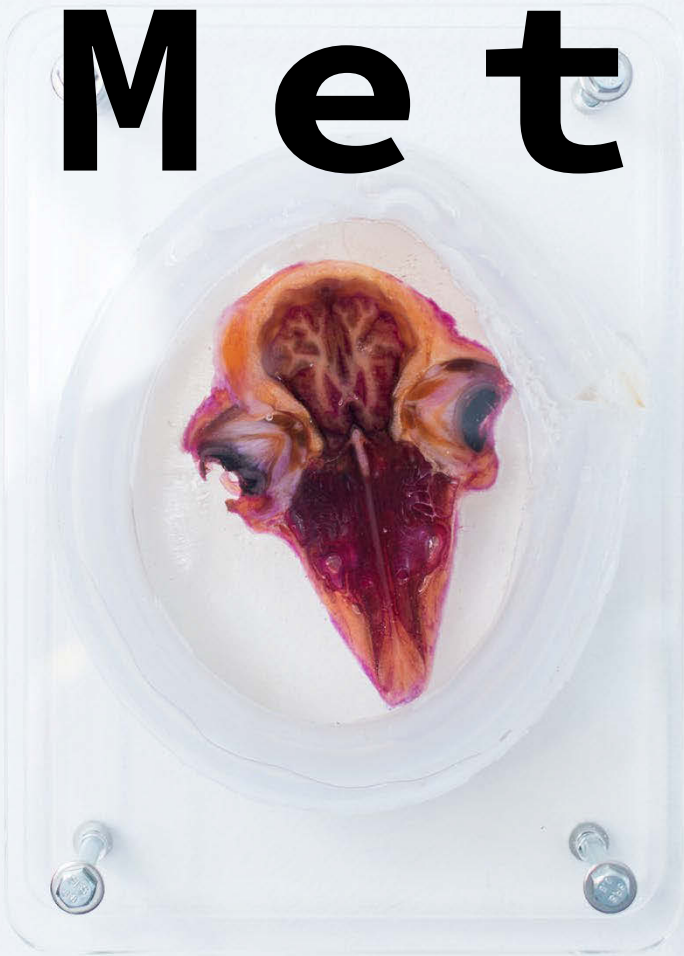




Text and artistic work: Marie Lynn Speckert

h y s i c a l e a s u r e s

An artistic exploration of soul,
weight, and the immaterial

Marie Lynn Speckert is an interdisciplinary artist exploring the synthesis of art, technology, and medicine. She works in the field of performance, sound, and installations. A part of her research includes contributions to the Tangible Music Lab and Institute of Anatomy Leipzig for the development of body interfaces, biomechanical models, and medical preparations. Her internationally showcased pieces were featured in various venues, such as Sølverget Galleri (NO), Venice Arsenale, Radial System Berlin, Microtec (Bozen), and Bæjarhátíð í Búðardal (ISL). She received scholarships from Stiftung Berliner Leben, Kulturstiftung Freistaat Sachsen, and Konrad-Adenauer Stiftung.

This paper delves into the multifaceted dimensions of human existence, intertwining art, philosophy, and science. Beginning with the German distinction between *Körper* and *Leib*, it navigates historical measurement standards, investigations into the soul's weight, and the evolving understanding of consciousness. From Dr Duncan MacDougall's meticulous measurements on his quest for the soul's weight, the paper engages with the intersection of science and metaphysics. It critically examines views on the anatomical seat of the soul, challenging traditional notions and explorations of consciousness and its neural underpinnings. Drawing parallels between the human body and technical systems, the paper contemplates the profound interconnectedness of body, soul, consciousness, and perception.

In the 17th century, René Descartes (1596–1650) conceptualized human beings as comprising a thinking substance (*res cogitans*), characterized by awareness and freedom, and a corporeal substance (*res extensa*), divisible into mechanically

Name:

58106g WEIGHT OF SOUL

Material:

Plastination, silicone, resin, steel, taxidermy

Fotos: by Manuel Wagner

Exhibition: Paul Scherzer Gallery Halle, 2023





»In this context, the body is viewed as an object, a visible and tangible entity, an instrument that can be interacted with and manipulated.«



determined parts (echoing aspects of Plotinus's dualistic concept of the soul). Embracing this dualism, Descartes, akin to his predecessors, faced the task of elucidating the nature of the connection between the mind and the body. Descartes proposed that the mind and body were linked through the pineal gland, positing it as the locus of the soul (Santoro et. al., 2009: 640).

Descartes's assertion that the pineal gland served as the seat of the soul faced early scrutiny. Among the initial critics of Descartes was anatomist Thomas Willis (1621–1675). In his work *De Anima Brutorum*, published in 1672, Willis argued that as the corpus striatum received all sensory information, it should be considered the primary site for the *senso comune*. Acknowledging the corpus callosum's association with imagination and the cerebral cortex's role in memory, Willis reintroduced a tripartite theory of the soul, attributing distinct responsibilities for various dimensions of brain and body functioning (Santoro et. al., 2009: 641).

In the early 20th century, Dr Duncan MacDougall, an American physician and researcher, put forward the idea that a person's soul has a measurable weight and that this weight loss can be observed upon an individual's death. This idea became known as the 'weight of the soul' (Macdougall, 1907:5). MacDougall conducted a series of experiments on dying patients and claimed that he found a weight loss of about 21 grams immediately after the patients died. He concluded that this was the weight of the soul leaving the body at death.

He conducted additional experiments on fifteen dogs in which he found no weight loss after death. Based on these results, he concluded that dogs did not have souls. »If it is definitely proved that there is in the human being a loss of substance at death not accounted for by known channels of loss, and that such loss of substance does not occur in the dog as my experiments would seem to show, then we have here a physiological difference between the human and the canine at least and probably between the human and all other forms of animal life« (Macdougall 1907: 243). Later he attempted to identify the human soul as a »shadow image« on X-rays. (Mikkelsen 2003)

Dr Gerry Nahum, a chemical engineer and physician affiliated with Duke University School of Medicine, formulated a hypothesis suggesting that the soul, or at least consciousness, could be linked to information, which is equivalent to a certain amount of energy. Drawing from Einstein's equation $E=mc^2$, where energy is equal to mass multiplied by the speed of light squared, Nahum proposed that this energy could potentially be measured using sensitive electromagnetic instruments. However, as of 2007, Nahum had not secured funding for experiments to validate his hypothesis. Subsequently, he transitioned to work at Bayer Pharmaceuticals. Notably, Nahum aimed to conduct

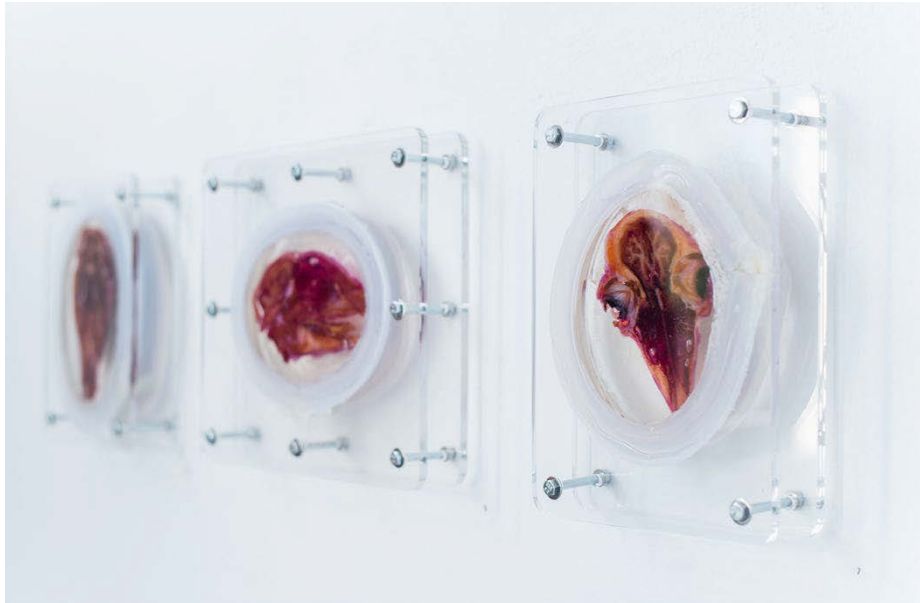
experiments not on humans but rather on leeches as subjects, avoiding the controversial approach taken by MacDougall (Roach 2005).

The idea of an anatomical seat of the soul is controversial in modern science. In science, consciousness and the self are usually viewed as a result of complex activities and processes distributed throughout the brain. Instead, consciousness is a product of the interaction of many brain regions and their complex networking (Tononi et. al. 1998). The term 'soul' usually refers to the immaterial, immortal core of our personality (Kornhuber 2017).

It is not yet known exactly which parts of the brain contribute to consciousness in which situations. Consciousness is a dynamic process involving frontoparietal networks and cortico-thalamo-cortical loops distributed throughout the brain (Tononi et. al. 1998). This varies from person to person. Despite these uncertainties, scientists can consciously identify and analyse brain areas and even convert some of them into control signals for computers or prostheses. The brain, together with the spinal cord, begins as the human control center. It controls and coordinates the processes in the body and processes external stimuli – partly unconsciously, partly consciously (Haynes 2015).

Christof Koch is a renowned neuroscientist who has worked intensively on the subject of consciousness. Koch examines various aspects of consciousness and also looks at the role of electrical processes in the brain. Koch argues that consciousness is based on neuronal activity. He describes the brain as a complex electrical circuit in which information is transmitted through the activity of neurons and their electrical impulses. Koch emphasizes the importance of brain waves and electrical signals in the development of consciousness (Koch 2017). He also emphasizes that there is a correlation between certain brain states and the experience of consciousness. For example, changes in the electrical activity of the brain can correlate with different states of consciousness such as sleep, wakefulness, or certain mental states. The question of the nature of consciousness and its connection to neuronal processes continues to be an active field of research (ibid.).

The book *Phi: A Voyage from the Brain to the Soul* by Giulio Tononi is a major publication in which Tononi explains the foundations of his Integrated Information Theory (IIT) and explores its application to the nature of consciousness. IIT postulates that consciousness is linked to a system's ability to integrate information. The central concept of IIT is the parameter Phi (Φ), which quantifies the amount of integrated information in a system. In simple terms, this means that a system must not only process information in order to be conscious, but also that this information must be connected in an integrated way. IIT differs from other theories of consciousness in its focus on information



and its integration. Tononi argues that consciousness depends not only on the amount of information, but also on the way this information is connected within the system.

When I reflect on the perspective of a taxidermist and artist, where I dissect the body into its individual components and treat it as material, fewer thoughts about the examination or discovery of the soul come to mind. Nevertheless, during the reconstruction and staging of a sculpture, I encounter similar considerations. The addition of ›life‹ and ›character‹ to a taxidermy specimen proves to be a creative ability of the taxidermist. When observing taxidermy specimens in museums, the animal is often presented in a heroic body position, whether it be in the act of hunting, leaping, or displayed as a trophy on the wall. However, the death of the animal has stripped it of any gesture and vitality. Through taxidermy, it takes on a new identity. It's not the specimen itself that acquires a character, but rather the viewer projects one onto the specimen, derived from their own experiences and perceptions. The taxidermist, while the artist imparting expression to the taxidermy specimen, does so within the minds of the viewers. Consequently, it is nearly impossible, for instance, to perfectly reconstruct a deceased pet as it was in life, as movements, character, expression, and ›life‹ can hardly return to the empty body. The taxidermy specimen lacks a soul, but the artist and taxidermist can simulate one. This is something art can achieve that science cannot, as, in my opinion, the soul is not a physical entity. But maybe the artist can paint a likeness.

»Der Körper ist nicht mehr zurückzuverwandeln in den Leib. Er bleibt die Leiche, auch wenn er noch so ertüchtigt wird« (Horkheimer et. al. 1991: 248).

In conclusion, this exploration of the body, consciousness, and measurement standards unveils a dynamic interplay between the tangible and intangible aspects of human existence. From meticulous measurements to the controversial pursuit of the soul's weight by Duncan MacDougall, the discourse on the body's essence extends to modern hypotheses linking consciousness to information and energy.

The intricate dance of the brain's neural processes and the evolving understanding of consciousness challenge traditional notions. From Descartes's pineal gland to contemporary theories like Integrated Information Theory (IIT), our exploration underscores the complexity of consciousness and the quest for a tangible understanding of the intangible. The quest for quantifiable data, whether it's the weight of the soul or the neural processes underlying consciousness, reflects the enduring human curiosity. While the notion of a measurable soul remains contentious, current insights lead us to a more profound understanding of the interactions within the brain and their role in constructing our individual realities. The structure of human perception shares parallels with technical systems where physical stimuli are transformed into sensory perceptions.

The relationship between the body, soul, consciousness, and perception remains a captivating and expansive field of research. It continues to challenge and enrich our understanding of the fundamentals of human existence, selfhood, and our place in the world. As we journey further into the depths of these mysteries, we uncover not only the intricacies of our physical and mental realms but also the profound interconnectedness of our human experience.

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