

You Are (Not) Your Brain: Incompatible Images of Human Beings in The Neurosciences

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Abstract

On an unprecedented scale, contemporary neuroscience confronts us with claims about our essential nature as human beings. These vary from you are your brain to you have no free will. Despite the prevalence of these claims in the neurosciences on the big questions about ourselves, contemporary neuroscience of consciousness does not speak with a unified voice. Although mainstream neuroscience of consciousness claims that you are your brain, a minority tradition argues you are not your brain but that you have a brain. The substance of these two traditions is presented in this article. An evaluation of the impact of the neurosciences on the big questions of being humans should as a first step appreciate the significance that the neurosciences do not automatically provide a solution to these age-old questions about human beings but display a spectrum of views.

Keywords: neuroscience of consciousness; human being; brain; you are your brain; hylomorphism; Cartesian legacy

Neuroscientific Research and Being Human

On an unprecedented scale, contemporary neuroscience confronts us with claims about our essential nature as human beings (see Crick 1994, Eagleman 2015, Swaab 2014). Besides the remarkable progress in clinical neuroscience and the insights into the way in which the brain works, neuroscientists over the last few decades (in what is broadly referred to as the neuroscience of consciousness), also entered the domains that previously were reserved for the humanities, philosophy and religious traditions, namely, the big questions of life. Given the advances in experimental neuroscience and the insights of neurology and neurobiology, for many people, these automatically translate into insights about what it is to be human.

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Nobody interested in the human condition can escape the potential impact of the neurosciences on these big questions about being human. The sheer number of publications in the neurosciences on aspects of being human is evidence for this (see Fuchs 2018; Jasanoff 2018; Swaab 2014). These views vary from you are your brain to the self is an illusion created by the brain and free will does not exist because it is your brain that decides. These, to say the least, sensationalist views undoubtedly provide remarkable “neuroscientific” answers to age-old philosophical questions about being human. One way or another, they all are variations of the central claim, you are your brain.

However, this is far from accepted because not all neuroscientists (of consciousness) agree on this. In fact, two broad and incompatible traditions or frameworks currently exist. These contain distinct views on being human and on what the brain is and how it works. One framework, to be referred to as mainstream neuroscience of consciousness produces neurocentric views of human beings: you are your brain. The other, a neuro-ecological perspective produces humanistic views of human beings: you are not your brain but instead, you have a brain. Obviously, either of the two must be mistaken because both cannot be true at the same time. You cannot be your brain and have a brain at the same time. Which one is to be preferred, is an issue for another day. The aim of this article is to present in some detail the two divergent views of human beings in the neurosciences.

In a broad outline, these views are based on completely different theoretical frameworks that are associated with the Aristotelean tradition and the Cartesian revolution of the 17th century, respectively:

The conceptual framework within which neuroscientific knowledge grew originated in Aristotelian thought, but it was subsequently transformed by the Cartesian revolution in the seventeenth century ... The Aristotelian conception of the *psuchē* and the Cartesian conception of the mind, which displaced it in the seventeenth century, constitute in certain respects two fundamentally different ways of thinking about human nature, which have informed neuroscientific reflection on the integrative action of the nervous system throughout the ages (Bennett and Hacker 2022, 21, 22).

The result is incompatible naturalistic explanations of the human condition in the neurosciences. They contain distinct views not only of what a human being is but also of what the brain is. To be sure, it has long been recognised that there is a close relationship between the brain and the self or person—there is just no agreement on what this relationship is. *Brain* and *self* are variously portrayed in these traditions.

A Humanistic View: Human Beings as Embodied Organisms

The humanistic view of human beings represents a recovery and development of the Aristotelean tradition that precedes the Cartesian legacy of mainstream neuroscience of

consciousness by centuries and contains a correction to the nested assumptions of that tradition.

Human Beings as Organisms with Particular Features

A human being is an identifiable object in the world that can be described with the term “person.”¹ A person is not something composed of mind and body or body and an abiotic brain but is above all a living being, ie a psychophysical unity, a monistic entity. The essence of a human being is not something inside the body or brain but is to be found in the person as a whole with all its mental and physical states. As Fuchs says, a person is “an embodied subjectivity” (Fuchs 2021, 125). In this view, a human person is an embodied, physical thing that is constituted by means of embodiment and aliveness. In the description of Bennett and Hacker (2022, 3), a human being “is a psychophysical unity, an animal that can perceive, act intentionally, reason and feel emotions, a language-using animal that is not merely conscious, but also self-conscious—not a brain embedded in the skull of a body.”²

As living organisms, as objects in the world, human beings come with certain fundamental features and characteristics—human beings have subjectivity, a self, and consciousness but they do not “have” these like having a coin in your pocket; having them is not being in an ownership relationship to them (see Bennett and Hacker 2022, 109 for an explanation of this). It is like having a pain, it refers to a mode of being of the organism and not something inside of it. Thus, consciousness is not something human beings have, but is “the activity of a living being, ie a perceiving, feeling, and moving organism in relation to its environment” (Fuchs 2021, 21). Likewise, being a person is not something a body has but is a mode of being of certain living organisms.

As subjective beings that have consciousness, a person is a body and has a body. Therefore, the living organism or person exists by virtue of “aspect-duality” (Fuchs 2018, 80). Instead of a mind-body dualism, a person consists of psychological and physiological processes that have the living creature as their carrier (Fuchs 2018, 137). The basis of this argument is a notion of

human beings as unified living organisms, and yet at the same time under a dual aspect both as a subjective and physical body (*Körper*) ... A person is a lived body (*Leib*)

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- 1 A whole family of concepts such as soul, person, I, me, and self, Pyysiäinen says, “all represent attempts at conceptualizing different aspects of human agency” (2009, 57). He could have added mind, consciousness and subject and even though they all have different connotations, they refer to the same aspect that makes us human beings (see also Vidal and Ortega 2017, 310). How to conceptualise being human remains one of the most elusive scientific challenges of our time. As will become clear, even this challenge is differently formulated in distinct interpretive traditions. Notably, the most popular in mainstream neuroscience of consciousness as to how the brain produces consciousness.
 - 2 Elsewhere they state: “Human beings are (actually or potentially) persons, that is, they are intelligent, language-using animals that are self-conscious, possess knowledge of good and evil, are free and responsible for their deeds and have rights and duties” (Bennett and Hacker 2022, 92).

inasmuch as his or her subjective states, experiences, and actions are bound to the medium of the body ... Hence, the lived body is never only subject and never only object, it rather is a ‘subject-object’ (Husserl 1952, 195) or it is both *Leib* and *Körper* (Fuchs 2018, 73, 74).

One more fundamental feature of human beings that sets them apart from other objects in the world is what can be called a horizon of possibilities with an openness to the future. Olivier (2017, 12) describes this feature with the notion of “care” in a Heideggerian sense as an attribute of *Dasein* of which concern is an expression. This is the feature of human beings that contains the view to be open to the future with possibilities for development. Employing the terminology of Bloch, Fuchs (2022, 2) describes this feature as the “not-yet-conscious” as a horizon of possibilities that can impact a person’s life (see also Fuchs 2021, 141). As an open-ended organism, a human being has the potential for change and choice.

This humanistic view of human beings in the neurosciences is a modern development but with the help of a very old philosophical tradition.

Persons as Organisms with Wholes and Parts: An Aristotelian Legacy

The humanistic view of human beings³ is based on a view (philosophy) of matter that goes back to Aristotle⁴ and contains several related insights. These include that things consist of parts and wholes, things exist as and form wholes and there are bigger and smaller things that exist, depending on their purpose. Roughly speaking this varies from small atoms to large galaxies and even though large things are made up of small parts, they exist in the world not just as the aggregate of their parts. In this view, wholes have properties that their parts do not have. The understanding of human organisms is modelled on this view of matter which is called hylomorphism.⁵ It can be described by means of three related sets of features.

First, the basic idea is that every physical object is composed of matter and form, or a substance is “a composite of a substantial form and prime matter; related to one another as actuality and potentiality” (Feser 2019, 42). In this view, matter, considered just by itself, is indeterminate and merely potentially a thing of a certain kind. A form, meanwhile, is a nature or essence that might be shared by multiple instances of a kind (as the forms of being a stone, a tree, a dog, or a human being). The form is what actualises matter’s potential to be a thing of a certain kind; stone is just a different sort

3 The objective here is not an original exposition of Aristotle’s views but a presentation of them, especially as it functions in neuroscientific studies of consciousness. This discussion and examples rely on Feser (2019; 2023), Doyle (2021) and Fuchs (2018).

4 The Aristotelean tradition which lasted for centuries until the 17th century, leads to “an essentially ‘organic world picture’” (Feser 2019, 65) but continues to inform a humanistic view of human beings.

5 The term is made up of the Greek words for matter (hyle) and form (morphe).

of matter from wood, and a dog is a different sort of thing from a bird and each sort of matter has its own properties—wood will burn when you light it, and stone will not.

Secondly, things are ordinarily made up of parts that constitute wholes that are different from the sum of the parts or a combination of the properties of the parts. For example, water is a substance that has a certain form and properties but consists of two substances (oxygen and hydrogen) that independently have their own properties but do not exist in water in the way they do separately. Water has properties that neither of these two substances have in themselves or in their own properties taken together. Implicit in this view is that things are different from each other because they are made up of different components to constitute new forms. Even though all material objects (humans included) can be seen as made of atoms and particles, as wholes they consist of substances and properties that are different from those entities.

Thirdly, the properties of the parts are different from that of the whole and this is referred to as the scale of things. Things exist or are real at levels or scales of reality. Things consist of parts but exist as wholes—distinctive wholes exist for purposes. The scale of things can be explained with the red apple example. At the ordinary scale of human perception, the surface of the apple is truly red but none of the atoms are red and at the atom scale the apple is also not red (the concept of “red” does not even apply to atoms). When trying to say whether an apple is red or not, our analysis should be conducted at the relevant scale of the natural object. It is a fallacy to think the truth is to be found by zooming in or zooming out from that level (see Doyle 2021, 274f).

What applies to ordinary objects also applies to living organisms. A dog is different from a bird in that its parts have properties that can only be understood in terms of the whole animal (paws, legs, etc.) but together make up the characteristics of a dog (which do not build nests or catch worms for its offspring). Human organisms as persons exist by virtue of being composite creatures with unique properties that belong to humans only (while they share many properties with other animals, they have the ability of language and human consciousness that is different from that in other animals). Thus, it is only of human beings or persons that one can say that they can do certain things or have certain characteristics.

Based on this philosophical view, a human being is seen as a living organism that although unified, contains matter and form, a body and a *psuchē*⁶ and human beings have features that their parts do not share or contain. None of these features belong to a part of the person or body, least to the brain.⁷ Only of a human being (and what

6 In this context the *psuchē*, which is most often translated as “soul” is a biological concept carrying the principle of animal life and is not the same as the Christian idea of an immaterial soul (see Bennett and Hacker 2022, 22).

7 In the explanation of Bennett and Hacker: “It is the animal that perceives, not parts of its brain, and it is human beings who think and reason, not their brains. The brain and its activities make it possible

resembles and behaves like a human being) can it be said that it has sensations; it can see or is blind, it can hear or is deaf, is conscious or unconscious (see Bennett and Hacker 2022, 82). As identifiable objects in the world, living beings “are not adequately comprehended when taken as systems that can be observed from the outside, whether as mechanisms of particles, as cybernetic control circuits, or as algorithms of information” (Fuchs 2021, 21). In other words, having consciousness and a self are features that belong to certain biological organisms.

Brain, an Organ of Mediation

This view of human beings as living organisms includes the brain as an organ of the body. It does not deny the importance of the brain but understands it to be an integrated part of a larger dynamical system that includes the body as well as the physical, social, and cultural environments (see Gallagher 2017, 11, 163). Instead of the separation of an abiotic brain from the body, this perspective is based on the co-evolution of brain and body and maintains the brain functions the way it does because it is dynamically coupled to the body and environment; the brain is an integral part of the body (see Saniotis and Henneberg 2011, 186–187). Fuchs (2018, 61) explains this in the following way: “over the course of evolution, the brain has developed as an organ whose complexity enabled the emergence of feeling, emotion, thought, and volition, and which became the crucial (though not sufficient) basis of integrative conscious experience.” Two implications follow from this.

One, the brain is a complex organ in the complex biological system that produces conscious experiences. The brain is not the generator of consciousness but only an organ, or as Fuchs (2018, 67) says, “an organ of a living being in its environment;”⁸ it is an “organ of mediation and resonance, not the creator of our world” (Fuchs 2018, 290).⁹

The second implication is the emphatic denial, you are not your brain; instead, you have a brain. In contrast to the claim that you are your brain, from a neuro-ecological perspective it is the case that human persons have brains, but they are not brains (see Noë 2009, 23–6; Fuchs 2018, 279). This is a rejection of the mereological fallacy that reduces personhood to brainhood and effectively replaces neurocentrism with an

for us—not for it—to perceive and think, to feel emotions, and to form and pursue projects” (2022, 3; see also Bennett and Hacker 2022, 18).

8 Elsewhere Fuchs (2021, 26) explains it thus: “The brain is not an information-processing or computational apparatus, but a highly living, plastic, and dynamic organ. But the most important thing is that this organ cannot fulfil its functions by itself. It is an organ of the body, with which it is closely linked.”

9 Many similar metaphors are used to explain this role of the brain. Elsewhere Fuchs says that brains or a central nervous system (and not only the brain) which is seen as the organ of translation, can be described as “an organ of interrelations” (2018, xvii). In a similar argument, Glannon (2011, 12) suggests that the brain be conceived as “an organ that mediates the interaction between the organism, or human subject, and the environment.”

embodied and enacted view. A neuro-ecological perspective not only resituates the brain itself in terms of its place (privilege) in a larger system, but it replaces the features linked to the brain-body and body-world dualisms that characterise mainstream neuroscience of consciousness.

Neurocentric Views of Mainstream Neuroscience of Consciousness

The dominant view that developed in mainstream neuroscience of consciousness over the last few decades can be summarised by the slogan *you are your brain*. This neurocentric image is iconically exemplified in the title of Dick Swaab's book, "We are our brains." He explains it thus, "Everything we think, do, and refrain from doing is determined by the brain. The construction of this fantastic machine determines our potential, our limitations, and our characters" (Swaab 2014, 3). The most famous equation of the brain with the person is probably Crick's (1994, 3) "astonishing hypothesis" in which he claims that you, "your joys and your sorrows, your memories and your ambitions, your sense of personal identity and free will, are in fact no more than the behavior of a vast assembly of nerve cells and their associated molecules." These are far from isolated views because most neuroscientists of consciousness agree on this.¹⁰ In these views, the self, mind or consciousness is the "mental" that is opposed to the "physical." It is, for example, evident in Hobson's (2001, 18) explanation of the brain-mind concept to describe the close interdependence of subjective experience and brain activity: "I use the hybrid term brain-mind as a temporary compromise between dualism (which I reject) and monism (which I can't quite prove)." The very term brain-mind expresses the identification of the mental with the physical brain.

Homo neuralis is the current dominant image of human beings in the neurosciences. And it should not be underestimated to what extent it even permeated popular culture to affirm that we are brain-people (see Vidal and Ortega 2017, 11). Although the idea that human beings are their brains is fairly recent,¹¹ it has deep-seated roots that go back to the mind-body problem formulated by Descartes in the 17th century and cannot be divorced from those historical developments of ideas about us. However, for the first time in human history, humans see themselves as equal to one of their organs while that organ itself is equated with one of the machines humans created, the digital computer.

Human Beings as Neural Entities: The Cartesian Revolution and its Legacy

It is no secret that the neuroscience of consciousness is deeply embedded in the transcendental mind-body problem that is famously associated with Descartes. Thus,

10 A similar sentiment is, for example, expressed by Eagleman (2015, 5), "Our thoughts and our dreams, our memories and experiences all arise from the strange neural material. Who we are is found within its intricate firing patterns of electrochemical pulses."

11 Although Hippocrates's words are often quoted as saying that "[m]en ought to know that from nothing else but the brain come joys, delights, laughter and sports, and sorrows, griefs, despondency, and lamentations." Vidal and Ortega (2017, 39–43) show that those words should be understood within their context where they did not attribute these functions to the brain itself but to the humours and bodily fluids that carry the "animal spirits" in the body.

the framework within which the idea that you are your brain developed and functions is that of the Cartesian mind-body problem. Descartes marks a turning point in Western thinking about human beings. In the words of Beauregard (2015, 23), “Descartes effected a disruption in a unified vision of person that existed prior to the modern philosophical period.”¹² And its lasting effect is the mind-body dualism.

The Cartesian transformation of the conception of the mind or soul can be summarised by means of four features:

First, he held that the mind is the whole soul ... Unlike Aristotle, he conceived of the soul not as the principle of life, but as the principle of thought or consciousness ... Second, Descartes redrew the boundaries of the mental ... A person is a *res cogitans*, a thinking thing ... The identification of the mental with consciousness remains with us to this day and casts a long shadow over neuroscientific reflection ... Third, he held that the union of the mind with the body, though ‘intimate’, is a union of two distinct substances ... Descartes intimated that a human being is not an individual substance, but a composite entity. The person (the ego), on the other hand, is an individual substance, and is identical with the mind ... Fourth, just as he conceived of the mind as having a single essential property—namely, thought—so too he conceived of matter as having a single essential property—namely, extension (Bennett and Hacker 2022, 34–35).

Taken together these features make up the Cartesian legacy (or framework). Although most contemporary neuroscientists reject his substance dualism of the mind (*soul*) as a separate substance from the body, the majority are trapped in the Cartesian framework and his legacy. As Holmes (1993, 202) points out, “Descartes galvanized the discussion of the problem of mind by analysing it in the terms of dualism with which modern discussion usually begins and, unfortunately, ends” (see also Fuchs 2018, 137). This can be illustrated by means of a brief historical overview of the insights that started with him and resulted today in views of the brainhood of the neural self. The aim is not to establish the historical picture but to use existing insights to illustrate the current state of affairs.¹³

This historical process can be described by means of a three-step development of ideas from the “thinking thing” of substance dualism through the mind-brain dualism to the fictitious mind in the brain of “scientific dualism.”

12 In the words of Bennett and Hacker (2022, 34), “Descartes (1596–1650) marks a profound upheaval in European thought. Although some aspects of his philosophy are still rooted in scholastic Aristotelian thought (and others in Augustinian thought), the novelty of his philosophical reflections is the starting point for modern philosophy. Much of his neuroscientific research proved wrong, but it provided a crucial impetus and shift of direction for neuroscience.”

13 This picture is much more complex than what this overview can provide, as can be seen in the historical overviews of Bennett and Hacker (see 2022, 15–54) as well as Frith and Rees (2017) that serve as the basis for this article.

From Substance Dualism to the Mind-Brain Dualism

Descartes replaced Aristotle's monistic idea of the body that exists for the purpose of the capacities of the *psuchê* to function (analogous to the relation of sight to the eye; the eye exists for the sake of sight), with the *res cogitans*, the "thinking thing." Put differently, he replaced the idea of the psychic pneuma with that of the "mind" (or "soul") as a second substance which interacts with the body in the pineal gland (Bennett and Hacker 2022, 36).¹⁴ Secondly, he attributed seeing to this mind or soul rather than to the living person. However, it was a close contemporary of him, the Oxford professor of Medicine, Thomas Willis, who shifted attention away from the flow of animal spirits in the ventricles to the cortex as the biological basis for psychological attributes (see Bennett and Hacker 2022, 38–40). Willis directed the mental functions to locations in the brain. Consequently, for more than a hundred years, attention to different areas in the cortex served to locate such mental functions in the brain itself (instead of interacting in the pineal gland). One more philosophical innovation from the 17th century belongs to Locke who separated "substance and personal identity, the 'man' and the person" (Vidal and Ortega 2012, 47). A person is a *thinking thing*.

However, what remained constant until the beginning of the 20th century was the notion of the mental as a separate substance from the body. Escaping the notion of substance dualism in the neurosciences can be described by means of Bennett and Hacker's three-generational picture of neuroscientific research in the 20th century.

Charles Sherrington represents the first generation of neuroscientists at the beginning of the 20th century. Like Descartes, he maintained that there are two separate substances, an energy system (matter) and a mental system (mind)—the one spatio-temporal and the other invisible and intangible (Bennett and Hacker 2022, 56). However, although he remained dualistic in his view of human beings, he was a beacon in consolidating insights about the nervous system and the cortex. Consequently, his students, the second generation of neuroscientists developed strong interests in the mind-brain problem (instead of the mind-body problem), but they remained dualists. For example, Eccles and Penfield conceived of human beings as animals in whom the mind, which they thought of as the bearer of psychological attributes, is in liaison with the brain (Bennett and Hacker 2022, 3). Eccles's view was based not only on Popper's philosophy but on empirical work on the readiness potential of the brain and split-brain patients (Bennett and Hacker 2022, 63–66). The mind as the locus of the self, was intricately connected to the brain. The question of how an immaterial entity such as the mind can interact causally with neurons was left unanswered by all these theorists. Instead of the pineal gland, Eccles left a legacy of the whole brain where the two substances interact.

This is where the third and contemporary generation scholars picked up the baton. What the first two generations of scholars conceived to be altogether improbable "is precisely

14 For Descartes the mind was not located in the brain but the pineal gland in the brain was the physical place where it interacted with the body (Vidal and Ortega 2017, 43).

the route that is currently adopted by the third generation of neuroscientists, who ascribe psychological functions to the brain” (Bennett and Hacker 2022, 78). This historical development is clearly summarised by Bennett and Hacker (2022, 79):

Leading figures of the first two generations of modern brain-neuroscientists were fundamentally Cartesian. Like Descartes, they distinguished the mind from the brain, and ascribed psychological attributes to the mind. The ascription of such attributes to human beings was, accordingly, derivative—as in Cartesian metaphysics. The third generation of neuroscientists, however, repudiated the dualism of their teachers. In the course of explaining the possession of psychological attributes by human beings, they ascribed such attributes not to the mind but to the brain or parts of the brain.

This three generational picture of 20th century neuroscience of consciousness illustrates how the mind-body problem of substance dualism was transformed into the mind-brain problem of the current generation. However, the mind-brain problem did not escape the Cartesian legacy.

From the Mind-Brain Dualism to Scientific Dualism

Despite claiming to reject substance dualism, most neuroscientists do not escape dualism and dualistic thinking. A recent description of current neuroscience of consciousness captures some of this:

Today, most scientists do not accept dualism, instead believing that mind somehow emerges from the physical properties of the brain. However, the distinction between mind and matter is still perceived as being so clear-cut that explaining how mind can emerge from matter ... remain[s] the hardest problems facing the student of consciousness (Frith and Rees 2017, 3).

The constituting assumption here is the physical–mental duality (mind and matter entities) that goes right back to the 17th century (see Fuchs 2018, 26; Holvenstot 2010, 196 for a discussion). Within the framework of this duality, two processes took place simultaneously among the third generation of scholars. The first was the transformation of the mind-brain dualism into a brain-body dualism and second, the redefinition of the brain itself.

Once the mind was conflated with the brain, the brain ceased to be an organ like other organs but obtained the features of the “mental.” The mind-brain conflation Jasanoff labels “scientific dualism” as the tendency to separate the brain from the rest of the body and to emphasise the inorganic qualities of the brain at the cost of its organic aspects that relate to other biological entities. In effect, this sets up a brain-body distinction that parallels the age-old metaphysical distinction between mind and body (Jasanoff 2018, 37–38). The Cartesian dualism of mind and body thus lives on in current brain

research as an abiotic brain within the body¹⁵ exemplified by the computer metaphor and its computational functions. These computational descriptions of the brain share a tendency to minimise the organic aspects of brains and minds and emphasise inorganic qualities that relate most distantly to other biological entities.

The abiotic images of brains as computers lack the wet and squishy qualities that characterise other organs and tissues and “scientific dualism provides a mechanism for keeping our minds sacred—distinguishing the functions and processes of the brain from those of mundane bodily processes like digestion or cancer, and perhaps even guarding our brains from being eaten” (Jasanoff 2018, 39). He explains it thus, “Depictions of the brain as inorganic, hypercomplex, functionally self-contained, and autonomously powerful present the brain as a surrogate for the disembodied soul and feeds the attitude that I have termed scientific dualism” (Jasanoff 2018, 140). The result is a peculiarly hybrid doctrine, composed of a disembodied mind and a disembodied brain, which Fuchs calls “Cartesian materialism” (Jasanoff 2018, 26). This abiotic brain does precisely what the non-material Cartesian mind or soul did for the first two generations of neuroscientists—it consists of a bodiless entity (see Fuchs 2018, 44–55).

In summary, the rejection of substance dualism is not to abandon or escape from dualistic thinking or from dualism as such. *I think Therefore I am* (Descartes) and *I am a brain, therefore I am* (neurocentrism) are two versions of the same mental-physical dualistic thinking. The success of the notion of brain man (*Homo Neuralis*) depends on two theoretical assumptions—the mental-physical duality and dualistic thinking. Most who repeat the slogan *you are your brain*, Jasanoff (2018, 92) points out, failing to see that it actually *equates* the brain with the person it supposedly controls.

An Abiotic Brain: Emergentism and Computationalism

Strange as it might sound, neuroscientists do not directly investigate human beings and do not explain how the brain produces consciousness or the self. Therefore, in *you are your brain* circles there is no agreement on how you are your brain. To be clear, they do not study what it is to be human, they do not investigate free will and they do not directly inquire about our image of ourselves as human beings. Instead, views about ourselves and free will, flow from brain research which presupposes we are our brains.¹⁶

15 For, in spite of their adamant repudiation of Cartesianism, the generation of neuroscientists who succeeded Sherrington’s pupils Bennett and Hacker point out, “in effect replaced the Cartesian dualism of mind and body with an analogous dualism of brain and body” (Bennett and Hacker 2022, 123).

16 The historical development of this idea is extensively documented by Vidal and Ortega (see 2017, 22–79). In the summary of Vidal (2009, 7), “whether ontological or methodological, the belief in brain-self consubstantiality seems to have impelled brain research. The idea that ‘we are our brains’ is not a corollary of neuroscientific advances, but a prerequisite of neuroscientific investigation. This is not a normative, but a historical, observation that makes sense of brainhood without justifying it or lending it support as an ideology of the self.”

Therefore, it is not easy to say how these scientists arrive at these claims about human beings. The two most common answers are emergence and computationalism.

The neurophilosopher Metzinger (2000, 5) claims that most neuroscientists today “would rather be epiphenomenalists than dualists.” As anti-Cartesians, most neuroscientists believe that somehow, consciousness emerges from the brain¹⁷ but rejects any form of a second substance in the brain. Swaab’s (2014, 3) remarks that “[j]ust as kidneys produce urine, the brain produces mind” is justified with the remark “as Jacob Moleschott (1822–1893) so inimitably put it.” No further explanation as to how this is done by the brain.¹⁸ The notion of emergentism carries the idea that it is a property of (brain) matter. It implies epiphenomenalism, the notion that consciousness is just an epiphenomenon of material brain processes (Dietrich 2007, 45–6).¹⁹ In this sense, Kitchener and Hales (2022, 1) quite correctly point out that it is probably fair to say that most neuroscientists ignore this issue of how the brain produces the self and consciousness since it emerges from the brain. It is important to note that epiphenomenalism is just like Descartes’s *res cogitans*, (thinking thing or second substance) a form of dualism.

The master metaphor in the idea of the abiotic brain, however, is that of the digital computer. Computationalism is the term used to refer to the notion that brains are computers, and the mind is just software that runs on the hardware of the brain (Olivier 2017, 3). The portrayal of the brain as a computer, Jasanoff (2018, 30) says, “permeates our culture.” Equating consciousness with information processing, Searle (2000, 576) calls it “profoundly antibiological”²⁰ and points out that in these views, brains do not really matter because any hardware that could carry out the information processing, would be equally conscious.²¹ The result of this is that “in practice, almost all of

17 For example, Swaab (2014, 169) states, “Consciousness can be seen as an emergent characteristic generated by the joint functioning of the enormous network of nerve cells.” Also, Eagleman (2015, 214) maintains, “Although the theoretical details are not yet worked out, the mind seems to emerge from the interaction of the billions of pieces and parts of the brain.”

18 He could have turned to Crick’s justification that what the brain does is emergent on the individual neurons — with the meaning of “emergent” as the whole depends on the nature and behaviour of its parts (see Crick 1994, 10–11). Nothing is more anathema than the idea of a soul, entity or consciousness that exists as a substance somewhere in the brain. Emergentism is a popular and common explanation for the production of consciousness. As a theory in the philosophy of mind, emergentism has a long history (see e.g. Ganeri 2011; Murphy and Brown 2007, 78–84, for discussions). Mental properties supervene the physical properties of the brain. The idea of emergence is based on the assumption that complex systems may display novel properties that are not possessed by their parts.

19 Epiphenomenalism proposes that consciousness is merely a by-product or side effect (and epiphenomenon) of neural processes but have no physical effect (see Blackmore 2005, 13; Jeeves and Brown 2009, 110). In other words, neural states are the cause of conscious states, but the latter are ineffective with regard to the neural states (see Owen and Guta 2019, 9).

20 Computational models of consciousness suggest it is independent of both neural structure and subjective experience (see Feldman 2022, 27).

21 For an evaluation of the computational theory of mind, see also the discussion of Gabriel (2012).

neurobiology (and its huge body of empirical evidence) has become permeated with the cognitivist, information-processing perspective” (Varela, Thompson and Rosch 1991, 44).

Does it Matter?

In a very general sense notions about the self or what it is to be human, are fundamental to how we live our lives, structure our societies and conduct our affairs. Ideas about us, Rose and Abi-Rached (2013, 202) say,

are central to debates about law, morality, justice, and the rights of minorities; about sexual relations, lifestyles, marriage, parenthood, and bioethical issues related to the beginning and end of life; about consumption, tastes, marketing, and economic life; about politics and conflicts over national identities; and much more.

If this is true in a general sense, it is also true of the claim that you are (not) your brain. The impact of brainhood as personhood has already been mentioned above in the example of free will. The neurocentric view that you are your brain resulted in empirical research that pretends to show that humans do not have free will since it is their brains that decide before they can. The free will debate that originated from the research of Benjamin Libet claims that free will does not exist because it is the brain that decides not you. The absurd implication of this view is that you do not have free will because it is your brain that decides not you, but if you are your brain, then it means it is your brain that decides for your brain (*you*) what to do (see Craffert 2023, 130 for a discussion).

Another pertinent example is the impact of this view on mental disorders that are redefined as brain disorders (see Vidal and Ortega 2017, 175f for a discussion) with the implication that soon most of them will be diagnosed in the brain and not in the person.

The overwhelming presence of notions that *you are your brain* is tempered by the realisation that within the neuroscience of consciousness no monolithic view on the big question of being human exists. While there is ordinary agreement that reflection about the human condition can no longer be insulated from neuroscientific research, there is no reason to think that all the answers are now readily available. The acknowledgement of these incompatible views within the neurosciences is a first step in taking it seriously that neuro research is here to stay, but with it, the need for critical neuroscience is needed more than ever.²² Each of these positions are to be evaluated as to which view of human beings one is prepared to stand up for—but that is a task for another day.

22 The scope of critical neuroscience is much wider than notions of being human and includes the impact of the neurosciences on various societal issues (see, e.g. Choudhury and Slaby 2012; Craffert 2014), the practice of neuroscientific research as such (see, e.g. Choudhury et al. 2010; Slaby and Heilinger 2013), as well as aspects of race, gender, and ageism on neuroscientific claims (see, e.g. Schmitz and Höppner 2014; Slaby and Gallagher 2015; Trujillo et al. 2022). None of these can here be discussed in detail.

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