

Descartes begins his argument by asserting what to him is a different view of man from that of the tradition. He says that while the soul is traditionally regarded as the principle of the life and movement of the body, it is more appropriate to view the body as possessing its own life-principle independently of the soul. Human and animal bodies share a principle of life and movement, heat, which is borne by extremely small material particles, the "animal spirits," throughout their nervous and circulatory systems. Their sensory and motor apparatuses enable these bodies to function like well-ordered machines, independently of the soul.

The way in which the nervous system in particular is organized permits such "mechanical" and involuntary processes as breathing, digestion, habitual modes of perception, and reflex action in both men and animals. The nervous system of an "animate" body is so organized that in every sense-perception or movement of the body, a corresponding pathway or conduit allows the transmission of animal spirits from the thing sensed to the brain, or from the brain to the muscle to be moved. The openings of these channels to the brain allow only the most "rarefied and subtle" of the spirits to enter, so that here activity and perception can be coordinated. Dreaming is accounted for by a "fortuitous" movement of animal spirits, from whatever cause, into the "traces" left in the brain by a previous movement of animal spirits.

For Descartes the soul belongs only to man. A sensation is communicated by the animal spirits in man to the pineal gland, where they somehow cause the soul to interpret the sensation as coming from an object perceived in the external world, or as a feeling in some part of the body itself. Dreams are interpreted like other sensations, but are less "lively" because their source is a fortuitous movement of animal spirits.

Imagination, however, requires that the soul "command" the pineal gland to send out animal spirits to the traces in the brain of the perceptions needed to create the image, and these spirits then return to the gland so modified that they can be interpreted by the soul as the desired image. Voluntary bodily movement also involves a command of the soul that the pineal gland send out animal spirits, in this case to a muscle to effect the movement desired.

The functions of the soul are thus perceiving and willing, at least for Descartes' purposes so far in The Passions. Both imagination and voluntary movement require the will or desire of the soul, as an action of the soul with respect to the gland. Sense-perception, feeling, and dreaming occur independently of the will, as actions of the gland with respect to the soul.

While all actions of the gland with respect to the soul are "passions" in the broad sense for Descartes, what we commonly call "passions of the soul" arise from diverse movements of the animal spirits like dreams, but act so strongly on the

soul as to produce desires contrary to the desires that it already has. In seeing a fearsome tiger about to leap at me, the animal spirits generated by sensation move not only directly to the gland for perception by the soul, but also through certain other channels either to my legs to prepare me to turn and flee, or to my hands to prepare me to draw my knife and defend myself. Allowing a certain margin of time so that mere reflex action does not occur, what disposes the animal spirits to travel one way or the other? The corresponding nervous pathways - the "courage" or "cowardice" of my character in traditional terms.

The disposition to act in a certain way involves the "victory" of a desire supported by the animal spirits, stemming from a corresponding nervous circuit, over other desires in the soul. Moral reform for Descartes requires restraining the desires caused by the bad dispositions, until good dispositions can be developed to replace them. Initially, all one can do is to inhibit the movements resulting from bad desires. When the passions supporting these desires subside, our state of mind becomes calm enough to form a "firm resolve" to act according to true judgements of right and wrong. All passions must somehow be restrained by the soul negatively, until the nervous system's propensity to produce passions supporting good desires can gain the upper hand over its propensity in the opposite direction. This last task necessitates the replacement of "bad" nervous channels with "good" ones. Since the bad pathways are only customary to begin with,

new ones can be opened up, Descartes thinks, by directing the surplus animal spirits accompanying those that represent the tiger into a "courage" circuit in the nervous system, or toward the hand to draw the knife. Once the new nervous channels are opened, one can master one's passions as easily as one trains one's dog.

Aside from his obvious errors of anatomy and physiology, an important question raised by Descartes' argument centers on his claim to a different analysis from that of the tradition. Does not the use of "animal spirits" indicate a need to retain some elements of the traditional notion of soul as the principle of bodily life and movement? Beyond this crude observation, one detects the influence of Aristotle and the Stoics in Descartes' view, as soon as he begins to treat the passions as moral phenomena. Habits dispose one to act in a certain way, whether they are interpreted as Aristotelian character traits or as Cartesian brain circuits. Descartes seems to come into line with the Stoics in the ease with which he thinks bad habits can be ignored and reformed, and the passions ultimately mastered by the soul alone.

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