosmos coheres with itself as a natural unity owing to the omnipresence of pneuma, a breathlike substance composed of fire and air perfectly blended. Early Stoics had given a predominant causal role to a creative form of fire. The varying degrees of tension in pneuma explain the differing levels of organization of material objects (things such as rocks, plants, animals, and rational animals). The orderliness and causal interdependence of everything in the cosmos was a vital feature of Stoic cosmology.

The cohesion imparted by pneuma is also reflected in the stoic theory of natural motion. Aristotle had held that earth and water have a natural downward motion, while fire and air naturally move upward. Chrysippus and his predecessors claimed that all the elements are centripetal, with the lighter elements simply being drawn less vigorously to the center than is earth.

Logic . Chrysippus was the greatest logician in the ancient world, after Aristotle. He did not follow Aristotle's lead in the development of a syllogistic logic based on terms (subjects or predicates) as the basic unit. Rather, the statement, or proposition, is fundamental to Chrysippus's logic. This facilitated his development of a forerunner of sentential logic. All valid inferences are reducible ultimately to one of the five indemonstrable argument forms.

1. If A then B. A. Therefore B.

2. If A then B. Not B. Therefore not A.

3. Not both A and B. A. Therefore not B.

4. Either A or B. A. Therefore not B

5. Either A or B. Not A. Therefore B.

Chrysippus is also responsible for even more impressive work in the field now called semantics, in rhetoric, and in the theory of argument forms.

Psychology . From the beginning Stoic psychology was corporealist. The soul is made of pneuma that pervades the entire body, and the mind is a highly concentrated and refined form of this pneuma centered in the heart (in this respect following Aristotle rather than Plato). The perceptual and motor functions are carried out through what has become known as the circulatory system, which forms a network throughout the body. Functionally, the mind (called the commanding part, or *hēgemonikon*) is fully unified. There is no division between a part responsible for reasoning and a separate locus of desire and perception. The Stoic theory was resistant to growing evidence from medical dissections (especially the discovery of the optic nerve) that the brain had a better claim to be the seat of thought and awareness. Chrysippus was more impressed by the importance of the network of arteries centered on the heart, which offered an explanation for the way the mind communicated with the entire body. Because the central nervous system was not yet understood, this consideration was hard to reject on scientific grounds. The Platonizing doctor Galen of Pergamum relied on dubious philosophical considerations in his support for the brain as the seat of thought, being most concerned to confirm the theory of Plato's *Timaeus* against Chrysippus, whose view continued to be the principal alternative to Plato's for many centuries. Galen also argued vigorously for the tripartition of the soul and the sharp separation of desire and cognition. Chrysippus's conviction that the mind was in the heart was wrong, though the reasoning behind the view was not unreasonable. But his claim that the mind is material and that cognitive, perceptual, emotional, and other functions are highly unified is more in keeping with modern scientific psychology than the medical tradition represented by Galen.

Chrysippus's philosophical brilliance transformed Stoicism and made it into the most influential school for centuries, until the revival of Platonism and Aristotelianism displaced it—in time for those schools to become dominant in their influence on medieval and early-modern science. He was also a prolific author (though none of his 700 books has been preserved intact) and a skilled organizer of intellectual activity in his school, using his position as head to give it an agenda that long outlasted his own career.

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Brad Inwood