



## Personal Identity and Head Transplant: A Psychological Analysis

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# Personal Identity and Head Transplant: A Psychological Analysis

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Personal identity as intended by embodied cognition theories is deeply challenged. If the sense of selfhood is maintained through the reciprocal dialogue between our cognition, which depends upon the experiences we do by way of the body, and our body, whose sensorimotor capacities are unique and embedded in our broader bio-psychological context, what could be the impact of the head transplant on personal identity? In other words, the body is our coherent way to be in the world and experience it, and cognition is the mean through which we transcend our body and become involved in the world recognizing ourselves as an "I," knowing that different sensations and feelings—ways of being—belong to the same individual, a signifying totality. Hence, who will be the HEAVEN-GEMINI survivor? Should we reconsider the notion of personal identity? How can we deal with the potential cosmetic purpose of this procedure? The feasibility and success of the head transplant depend also on the preservation of the integrity of personal identity and the sense of selfhood,

which should be a fundamental goal of research, right next to concerns about the technical aspects. As health care professionals and researchers, we must look into psychological well-being as well as physical well-being.

As technological and medical knowledge advances, it comes as no surprise that surgical procedures for body-to-head transplantation (BHT) have been under investigation over the past few years. The medical team led by the Italian neurosurgeon Sergio Canavero proposed the HEAVEN (head anastomosis venture; Canavero 2013) and GEMINI (spinal cord fusion; Canavero and Ren 2016) protocols—two procedures that should assure the successful transplantation of a healthy brain (body-recipient, the head) on a brain-dead body (body-donor). The team of doctors had scheduled the first head transplant to be performed in a human for the end of 2017, which turned out to be an optimistic prediction, considering the safety and feasibility issues related to the two procedures stemming from the uncertain and premature results of clinical trials in animal models.

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In addition to the medical issues that such a procedure can obscure, but that are not the focus of this commentary, many ethical concerns have arisen from both the scientific community (Brennum 2016, Furr et al. 2017) and the general public. The already known concerns, related to organ transplantation in general, largely involve an attempt to minimize risks and optimize benefits. Indeed, even if the potential benefits of a BHT are striking—think of a quadriplegic patient, for whom medicine is currently powerless, who could achieve standing position and gait, and thus autonomy and a better quality of life—the risk of serious damages including death is too high.

However, the new and crucial challenge arising from the head transplantation is related to neurocognitive aspects and the nature of personal identity: Who will be the HEAVEN–GEMINI survivor? The “head-owner,” the “body-owner,” or a new individual?

### EMBODIED COGNITION THEORIES AND PERSONAL IDENTITY

Before examining the relationship between head transplantation and personal identity integrity, we should disambiguate the meaning of three concepts often used interchangeably: *personhood*, *brainhood*, and *selfhood*.

While personhood in Western culture is the status, the condition of being an individual who is alive, aware, has feelings, has cognitive abilities, and controls his own behavior, brainhood is a concept belonging to neuroscientific research. According to Vidal (2009), what makes a human being an individual is the property of being a brain, which has its own ways of functioning and its contents. In this perspective, identity and the brain are the same thing and thus the individual, now turned into a *cerebral subject*, depends on the integrity of brain function.

According to the hermeneutic–phenomenological perspective that I will consider, selfhood refers to the way in which every individual is present to himself and prereflexively conscious of his actions, thoughts, and feelings in everyday life and engaging with others. In other words, selfhood refers to the ability of a person to always recognize herself as the same individual, with the characteristics of continuity, unity, and privacy, and consistently with her ways of being in the world. If some scholars still argue that personal identity depends on psychological continuity—the continuity of one’s own memories, thoughts, emotions, feelings—others claim that it is provided by biological–bodily continuity—based on the complex interrelation between external inputs, regulatory systems, and patterns of perception (Pascalev, Pascalev, and Giordano 2016; Mori 2016). However, this Cartesian dualism has been rejected in favor of a new kind of dualism, which nevertheless continues to engage the mind–body problem in the construction of personal identity.

Embodied cognition theories, which have their roots in Kant’s philosophy and have been recently developed by

philosophers and neurobiologists such as Merleau-Ponty, Damasio, Varela, and Maturana, state that personal identity depends strictly on the intrinsic bond between the cognition of the individual and the body of the individual. In defining the term *embodied*, Varela and colleagues stated:

By using the term embodied we mean to highlight two points: first that cognition depends upon the kinds of experience that come from having a body with various sensorimotor capacities, and second, that these individual sensorimotor capacities are themselves embedded in a more encompassing biological, psychological and cultural context. (Varela, Rosch, and Thompson 1992, 172–173)

If the body is our (coherent) way to be in the world, cognition is the way in which we transcend our body and become involved in the world through recognizing ourselves as an “I,” knowing that different experiences and emotional tones—ways of being—belong to the same individual (Me). This continuity, also called permanence of the Self, is built through the narrative identity:

the narrative recomposition of the experience of living reconfigures the variety of one’s own experience into a signifying totality, while concurrently delineating the person to whom those actions and emotions refer. (Arciero and Bondolfi 2009, 60)

In this perspective, if we take away from a person her ways of being in the world and her emotional tones—replacing one’s body with the body of someone else, likely possible in the near future through the HEAVEN–GEMINI procedure—what remains is only a thinking thing, a *res cogitans*. How could this thinking thing, the head receiving the body, bind to a new experience of perceiving the external world? If the brain is the organ that recognizes sensorial experiences coming from the body as belonging to Me, and translates them into meaningful episodes intertwined in a coherent narrative identity, how could a transplant survivor deal with the mismatch between the identity of the head and the foreign and unfamiliar identity of the body? From the psychopathological literature, we know that the inability to integrate different personal experiences into a coherent narrative reconfiguration often lead to the emergence of pathology, which may take different shapes. Should we consider the transplant survivor as an individual with potential identity disturbances, unable to recognize himself and his new experiences?

Interestingly, an attempt to address this issue is the proposal of an augmented virtual reality training for the body-recipient prior the surgery, which should prevent the triggering of dysfunctional behaviors and psychological burden that could rise from experiencing a foreign body (Iamsakul et al. 2017). Even if these kinds of techniques are conventional and effective in neurorehabilitation

for neurological injuries, as well as for prosthetic limb implant, dealing with a body completely new in size, shape, and even sex and age may not be just a matter of some sessions of training and can be overwhelming for the individual identity in any case. In fact, external dimensions of the body, such as size and shape, and other body parts like hands, legs, eyes, mouth, and sexual organs appear to be fundamental for personal identity, whereas our inner organs, even of crucial importance for our life, do not contribute to the outer perceived identity. Even though these criteria are in part culture-based and may depend also on personal beliefs, it is undeniable that corporeity—the being embodied, “the same each and every time, in the same things with the same emotional tones” (Arciero and Bondolfi 2009, 71)—contribute to the perception of the sameness of my experience, both from a first-person standpoint and an objective one.

### CONCLUSIONS

Even assuming a complete physical recovery after a head transplant, is it enough to consider the whole procedure safe for the individual undergoing it? Should we reconsider personal identity? Do we have to accept the notion of (pure) *brainhood* in order to agree with the HEAVEN–GEMINI procedure? If there is someone willing to undergo the procedure, should we consider personal identity definition as a personal matter? These and other questions remain open: neither thought experiments nor animal experiments can tell us anything about this issue. The former still highlight intricate philosophical and ethical themes; the latter, although promising, cannot yet rely on sound experimental procedures through which we can study consciousness and awareness in animals. ■

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# Is There a Place for Humility in HEAVEN?

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The primary intention of Ren and Canavero’s article (2017) is to respond to various criticisms raised by their proposal of the head anastomosis venture (HEAVEN) procedure. Before we launch a deeper analysis of Ren and Canavero’s article, I would like to draw attention to a sentence, “Unfortunately, humility is not a part of medical lore,” where they refer to the arrogance and unsuccessfulness of medical science to recognize the importance and breakthrough of the HEAVEN procedure. Interestingly, with

this repeated citation, they acknowledge a familiar criticism of medical lore, so that we would expect that they provide a good example of the appreciation of humility in their present article.

However, at the beginning of the article’s abstract, they call for a sound ethical debate based on equipoise and knowledge, claiming that thus far the debate and considerations are without a proper grounding in knowledge and science. Furthermore, they wonder about the ethical outrage they have

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