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Soul, Seat of the

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Introduction

This article surveys metaphysical and physiological investigations of the seat of the soul. After introducing the Scholastic background of the problem (section "From the Scholastics to Vesalius"), I focus on the turn that is represented by Cartesian philosophy (section "The Cartesian Turn"), then address the metaphysical (section "Metaphysical Controversies") and physiological (section "Experimental Traditions and Physiological Hypotheses") controversies between the seventeenth and the eighteenth centuries. Kant's criticism that the quest for the seat of the soul is an "impossible" task introduces a conclusion on the legacy of the problem in neurophysiology (section "Kant's Critique and the Fate of the Seat of the Soul").

From the Scholastics to Vesalius

The question concerning the seat of the soul traditionally involved both a metaphysical and a medical dimension: on the one hand, different conceptions of the soul determined whether it made sense to search for its place in the body; on the other hand, anatomical and physiological knowledge provided the background for detecting the bodily correlate of the soul's operations, that is, the "organ" of the soul.

Whether the soul had a particular seat or was joined to the whole body, whether there was one soul for any individual being, and whether the soul was indivisible were standard problems of Scholastic philosophy until the seventeenth century (Eustachius 1648, Sect. 3.1 1–10). In Scholastic theories, the soul as form was commonly conceived as existing wholly in every part of the body of plants and animals (Pasnau 2011, 337. This doctrine is known as "holenmerism," with the term coined by the seventeenth-century philosopher Henry More). The soul was characterized by different faculties, like nutrition, perception, and mind, the latter notably belonging only to the human soul. It was traditionally admitted that the mind was located in the body not by essence (for mind is not matter), but *per praesentiam* (cognitively) or *per potentiam* (by action) (Lombard, *Sentences*, I, 37).

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The Scholastics faced the peculiar problem of reconciling the view that the rational soul can exist after death with the metaphysical tenet that the separation from the body is against its nature and involves a loss of cognitive functions (Aquinas, *Summa Theologiae*, I, q. 89, art. 1). Dante represents this separability arguing that the "virtue informative" of rational souls of the dead "rays around about" and thus impresses its form to the air and "organizes [*organa*] thereafter every sense," resuming its sensory and motor functions (*Purgatorio*, XXV, 89–102). Some scholars have suggested an analogy between the Aristotelian soul and the "functional organization" of organisms and machines, thus defending a neo-Aristotelian approach to the mind against reductive materialism and dualism. In this perspective, the very *question* of the unity of mind and body and hence of the seat of the soul would be dismissed: "The soul is not an 'it' housed in the body, but a functional structure in and of matter" (Nussbaum and Putnam 1992, 51–2, 60).

Be that as it may, details about the cerebral basis of the rational soul hardly mattered for scholastic accounts of cognitive operations. To be sure, following Galenic medicine, cognitive functions were located in brain ventricles, but no details were provided about the physiological processes that allegedly accompanied cognitive operations. The great anatomist Andreas Vesalius, in book VII of *On the Fabric of The Human Body* (1542), did not straightforwardly reject traditional hypotheses on the seat of the soul, but he criticized the anatomical "inventions" of the Scholastics and lamented that even after accurate dissections he was "unable to understand how the brain can perform its office of imagining, meditating, thinking, and remembering, or, following various doctrines, however you may wish to divide and enumerate the powers of the Reigning soul" (Singer 1952, 4, 6). Indeed, as Gary Hatfield has pointed out, "knowing roughly where a process takes place in the brain typically tells us little of nothing about the [. . .] mechanics of the process" (Hatfield 1988, 727). But the latter question became prominent with the rise of mechanical philosophy and eventually set the condition for the localization of the soul itself.

The Cartesian Turn

Cartesian philosophy revived the investigation into the seat of the soul in a radically different theoretical framework. Descartes dropped the Aristotelian notion of form and conceived the soul (or "mind") as a thinking substance that is distinct from the body, thus giving a new problematic twist to the issue of localization. On the other hand, he introduced the concept of matter as extended substance, the fundamental element of his mechanistic explanation of cognitive functions. This explanation was limited to the nonconscious processing of stimuli, which Descartes takes as the standard operation of nonhuman animals, while the human conscious mind was conceived as interacting with brain traces in perception and voluntary motion. While Descartes rejected Aristotelian forms, he tried for a partial reconciliation with the traditional view of the seat of the soul, arguing that "the human soul, while informing the entire body, nevertheless has its seat in the whole brain" (AT IX B, 315). His original hypothesis was that the pineal gland, located at the center of the brain, was the main seat of mental operations.

Descartes argued that since we only have one soul and we see only one image rather than two despite having two eyes, there must be a place where nervous signals come together and are combined, and the single part of the brain that is not double seemed to be the best candidate for this role of functional organization (Shapiro 2011). Descartes's anatomical claim entails that the unification of sensory data is a mechanical process rather than a function of the soul, hence the pineal gland is the seat of "imagination and common sense" (AT XI, 176). This mechanistic account was sufficient to explain the behavior of animals (as automata), thus turning many functions of information processing that were previously ascribed to the soul into mechanical processes depending on the rolling of the gland. Human perception, on the other hand, depended on the soul contemplating and interacting with brain traces that were inscribed on the surface of the gland. While Descartes' mechanistic approach left a lasting legacy, Steno famously presented

anatomical evidence against the claims that the pineal gland has a unique central position and lies at the end of afferent nerves. This criticism influenced Cartesians like Louis de La Forge as well as Spinoza (Scribano 2015, 134).

Concerning the unity of the conscious mind and the body, Descartes pointed out that "sensations of pain, hunger, thirst, and so on" teach that "I am not merely present in my body as a sailor is present in a ship, but that I am very closely joined and, as it were, intermingled with it so that I and the body form a *unit"* (AT VII, 81). This analogy was Aristotelian. Indeed, Descartes granted that the Scholastic doctrine of "holenmerism" "is exactly the way in which I now understand the mind to be coextensive with the body—the whole mind in the whole body and the whole mind in any one of its parts" (AT VII, 442; see Rozemond 2003). Pressed by Henry More, he was forced to distinguish this notion from proper extension, for the soul cannot be divided into parts. The soul's extension was an "extension of a different nature" (AT III, 694), an extension "by analogy" (AT V, 270), lacking parts, size, and shape. It was an "extension of power" (AT V, 342), like that of angels and God, hence the soul could occupy no place when not acting on bodies. This sounded, again, like a Scholastic notion. On the whole, however, Descartes turned out to be uninterested in entering metaphysical disputes on the presence of the soul. He eventually wrote to Elisabeth of Bohemia that the unity of mind and body is a "primitive notion" (AT III, 665), that is known most clearly by the senses and that "each always experiences within himself without philosophizing" (AT III, 694).

Metaphysical Controversies

Descartes' theory of the seat of the soul aroused metaphysical and medical (section "Experimental Traditions and Physiological Hypotheses") controversies. Hobbes notably rejected Descartes' dualism, claiming that "the mind will be nothing more than motion occurring in various parts of an organic body" (AT VII, 178). Given that the soul has a seat, he argued that to be in a place entails having dimensions (according to the traditional definition of location), hence everything, including the soul, has to be considered corporeal (*Elem* I.11.5). He also dismissed holenmerism as a "plain contradiction" *(Lev.*, III.34.2). Henry More similarly criticized Descartes, wondering how the soul can lack parts if it is extended in the whole body (AT V, 313–314) and was unconvinced by Descartes' replies on the presence by analogy. Against the "nullibists" – those who deny that the soul is somewhere – he maintained that the soul has a proper extension, but contrary to bodies it is penetrable. Soul and body can overlap in the same place, for the soul has a fourth dimension called "spissitude" (see Gabbey 1995).

Malebranche praised Descartes' dualism as a historical accomplishment, but he disregarded the pineal gland hypothesis and rejected the thesis that sensations depend on the mind's diffusion in the body. Malebranche maintained that the gap between neurophysiology and metaphysics could not be bridged by the soul's presence: only God could cause the "natural and mutual correspondence of the soul's thought with brain traces, and of the soul's emotions with the movements of the animal spirits" (Malebranche 1958–, I, 215), and hence explain the interaction between the soul and brain fibers or animal spirits in the "seat of imagination," wherever the latter may exactly lie (I, 193–194). Spinoza adhered to the program of a mechanistic neurophysiology of sensation and imagination, but he also considered the pineal gland hypothesis to be anatomically incorrect and nonexplanatory (*Eth.*, V, Pref). Spinoza took the parallelism between ideas and images in the brain as dependent on the identity of mind and body (*Eth.*, III, p2ff), hence did not need to find a seat of the soul anymore.

On Leibniz' hypothesis of preestablished harmony, the soul's perceptions corresponded "to what happens in the entire universe but more particularly and more perfectly to what happens in the body which is assigned to it" (GP IV, 458), but it made no sense to search for the place of the soul in the body. In some texts Leibniz revived Aristotelian notions admitting the unity of souls and bodies in "corporeal substances," but the

consistency of this view with monadology is controversial. Any theory of localization or causal interaction of soul and body raised for Leibniz the danger of materialism. In this perspective, he attacked Newton's thesis that the soul interacts with the body in a "sensorium": "To say that it [the soul] is diffused all over the body is to make it extended and divisible. To say it is, the whole of it, in every part of the body is to make it divided from itself. To fix it to a point, to diffuse it all over many points, are only abusive expressions, *idola tribus*" (GP VII, 365–366). On the whole, seventeenth-century metaphysical systems did not contribute to the determination of the seat of the soul, but rather questioned its possibility.

Experimental Traditions and Physiological Hypotheses

Descartes' pineal gland hypothesis stimulated investigations and alternative hypotheses on the seat of the soul among physicians and anatomists. Thomas Willis reduced vital and sensory functions of animals to fluid "animal souls" and elaborated a mechanist explanation of cognitive functions in the brain. He argued that the similarity between the brain of humans and "brutes" indicated that – in order to explain the human difference – we should grant the existence of a rational soul, which conceived ideas in the *corpus callosum* (Willis 1684, 79). Steno (1669, 12) pointed out that this view was not supported by anatomical evidence either. Willis professed himself a follower of chemical atomism, maintaining the animation and sensitivity of bodies. In this tradition, which was very strong in seventeenth-century physiology, different functions could be located in the brain and in other parts of the body.

Henry More supported his claim that the soul is extended by experiments on animal motion, arguing that the latter depended on the spontaneous and direct action of the soul in the muscles. Newton adhered to this theory and conducted more experiments, concluding that not only voluntary motion, but also memory and imagination require the diffusion and agency of the soul in the body. This research motivated Newton's famous parallels between God's omnipresence in space and the human mind's presence in the sensorium (Newton 2004, 91) and the hypothesis concerning the existence of a "very subtle spirit" (ether) thereby "all sensation is excited, and the limbs of animals move at command of the will" (Newton 2004, 93).

A few lines from Newton were sufficient to stimulate speculations and investigations throughout the eighteenth century. David Hartley argued that "the white medullary Substance of the Brain is also the Instrument, by which Ideas are presented to the Mind: Or, in other Words, whatever Changes are made in this Substance, corresponding Changes are made in our Ideas; and *vice versa*" (1749, I, 8). By this "supervenience" hypothesis Hartley claimed that the medullary substance was the seat of the rational soul, while the spinal cord was the seat of the sensitive soul (I, 51). The question was very relevant in Albrecht von Haller's seminal treatise of physiology. Haller defended a Cartesian immaterial and undivided soul, whose "seat [. . .] is in the head." At the same time he followed Newtonian experimentalism and defined three "reactive" forces: elasticity, irritability (reaction without feeling), and sensation or feeling, the latter being a power of consciousness located in the nerves (Haller 1757–1766, I, 488; IV, 467–470).

At the end of the century, the anatomist Thomas Sömmering, in his book *On the Organ of the Soul*, presented new anatomical evidence on afferent nerves in support of the hypothesis that the soul is localized in ventricular fluids. This view, in turn, was supported by biological evidence: "our spirit, that is the whole force of our developed individual, of our I, is [. . .] contained in a drop of soft liquid." But the latter hypothesis required the additional claim of "transcendental physiology" that this "fluid can be animated" (Sömmering 1796, 38, 42). Sömmering's case confirms that locating the *sensorium commune* was not sufficient to solve the problem of the seat of the soul.

Kant's Critique and the Fate of the Seat of the Soul

When Kant wrote an appendix to Sömmering's essay (1796), at the latter's invitation, he argued for the separation of neurophysiology from the metaphysical question of the seat of the soul. Kant granted that anatomy and physiology could find the seat of the "common sense" and that "a faculty of the nerves underlies the mind in its empirical thinking." Indeed, he suggested that chemical processes in ventricular fluids could correspond to association of ideas (AA XII, 33–34). But he maintained that the problem of the seat of the *soul* "as formulated by Haller" must be eradicated from physiology, for it is "not only unsolvable [. . .] but also in itself contradictory": its solution could be compared to an "impossible magnitude (√–2)" (AA XII, 34–5). Kant dismissed the concept of a soul-substance and focused on consciousness, arguing that the latter exists in a temporal dimension and hence it makes no sense to assign a spatial dimension to it. Rather than a "local presence," we are concerned with a "dynamical presence" that "belongs only for the understanding, and [. . .] just for that reason is not spatial" (32). This conclusion introduced a second kind of argument: a priori principles of "pure consciousness" (such as logical or moral laws), however based on bodily processes, cannot be reduced to empirical principles of natural science. The question of the seat of the soul neglects this epistemic boundary and thus raises an unfruitful conflict between philosophy and medicine (Pecere 2016).

Kant's criticism has been considered a watershed for early nineteenth century investigations of the seat of the soul (Hagner 2008, 83), but did not mark its end. Philosophical monism, e.g. in speculative *Naturphilosophie*, stimulated a new wave of localization hypotheses. Many philosophers tended to avoid strict nervous localizations for example, Hermann Lotze preferred to think of unstructured parts of the brain as the most likely seat of the soul. Kant's antireductive claim on the other hand suggested a notion of "organization of the mind" that was independent of the material substrate (Pecere 2018) and left a trace in subsequent notions of "functional" organization. Gall's phrenology raised a huge controversy for its materialism and lack of experimental evidence, stimulating massive experimental investigations on the localization of the brain functions. Different scientists located the soul in the brain cortex, the brain stem, or the spinal cord. The choice was arguably overdetermined by the respective notion of "soul" (Michel forthcoming), showing once more that the quest for the seat of the soul gradually became the project of localizing different aspects of mind and consciousness.

Cross-References

- ▶ Humours, and the Mind
- ▶ Materialism
- ▶ Soul (Nature and Immortality)

References

AA = von der Königlich Preußischen Akademie der Wissenschaften (hrsg) (1900) Kants gesammelte Schriften. Reimer, Berlin

AT = Adam C, Tannery P (eds) (1897) Oeuvres de Descartes. Vrin, Paris

Eustachius a Sancto Paulo (1648) Summa philosophiae quadripartita. Roger Daniel, London

Gabbey A (1995) Henry More lecteur de Descartes: philosophie naturelle et apologétique. Arch Philos 58:364–365

GP = Leibniz GW (1875–1890) Die philosophischen Schriften. Weidmann, Berlin

Hagner M (2008) Homo cerebralis. Suhrkamp, Frankfurt a. M

Haller A (1757–1766) Elementa physiologiae corporis humani, 8 vols. Bousquet et al, Bern/Lausanne

Hartley D (1749) Observations on man, his frame, his duty and his expectations. Richardson, London

Hatfield G (1988) Neuro-philosophy meets psychology. Cogn Neuropsychol 5:723–746

Hobbes T (1839–1845) The English works. J. Bohn, London

Malebranche (1958–) Oeuvres completes. Vrin, Paris.

Michel M (forthcoming) Consciousness science underdetermined. https://www.ergophiljournal.org/

Newton I (2004) Philosophical writings. Cambridge University Press, Cambridge

Nussbaum MC, Putnam H (1992) Changing Aristotle's mind. In: Nussbaum MC, Oksenberg Rorty A (eds) Essays on Aristotle's De Anima. Clarendon Press, Oxford, pp 27–56

Pasnau R (2011) Metaphysical themes 1274–1671. Clarendon Press, Oxford
Pecere P (2016) Kant's Über das Organ der Seele and the limits of physiology. In: Hanna R et al (eds) Kant's shorter writings. Cambridge Scholars Publishing, Newcastle, pp 214–230
Pecere P (2018) Lois, sensations et nerfs. Possibilité et limites de la neurophysiologie des fonctions mentales de Kant à Helmholtz. In: Cherici C, Dupont JC, Wolfe CT (eds) Physique de l'esprit. Hermann, Paris, pp 161–180
Rozemond M (2003) Descartes, mind-body union, and holenmerism. Philos Top 31:343–367
Scribano E (2015) Macchine con la mente. Carocci, Roma
Shapiro L (2011) Descartes's pineal gland reconsidered. Midwest Stud Philos 35:259–286
Singer C (1952) Vesalius on the human brain. Oxford University Press, Oxford
Soemmering ST (1796) Über das Organ der Seele. Königsberg, Nicolovius
Spinoza B (1985) Ethics demonstrated in geometric order [1677]. In: Curley E (ed) The collected works of Spinoza. Princeton University Press, Princeton, pp 408–617
Steno N (1669) Discours sur l'anatomie du cerveau. Robert de Ninville, Paris
Willis T (1684) Two discourses concerning the soul of brutes. In: Dr. Willis's practice of physick, being the whole works of that renowned and famous physician, 2nd edn. Dringer, London