

Mind Cloning—Is It Feasible?

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Abstract

The dominant view of the constitution of the human being in modern times is physicalism. This view attempts to explain mental manifestations as an epiphenomenon of the brain to the exclusion of the soul, as opposed by dualism. According to the dominant view, the mind arose at some point during evolutionary development. As such, physicalists have attempted to transfer the human mind from one substrate to another, in a process called mind cloning.

That project leads to multiple problems. Until now the connectome of only 100,000 mouse neurons have been mapped, thus calling the feasibility of the project into question. Ethical issues also arise: would I be held responsible for my mind clone's criminal activities? What if I and my mind clone vote against each other? Would mind cloning lead to the devaluation of human life?

Despite its widespread acceptance, physicalists are still at a loss as to how to solve the hard problem of consciousness; namely, as to where consciousness comes from. They can only correlate certain brain functions with certain states of consciousness but cannot explain its origin.

According to Leibniz's law of the indiscernibility of identicals, the mind is distinct and separate from the brain. The mind is a non-biological entity, and is the seat of all rational, emotional, and volitional functions of the soul. It is also not a by-product of random evolution because the soul was created with a conscious God, according to Genesis 2:7.

Keywords: dualism, indiscernibility of identicals, mind cloning, physicalism, soul

Introduction

Humans have been thinking about how the mind works ever since the dawn of history. What is meant by the “mind?” What is “consciousness?” Is it only the manifestation of the brain, or is there more to just anatomy? Where is it located? How did it come to exist? Are human beings capable of replicating the mind (aka “mind cloning”)? If so, would it be ethical? And, do people have souls?

To begin with, it would be expedient to define some terms for better understanding later on in the paper. The “soul” is the immortal, immaterial, spatially unbounded component that, together with the body, composes the human being (Cooper 1989, 10–12). The mind is the faculty of the soul, the center of rational thought, emotion, and memory. Although the mind is also immaterial, its functions are associated, but not identical with, the working of the brain, which acts as an interface between the soul and the body. “Consciousness” is defined as self-awareness experienced through first-person experience (Moreland 2014, 195–197). As such, it is a faculty of the mind thinking about itself.

Physicalism

As of today, there are two main theories of the mind. The first, most widespread view in modern history, is that the mind is the manifestation of the brain. This view is called “physicalism” (Moreland and Rae 2000, 46). Ever since the Enlightenment, superhuman powers have been attributed to the mind (Pastor and

Cuadrado 2014), and many philosophers claimed that humans are able to model the natural world with their minds. Today, transhumanists equate the core essence of the human being with the mind. According to Elkins (Elkins 2011), “we are what we think”: the mind controls emotions and it models reality, harbors memories, and formulates our rational will (Joubert 2015). According to proponents of physicalism, the mind and its associated consciousness originates from the brain, and that different psychological states correspond to different states that the brain is in (Joubert 2015). Since humans are seen as the products of evolution, it follows that the mind must have been spontaneously caused by matter over the course of millions of years (fig. 1A). Consciousness

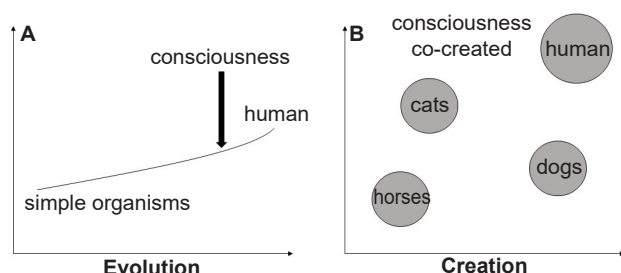


Fig. 1. Comparison of materialistic and supernatural creation of human consciousness. **A.** The materialistic viewpoint claims that consciousness is merely a by-product of the process of evolution from simple organisms to the human being. **B.** The supernatural view holds to the special creation of human kind and all other groups of organisms. The consciousness as well as the soul is created into the human being directly by God.

allegedly must have arisen within a biological substrate after reaching a certain threshold number of brain cells during the same period of evolution (Rothblatt 2014). Proponents of physicalism also posit that there is no soul. Philosopher William Lyon states, “Evolution is a seamless garment with no holes wherein souls might be inserted from above” (Moreland and Rae 2000, 90).

Dualism

The second main view of the human being’s constitution is called “dualism.” Proponents of this view hold that man is made up of a material, bodily component, and an immaterial component, the soul, which is not identical or reducible to the body. Although they form a unity and interact with one another, they are distinct. According to Moreland and Rae (2000), “various brain events with physical properties are nonidentical to mental events.” The soul, present in each part of the body, cannot be divided (as in amputees), and is not spatially located in it (Moreland and Rae 2000).

In Genesis 2:7 we read about the creation of man: “And the LORD God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living being.” Thus, according to the Christian worldview, man is a dual being, made up of body and soul (or spirit) (Zechariah 12:1). In Hebrew, the soul is called נֶפֶשׁ (*nephesh*), whereas in Greek, it is called ψυχή (*psuche*). The soul is therefore the immaterial component of the human being, which leaves the body at death (Isaiah 53:12; James 2:26). Sometimes the biblical writers address their own souls as if it is a separate thing from themselves: “Bless Jehovah, O my soul.” (Psalm 103:1). Scripture reveals the soul as the seat of knowledge, feeling and willing, representing the entire person (Luke 1:46). Thus, the soul may be used as a part to denote the whole person (just as in English we might say: “all hands on deck”; cf. Genesis 49:6).

The spirit (רוּחַ, *ruach* in Hebrew, and πνεῦμα, or *pneuma* in Greek) denotes the mental faculties of man (Job 20:3; 32:8), the seat of the will and feelings (Exodus 35:21), or a faculty of the soul. However, it is noteworthy that this understanding differs from Cartesian dualism, which equates man’s immaterial substance with the mind alone. The latter may thus be used interchangeably with the soul (Ezekiel 36:26–27; John 23:46) only if the soul is defined as a mental substance. Scripture reveals it can leave a human upon death and subsequently return to a man just as the soul does (1 Samuel 30:12). If there is a difference between the spirit and soul, then it is because the spirit denotes more of a controlling force or a disposition to act in certain ways (Smith 1993).

Studying the mind

Despite the dominance of the dualist position for thousands of years, today physicalism has become the almost exclusive view of the human mind, as an element of the naturalist way of interpreting scientific data (Joubert 2011). As such, several scientists, philosophers, and philanthropists (most notably from the transhumanist movement) have posited the idea of replicating, or cloning the human mind; in creating a sentient form of consciousness.

In neuroscience the problem of how consciousness arises from neurophysiological processes can be split into two problems: the “easy” and the “hard” problem. The easy problem includes things like how we can differentiate between sensory stimuli or integrate multiple stimuli into one sensation (Chalmers 1995a). So far there has been much progress in solving the easy problem relating to consciousness. However, the “hard” problem has been left almost untouched.

According to the physicalists’ train of thought, “the hard problem of consciousness” corresponds to how the neurophysiological processes allegedly give rise to subjective experience (Chalmers 1995b). This has spawned areas of research such as artificial intelligence (AI), mind cloning, and brain organoid development, among others. As of yet, explaining how a mind could be caused by matter to exist has been unsuccessful. This is because neurophysiological processes are not agents. Agents induce neurophysiological processes, and not vice-versa (Joubert 2015).

Much of this research has been able to isolate physical processes which are associated with different aspects of consciousness, but have not explained how it came into existence. These theories often rely on correlative explanations, which do not have much explanatory power, or by postulating such mental entities that cannot be pinpointed within the brain (Brogaard and Gatzia 2016; Koch and Crick 2004). Furthermore, such experiments have also been unable to explain the subjective experience of any person (Goff, Seager, and Allen-Hermanson 2021).

Goal of the present study

In this paper, the main area of mind cloning will be examined and its feasibility will be assessed, and relevant ethical issues discussed. It will also examine the reasons why the human soul exists as an alternative explanation of the human mind as opposed to monism.

Can we replicate the mind?

There are several ways engineers or scientists can purportedly replicate the mind. One such hypothetical method is based on the concept of coupling neurons to electric circuits. This has actually been accomplished in amputees. In this case, artificial limbs have been

created, allowing these people to walk normally and even feel sensations as though their feet were actually touching the ground.

To take this a step further, neurons could be replaced in the brain by artificial ones, one by one, until the whole brain has been converted into an artificial organ (Solms 2021). Artificial cells have already been modelled, which mimic cortical pyramidal neurons (Eyal et al. 2018). Furthermore, neuroscientists have also been able to develop brain organoids in Petri dishes. These are small, pea-sized masses of brain tissue that have undergone a certain level of structuring (Di Lullo and Kriegstein 2017; Kelava and Lancaster 2016). This alone raises an ontological and ethical question, namely, whether a human being can be reduced to his brain.

Replicating the human mind remains to be seen. Our thoughts and emotions are subjective and cannot be examined or verified scientifically. Since we lack first-person experience of another person's mind, mind cloning falls outside the purview of science.

Mind cloning

“Mind cloning” is an intriguing, hypothetical method of replicating the mind. Transhumanists have proposed ways of copying the human mind from a biological substrate to an inorganic substrate, an electronic carrier of the neural connections within the brain coded by 0s and 1s in the form of a “mind file.” When this so-called mind file is uploaded to a carrier substrate, the resulting entity is a mind clone. The main idea behind copying the mind in such a manner would be to salvage the person's mind after death. In that manner, transhumanists attempt to get the human being to endure forever in the form of his mind clone. This is nothing less than an attempt to achieve immortality. An example of such an alleged mind clone is BINA48, a talking mannequin, which was copied from the mental configuration of Martine Rothblatt, the well-known lawyer and entrepreneur (Rothblatt 2014).

Currently, scientists have been able to map all of the neural connections within a cubic millimeter of a mouse's brain (the so-called “grain brain”). However, this brain tissue sample contained only 100,000 neurons and only one billion synapses, which is a vanishingly small fraction ($10^{-11}\%$) of the 10^{22} possible synapses between the approximately 10^{11} neurons that make up the human brain. Five electron microscopes had to run continuously for five months to collect more than 100 million images that took up around 100 petabytes (100 million gigabytes) (DeWeerd 2019). In comparison, mapping the entire human brain would be much, much more difficult, raising doubts as to whether the technology exists to accomplish such a task.

It may be tempting to say that, based on Moore's law that computational capacity doubles approximately every two years (Moore 1965), eventually there will be enough computational capacity to store all the data necessary to store a person's mind file, which is larger than the 100 petabytes needed to store a small fragment of a mouse's brain. The 10^{22} possible synapses of the human brain are 10^{12} times larger than the number of possible synapses within the mouse brain-grain. Thus, the size of a human mind file is around 100Zb (zettabytes), which is 37 times the amount of global data in 2012.

We also have to remember that Moore's law is not a law of physics, but rather an empirical relationship gained from experience. There is nothing that says that after a certain threshold, computational capacity will plateau instead of increasing forever exponentially. Exponential trends commonly reach plateaus, since the environment cannot support the trend after a while (Kurzweil 2005, 128).

The hivemind

Another form of mental transhumanism involves the merging of the minds of multiple individuals into a single super-conscious entity, a “mind collective.” Whereas mind cloning copies the subject's mind to multiple secondary substrates, mind collectivism merges many minds into a single entity (see fig. 2). Some variants of this many-to-one type of mental transhumanism include mind uploading to the Internet. This kind of mind collective would allow telepathic communication over the Internet and the sharing of experiences between individuals (Gasson et al. 2004). A more extreme form of the mind collective, called the “hivemind,” involves multiple agents dissolving into a collective super-consciousness that are no longer recoverable as separate entities (Danahen and Petersen 2020). As such, the hivemind could possibly lead to moral chaos, as no single distinct entity within the hivemind could

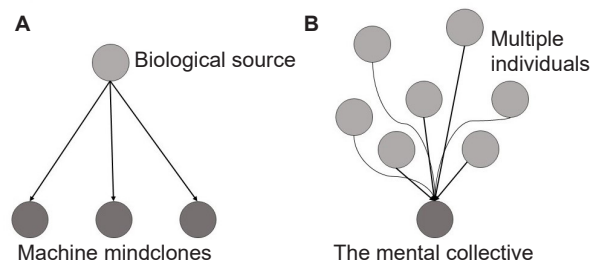


Fig. 2. Comparison of different mind-based transhumanist technologies. **A.** One-to-many mind cloning involves the transfer of the information representing the configuration of a single mind to multiple mind clones of different substrates. **B.** The many-to-one mind collective involves fusing multiple consciousness into a single super-consciousness.

be held accountable for any wrongdoing that the hivemind commits.

Ethical issues concerning mind cloning

Mind cloning raises several important ethical questions. Can we truly equate the mind with the entire person, with all of that person's desires, will, memories, etc.? Can human beings really be reduced to their minds? Why should we equate a person with their mind? Why not their genetic material? For example, consider identical twins. A review paper which summarized 50 years of twin studies covering 17,804 complex traits in over 14.5 million subjects from 2,748 publications showed that the heritability of all traits was 49%, and that not one of the traits studied had zero inheritability (Polderman et al. 2015). Yet, after some time, even the DNA of identical twins begins to differ, via differential somatic mutations and differences in the methylation state of the DNA.

Personal uniqueness

If mind cloning were possible, then someone's mind clone might be able to undergo new experiences, acquire new skills, and learn new things over time. In response, Rothblatt claims that a source individual and the individual's mind clone would remain "largely the same" in mannerisms, personality traits, recollections, feelings, beliefs, attitudes, and values (Rothblatt 2014). But if my mind clone were to live forever—which is the ultimate goal of mind cloning—then eventually, even inevitably, the mind clone's personality could change fundamentally compared to its source. People convert to other religions, and personalities change. Sometimes people change so much after a traumatic experience (such as a major accident or post-traumatic stress disorder) that their friends, relatives or associates from a long time ago would not recognize them as the same person.

The mind clone may also come to hold different political views than the source. If you and your mind clone are the same "person," who would "both" of you vote for? Would the vote(s) cancel out if you had different opinions? What if your mind clone disliked the person you wanted to marry? That could cause a person misery for the rest of their lives.

What if your mind clone becomes deceptive? After all, they are allegedly a perfect copy of your own mind and know all the aspects of your innermost thoughts. Would you be comfortable in allowing your mind clone to blackmail you by publicizing your most private, even embarrassing thoughts?

Similar problems arise with mind cloning as with regular cloning. Would not the mind clone feel devalued as a commercial commodity (Brock

1998), merely the projection of the source person? Furthermore, every person has a right to a unique identity, but it would be lost in both biological and mind cloning (Childress 1981). Mind cloning, but also transhumanism in general, devalues human life since it would be able to be created in a test tube or in a factory like any kind of ordinary product. Just as an illustration, the futurist Pearson predicts that by 2030, people will be having emotional and casual sex with robots (Heap and Sanford 2020, 69), a form of cyberprostitution.

More serious issues

The previous section referred to ethical issues that affect individuals. Mind cloning can go beyond that and affect other issues as well. What if your mind clone engages in criminal activity? Would you be willing to go to jail for crimes that your mind clone committed, or even be executed for the mind clone's crimes that merit capital punishment? Probably not. This is not a hypothetical consideration, because in 1981, a 37-year-old factory worker named Kenji Urada was killed at a manufacturing plant in Akashi, Japan, when an artificial intelligence-based robot misidentified him and pushed him into the moving parts of machinery, thereby crushing him to death (Weng et al. 2009).

Furthermore, if it were possible to live forever in your mind clone, does this mean you would never leave your children an inheritance after you physically die? How good would it be if a dictator created his own mind clone ("Hitlerbot") and thus perpetually stayed in power and oppressed his or her country, possibly forever?

The dualist perspective

As pointed out above, there are very large physical limitations to mind cloning, as well as several thorny ethical issues involved. Consciousness as a product of evolution has only been an assumption and has never been scientifically demonstrated. It also seems that the hard problem of consciousness cannot be solved by naturalists or materialists. We simply cannot create subjective experience merely by copying brain cell connections. That is because there is something more to the mind than mere matter. The question is, therefore, if we reject the physicalist view of the human constitution, do we have a viable alternative in the dualist perspective? Or was it a mistake to reject this view in the first place? Thus, if humans have a soul, how can it be proven?

The soul

As pointed out earlier, consciousness is immaterial and subjective. It cannot be measured like gravity or

electromagnetic fields. Not once have scientists ever observed such a substance arise out of something material or physical. Proponents of materialism are also reductionist in their thinking, and as such, do not truly model reality.

Consciousness is a unitary phenomenon. In other words, it is not like a color that can be shared between multiple mind clones. Neither can it be fused together with other consciousnesses into a hivemind. The individual component of consciousness would lose its individual boundaries and thereby cease to exist. What if the consciousness of a human is fused with that of a dog? Would the human thereby lose several degrees of consciousness? Fused consciousness cannot be studied scientifically.

According to Leibniz's law of the indiscernibility of identicals, if one entity differs from another one in at least one attribute, then those two entities are not identical, hence, two separate things. If Leibniz's law of indiscernability can be applied to distinguish between the mind and the brain, then physicalism is false (Joubert 2011). A mind does not have any kind of physical three-dimensional properties like a brain. The mind also does not have any concrete localization, does not have any weight, and cannot be divided into parts (see fig. 3). Thoughts do not exist in the physical world, yet they are real subjective entities. Thus, our mind is an immaterial entity apart from the brain (Moreland 2009, 330; 2014). This immaterial entity is the human spirit, the seat of the mental faculties of the soul. Thus, to claim that people are their mind clones would be to admit that they have multiple subjective presences, one in their body and another in their mind clone, which is entirely impossible: a person cannot be present in two places at once.

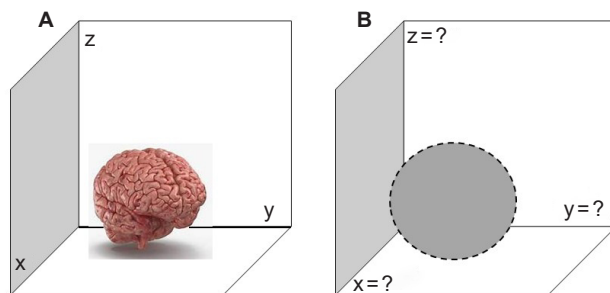


Fig. 3. The difference between the brain and the soul. **A.** The physical brain has three-dimensional spatial extent. **B.** In comparison, the soul is intangible, yet exists.

Scientists may be capable of growing biological body parts, even brain organoids, but we will never be able to create or clone a soul. Humans are unique and cannot be copied. And vice-versa, mind cloning will never succeed because the soul, in its embodied state, cannot be removed from the physical body and transferred to a non-biological substrate. It supports

what the Bible teaches about God creating humans with a fleshly body and not a cyborg-like body made out of electronic circuits.

God alone created the mind. According to Genesis 1, God created species and organisms to vary within their kinds, thus within boundaries (fig. 1B). It explains why humans can never become something non-human, transhuman, or posthuman. For this reason, transsexualism and transgenderism are also impossible even if Rothblatt acknowledges the existence of the human soul, albeit reducing it to a non-material manifestation of the material body. He writes: "The soul is that hearth of consciousness, from which our identity and ethics hail" (Rothblatt 2014). According to another opinion, free will and choice are not defined by neurons or muscles but rather by the embodied subject, which cannot be divided but belongs to the person as a whole (Fuchs 2006; cf. Matthew 10:28).

Even if scientists succeed in mapping all of our neural connections onto another substrate, that new entity will be neither conscious nor alive. Electrodes are not alive; only biological cells in a material sense are (besides the fact that spirit beings, such as God, angels, and demons, are also alive and conscious). Cyborgs cannot procreate, which is an important part of how living species are defined. One could argue that cyborgs could build other cyborgs from raw materials if they were so intelligent. But that is not the same as the ontological development of a baby growing in the womb from a single cell. It means that, at best, cyborgs are like viruses, fully dependent upon another host (flesh and blood humans) to create them individually, factory-style.

The origin of the soul

Where does the soul come from? How does it originate? As seen earlier, according to proponents of physicalism who reject the supernatural, the soul must have emerged at some stage during the course of evolution. Whereas most Christian thinkers believe that animal souls are less complex than human souls, the soul is not the product of genetic mutations. There is no gene that regulates the production of the soul. Materialistic evolution can only explain how physical events (genetic mutations) cause changes in physical substances, but incapable of explaining how a soul can come into existence. Since mental qualities are not physical, they cannot be subjects of natural selection (Moreland 2009). From matter only, matter can come, not immaterial consciousness. *Ex nihilo nihil fit* (nothing comes from nothing). Since physicalists only have physical particles to work with, they are at a complete loss as to how to explain consciousness (Moreland 1998). Also, according to the premise of the completeness of

physics, all physical effects are due to physical causes (Papineau 2001). Thus, evolution must exclude the coming into being of an immaterial soul, and since souls exist, the evolution of a soul could not have happened.

In order for the monist view to gain credibility, mental properties must be caused by proto-mental properties of matter. Indeed, some philosophers believe that mental features are fundamental and ubiquitous in the natural world (Goff, Seager, and Allen-Hermanson 2021), and that during the course of evolution, these proto-mental qualities of matter coalesced into the consciousness of complex organisms, including man. That view is called “panpsychism,” which has been in existence ever since the ancient Greeks. However, panpsychic qualities of reality can neither be observed nor tested (Papineau 2001), since in order to test them, they must be experienced. Thus, positing their existence is unscientific. In other words, it is meaningless to say that objects such as rocks have mental properties or process experiences with their minds.

Objections to the dualist view

Objections have been raised about the existence of the soul, basing their argument on twinning, human cloning, and frozen embryos. If the soul cannot be split, what happens during the process of twinning? At the early stage of embryonic development, when the embryo is present in only a few totipotent cells (cells which are biologically capable of developing into any other type of cell), these cells may disassociate and grow into a new human that is identical in makeup to the initial cells. That is how twins are born. But, does the original twin retain his soul, whereas the other lacks one? Or what about human cloning? When a somatic cell’s nucleus is injected into an egg cell, giving rise to another human. Does such a human being lack a soul (Moreland and Rae 2000, 218–220)?

Nothing can surprise God. The existence of a new soul is not always tied to the fertilization of the egg by the sperm. Scientists may want to play God by “creating” a new human via cloning, but all they are really doing is using existing DNA and existing cells to clone a human being. From a biblical perspective, they are sinning by playing God, yet God can overcome evil with good (Genesis 50:20), and provide the cloned human being with a real soul.

Some may ask, but what about frozen embryos? What happens when the soul does not seem to manifest itself? The question is easily answered. When people are asleep or are in a coma, their bodily functions slow down, albeit they do not cease entirely (Moreland 2010; Moreland and Rae 2000, 227). When an embryo is on ice, its functions slow down dramatically, although not entirely, just as

the metabolism of a hibernating bear slows down during winter but does not come to a complete stop. But arguably, putting an embryo on ice is a form of torture, and it is a logical non-sequitur that the embryo lacks a soul.

What about split-brain people? During brain surgery or other circumstances, the corpus callosum of the brain may be cut in half. The corpus callosum is that part of the brain resting above the midbrain, which connects the two hemispheres of the brain by a dense bundle of nerve fibers. When it is cut, there is no interaction between the two hemispheres. What happens to the soul in this case? Are there now two souls? It is a wholly mistaken notion, to say the least, since consciousness is also partially correlated with certain nerve centers in the brain stem. For example, children born with anencephaly are still capable of showing emotions, reacting to people and carrying out coordinated movements (Solms 2021). Even though the brain can be split, the soul cannot.

Theologically speaking, some scholars oppose anthropological dualism as an imposition of pagan influences on biblical anthropology, creating a false dichotomy between the spiritual and the profane, the soul and the body. However, dualistic anthropology has its basis in the Bible, as indicated earlier. Furthermore, anthropological dualism does not necessarily imply Platonic dualism, for a soul is not imprisoned in a body but rather embodied souls.

Conclusion

Physicalists are wedded to the idea of a materialistic origin of consciousness during evolution. They think that consciousness could not have come into being any other way, lest the supernatural put its foot in the door of a purely naturalist worldview. However, subjective experience has never been demonstrated to be caused by matter, despite decades of neurological and psychological research.

Humans have an immaterial subjective component, which exists apart from material processes and can be identified with the mind. As such, it is not governed by physical laws. It is irreducible, just like mass, space, and time. Consciousness belongs to the immaterial, mental realm of the soul. Thus, the existence of the soul refutes the aims of physicalists and cannot be explained by material or physical processes of evolution.

This means that the attempts by transhumanists to clone the mind in order to escape the confines of human mortality are wholly futile. God made it impossible for humans to live forever with a sinful nature (Genesis 3:22). Since humans are under sin, they are all appointed to die one day: “but of the tree of the knowledge of good and evil you shall not eat, for in the day that you eat of it you shall surely die”

(Genesis 2:17). Hebrews 9:27 also says: “And as it is appointed for men to die once, but after this the judgment.”

However, humans can live forever, but not in a way fashioned by men in an attempt to escape God’s rule. They must humbly repent of their sins and submit to God’s will. That explains the death of Christ: he died for us that we may have eternal life (John 3:16; 17:3). If we trust in Christ, then all diseases, all our sorrows and death itself will one day pass away (Revelation 21:4). This is the true way of salvation and eternal life, not a futile materialistic fantasy that equates a human with his mind, and tries to achieve immortality by perpetuating it.

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