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## **An Analysis and Criticism of Mind Transfer**

1. A thought experiment – 2. The bio-sim relationship – 3. Mind scanning and mapping – 4. (Re)creation or development? – 5. How can we move on in mind transfer research?

If we try to analyse the meaning of mind transfer or the uploading of the human mind, we face numerous issues. Presumably, the first one is how we can define this uploading procedure and the human mind in general. We will see that already the formulation of them do not belong to a rather narrow field of science either, which can cause difficulties in finding the most appropriate approach to their determination and examination. However, we should deal with other applicable questions as well, for example, our purpose of using mind transfer more generally. For what is mind transfer sufficient for? By examining the core reasons behind the contemporary interest of mind transfer, its most attractive features can be found. In what sense can mind transfer offer more and improve us? In what sense could the transferred mind be different from us, if this procedure is feasible at all?

Comparing our existence as humans in our current environment with existence as an uploaded mind in a virtual environment, we can find many differences, but here, in the beginning, I would like to highlight one extremely significant one. Through mind transfer, the non-material content of our brain could hypothetically live much longer, conceivably forever. This potential promise of eternal life is one of the most supportive arguments in favour of this technology. However, finding

the most suitable technology for accomplishing this goal is not so simple. In the following, we will examine numerous aspects to show the complexity of the issue, the difficulties and the uncertainty involved.

## 1. A thought experiment

Of course, there are many examples that deal with living in a virtual environment in a similar way, but I would like to specifically refer to an article in *The Guardian* titled *What happens if your mind lives for ever on the internet?* which was written by Michael S.A. Graziano, a professor of Psychology and Neuroscience at Princeton University. I have been thinking – just as other thinkers and scientists – whether the procedure of mind transfer ought to mean that copies of us can live like us or not. To what extent should we consider these *sim* us (according to the article *sim* = simulated) as the real extension of our *bio* (biological) self? Is it only functional, or is it real?

The professor shows with a humorous thought experiment and hypothetical conversation between the two versions of humans that these copies can experience life very differently. Whereas we (the *bio*) can perceive this whole scanning and transferring procedure to be a waste of a huge amount of money and we can regret it because we do not benefit from it, our copied version – the *sim* – may think of it as the *bio*'s best act. The *sim* can live in one of our currently experienced, simulated worlds, which it can use similarly to our usage but more effectively, completely differently and longer in time by our previous habits. It can experience – if this is the appropriate expression in the case of *sims* – and enjoy limitless and infinite 'life' and every feature of the virtual existence, which differs from the mortal one. Graziano considers mind transfer to be a rather good opportunity for achieving eternal life, but from my point of view, it can cause a few additional issues with respect to its influence on current human society and self-consciousness. For instance, as Graziano also mentions in the article, in the case of the labour force, uploaded minds could replace real, biological workers within a short time because of improvements in technology. Given that one of the benefits of technology is to make processes simpler and cheaper for humanity, widespread automation seems likely. On the one hand, this can be understood as a form of altruism – if we are allowed to talk about altruism in the case of *sims* – but on the other, it could cause a chain reaction which will lead to the collapse of our current life and upset the original system of society. One of the possible unfavourable results of this could be that the biologically existing workforce will become redundant, affecting the economy and well-being

globally. However, Graziano finds a more beneficial side of the process as well: the knowledge and wisdom that we residents of the so-called *foundation world* will be able to transfer into a new world, the *cloud world*:

The balance of power and culture would shift rapidly to the cloud. How could it not? That's where the knowledge, experience and political connections will accumulate. In that scenario, the foundation world becomes a kind of larval stage for immature minds, and the cloud world is where life really begins. Mind uploading could transform our culture and civilisation more profoundly than anything in our past.

My reading of these lines is that our bio life before mind transfer is about the development of processes, inventing new technologies, collecting information and patterns which we can systemize and improve before uploading them to a common, long-lasting artificial system where the sim society can use and organize them more effectively. It seems that Graziano's approach does not take into account that human bio life is more than and different from information, data and patterns. Moreover, as we arrive at this opportunity to continue our lives, which seems to be unavoidable in the case of the possibility of mind transfer, we have to examine the reality of the whole process, the relationships involved and the validity of the approach above introduced.

The above scenario refers to one of the possible consequences of connecting the two participants. When we examine it thoroughly, a break-up can be identified. This suggests that at the very moment when the mind transfer happens, the original person will not have a parallel life influenced and shaped by environmental effects, but start to operate by the rules of the new world, separately from their identity. Thinking of alternative feasibility of real – artificial connection – but uncertain if it is executable at all – with which we can preserve our identity as well, it could be imaginable with a permanent connection between the bio and the sim. In this case, the effects that influence the bio in the foundation world will be uploaded into the cloud world at the moment when it meets the effects; the sim can be understood as a kind of backup for the bio in real time, but not a copy of its individual existence, which assumes another type of connection between them. It is foreseeable but, in this case, it means that with the uploading procedure, the intention of continuing the self is not fulfilled. This is not a continuation but a kind of duplication.

Hereinafter I am moving backwards – for the larger to smaller unit – to which methodology most clearly shows why mind transfer is so confusing. At the end of my work, inter alia, I recommend a likely new – but still not known – direction to handle the mind transfer issue in general.

## 2. The bio-sim relationship

Assuming that mind transfer is possible, we have to consider the types of relationships between the imaginable and the bio(logical) and sim(ulated) versions of us. What actually is this sim?

The sim, as our uploaded mind, is a copy of us, whose life was separated from ours at that point when it was uploaded. The transferred mind continues to ‘live’ in an artificial, virtual space and at the same time, the owner of the mind as a normal human being continues to live in their usual reality, too. Physically, these two entities have nothing to do with each other anymore. Their lives are separate from the point of uploading. Based on mapped patterns, the transferred version could live a life that is similar to the original one, but due to their different kinds of existence, environmental influences, experiences and methods, the world does not make it possible to continue in the same way.

Consequently, the sim should be considered a clone of the bio up to the moment of uploading. This could last until that exact moment. Until then, they are so close to each other that theoretically they are the same. In anticipation, we can say that this is because of the nature of the cloning process as well. It is known about cloning that the germline of the copy – if we are talking about human, organic cloning – is almost completely the same as the cloned one. However, this only pertains to genetic information and not personality or gene expressions, etc. In the case of cloned computer programmes, the situation is a bit different because we are able to clone a system with all of its rules and basic features. Thus, this time the bio and the sim could be completely identical, but up to this point, the two programmes are used in the same way with the same influential effects. If we try to transfer a biological – it can be said – system into an artificial space, we can see the difficulties related to the different types of environments, which will be examined further in the next paragraph.

As regards the bio-sim relationship, even if it were possible to transfer the mind into a computer programme, the sim would never be able to become the extension of the bio’s lifespan and life in general because of the fact that it will live a different type of life in a disparate type of environment. It is foreseeable that the connection between biological and artificial is not transitive. Even though we can implant artificial parts in the human body we still cannot transfer them into each other. Presumably, the only case when we can consider the simulated mind an extension is when the life of the biological subject ceases to exist at the moment when it is mapped, scanned and uploaded into the virtual space. Even in this case, however, it is still not certain that this would constitute the real continuation of the life of the deceased.

### 3. Mind scanning and mapping

We would be naive to believe that mind transfer gives us the opportunity of eternal life, because the matter is not as simple as it first seems. To prove this, let us examine the nature of some currently known and used methods – technologies of mind mapping – including what they are suitable and sufficient for and the essence of us as humans, which is problematic to understand let alone comprehensively code.

Among others, neuroscientists and computer scientists are engaging with mind mapping and scanning. They know the human brain best and they have the greatest knowledge about it. If we try to define what we need to know about the human mind, we can examine it from at least two significant perspectives: a practical, biologically functional one and a suspected, elusive, philosophically examined one.

Starting with the practical side, without claiming completeness but by setting examples for them, mapping and scanning are two different types of observation. Both belong to discovering the operation of the mind. Mapping procedures mostly use imaging devices such as MRI (magnetic resonance imaging), fMRI (functional magnetic resonance imaging), or electromagnetic brain mapping like EEG (electroencephalography), MEG (magnetoencephalography) or HARDI (high angular resolution diffusion imaging). These are non-invasive interventions that support observations of the function and the anatomy of neurons. High-powered microscopes for examining brain cells, directly the neurons are tools of more detailed and invasive research which are parts of the scanning process too. These currently used methods give measurable results about the operation or functioning of the brain and its components. With these, scientists can analyze and observe the structure, the connectome – which is a map of the neural connections of the brain – and the operation of it, which means *inter alia* the activity and the activity net of neurons.

Here we can ask a fairly simple question: why is this information necessary? Given that we have no knowledge of the operation and the building elements, we have no idea of how the brain works at the physical and biological level. In this sense, we consider the brain a machine whose functions we want to know. The essential difference from traditionally invented machines is that it is not human-made. (This may be key to the difficulties we face.)

A more precise question may pertain to whether this amount of information is enough to achieve our goal, which is to map and then transfer the human mind into the virtual system. This is more important to answer because the human person-

ality does not only belong to the physical system of the brain. Along with this we should consider another issue: whether the information that we will obtain from the mapping and structuring processes is suitable to recreate the human mind in the other space.

### 3.1. What can the mapped information be used for?

Mapped information is a mass of facts that scientists can use to understand the operation of the brain. However, at the same time it cannot be enough to completely recreate a human mind. Why?

If our aim is to transfer the human mind into virtual space, we have to code the information of the brain first. The second step is to make a map from the information, while the third station is to convert this information into the artificial, virtual language so that it is appropriate for uploading into the new system. We have to convert a biologically living mechanism into a different, binary system-based device, a living one into an inanimate one. When we examine the issue from the view of the philosophy of mind, we face the difficulties of mind-body relations. This shows different approaches of the mind-body duality. The uncertainties allow us to suggest that it is not absolutely certain that transferring anything from human existence – data without a soul, self, the essence of personal life – is possible. These two environments, which according to Graziano can be called *foundation* and *cloud worlds*, are fundamentally different from each other. One is strongly connected to the Earth and its rules and nature in general; the other operates by rules, algorithms and formulas and uses a lower level of energy sources from nature. In fact, the latter is only a part of nature; it is not nature itself and does not originate from it. Here, inverse proportionality can be observed. The sim mind operates in a physically smaller place, but it has an almost infinite opportunity to widen it. By contrast, the bio lives in a whole nature-based world, on the Earth, but with fewer and shorter-term opportunities than the sim. Even if the virtual space is a copy of our founding world, it stays an illusion from our point of view, where the senses which we usually experience (smell, taste, body awareness, etc.) should be interpreted differently.

In the artificial space, the representatives of humankind, the programmers, are able to build a whole new world, but this can be filled with information, knowledge and rules that can ensure the operation of a perfect world with the promise of eternity. Here a question pertains to whose promise of eternity we are speaking. Definitely for the huge database and the so-called residents of it, self-learning systems as well as artificial intelligence (AI). In my point of view – and in line with

the opinions of several researchers and philosophers – we can transfer knowledge and build intelligent systems, but we cannot transfer human minds, at least for the time being. The main problem with mind transfer is the transfer of consciousness, which is possibly the key to the uniqueness of every single person of humankind and which is elusive and different from an artificial system. As the researchers of, for instance, the Human Brain Project say: ‘One of the deepest unsolved problems in science is the nature of consciousness – how is consciousness generated by the brain?’ This issue is well-known in philosophy, philosophy of mind and neuroscience, but we still have no incontestable determination of the essence of consciousness. Here, I would like to invoke Ned Block, the American philosopher who made a distinction between the two types of consciousness to determine the issue and to analyze the possible differences between the consciousness of humans and artificial creations.

Although this distinction does not enable us to get closer to the unquestionable definition of what consciousness exactly means and what makes us who we are, it provides an approach that we can use as an argument against the suitability of current technologies for mind transfer.

Block specifies two types of consciousness: phenomenal consciousness and access consciousness. Phenomenal consciousness means undergoing experiential mental states, whereas access consciousness (= awareness) means the ability of self-representation. We humans have phenomenal consciousness because we can experience and not just imitate mental states. By contrast, uploaded minds are able to process the information that is related to them and are therefore capable of self-representation as well, but they are not able to experience human mental states. They can only imitate them if we can code them in general.

You cannot code intuition; you cannot code aesthetic beauty; you cannot code love or hate, says Dr Miguel Nicolelis, who is developing a mind-controlled exoskeleton aimed at helping the paralysed walk. There is no way you will ever see a human brain reduced to a digital medium. It’s simply impossible to reduce that complexity to the kind of algorithmic process that you will have to have to do that.

According to this citation, Block and my previous derivations, presumably, the transferred mind cannot be the continuation of the mapped person because it is not possible to code mental states.

Data can survive and be transformed, but consciousness cannot. Information and knowledge have that type of nature, and because of that they are not living existences so they can be converted into formulas, algorithms which is a common language

of humankind with which we can save and share certain types of knowledge with. Imagine if we were to code all the circumstances of living as humans, such as the environment that surrounds us and the rules and regularities of the operation of the world. Even if we were to code all the features of humans, we would get closer to the perfect recreation of our foundation world in a virtual space, but we would fail to convert the essence of personal life, which seems to be tied at the very least to the brain for the present, if not to all other biological features, too.

#### 4. (Re)creation or development?

I find it is impossible to avoid analyzing the current issue from another perspective by turning back to the formerly mentioned recreation, which should also be analyzed.

Human life develops according to its natural procedure. Development begins with the meeting of female and male gametes, leading to the prenatal development of a being. It starts with morphogenesis, which means qualitative development and continues with organogenesis, which is mostly a quantitative growth. The whole life of a living creature is a developing process from conception until the death of the last living cell. In the case of a human, personality is the essence of unique life, a person's consciousness gradually developing during their lifetime. Ideally the healthy, full-valued, self-conscious person develops without any human-made intervention by its nature. We can see that a person is not an artificial creation; it is a development because humans have the original material (gametes), the rules of nature and thus the capabilities to allow new life to form.

In the case of a sim, the hypothetically transferred mind in the future is different. The rules that are valid for the developing process of humans are not suitable for these beings. Their name indicates that they are made, created and coded by humans. This means that human-based rules are the typical features that should be attributed to them, and they have to be interpreted differently.

Why is this necessary?

It is necessary because of the basically disparate type of world, environment and system of transferred minds.

Certain rights, duties and sometimes activities that are typical of humans in the traditional sense cannot be attributed to these sim beings. For instance, *habeas corpus*, which stands for the principle of legal terminology to safeguard personal liberty, cannot be interpreted. Considering that these uploaded minds in their physical sense they are already deprived of their freedom in some respects – actually, they



do not have any body-related physical form – so they live in a limited way. This makes the principle of *habeas corpus* uninterpretable in their cases. The same is true of the legal concept of *vis major* (we can interpret this as an unavoidable event, an accident, a failure to perform, undertaken for reasons beyond our control), which is also uninterpretable in this virtual system. Beyond these examples, if we were to think about the right of bodily self-determination, it must also be realized that in the case of simulated beings this can be interpreted in a completely different way from in the controversial sense. It has the disposing capacity, the autonomy of action from another point of view, so it has to be construed in a completely different way. The foregoing summarizes the scope for interpreting individual actions, but if we would like to examine the actual actions of the individual as well, it is worth additionally interpreting the case of serious bodily harm. Although it is an extreme action, it clearly shows how sims differ from us. If sim beings in the cloud world exist in only a simulated reality, it is consequently impossible and maybe not even necessary to carry out this act – which endangers the physical integrity of others – because physically and biologically, they do not have a body. They are only mapped, scanned and uploaded minds with the imitation of living as a human and they are not able to influence others' conditions through a physical act. In this new environment, serious harm could be interpreted akin to a computer virus, which although able to commit harm, cannot do so physically. These kinds of phenomena can endanger the operation of the system and the 'life' of its residents and it can be the similar kind of threat to them like in our current reality the organic viruses or other human for the human-kind or individuals as well. However, this ability – to be able to cause serious bodily harm – only pertains to humans and it cannot be realized in this virtual environment with the same meaning and consequences.

What can be read from the lines above?

We can deduce at least two different things. One is that if we try to recreate humans in an artificial environment, we are attempting to play God and trying to create a new kind of existence. This is morally contradictory whether we have the right – if we have the suitable technology, naturally – to do this or not. There are many arguments for and against it. The main ones are that God is the only one who has the right and the ability to create new kinds of beings. From the other side, it is strongly supported that if we have the knowledge and tools to do something, we are allowed to do it, otherwise God would not have made it possible for us to invent the technology. This argument is also written in the Book of Genesis, which states that if we invent anything, it is a sign that we are allowed to live with the opportunity to use it. Obviously, this is an extreme formulation because we have to take ethical and other guidelines into account.

The other argument is much more practical. The similar notions or expressions that we use for similar cases of bio and sim are confusing. The problem is that we have only this toolbar because we are trying to build new but similarly operated systems and think that they should operate like us. This may be one of the reasons why we cannot move on, as we have become stuck in this thinking, which is understandable. Our aim is to recreate the human mind and personality in a different type of environment with different circumstances, but it is not such a method leading to this result. At least, it does not help to fulfil our aims for the present.

## **5. How can we move on in mind transfer research?**

Proceeding with the mind transfer procedure, the problem is that we are trying to convert an organic brain into an inorganic one, an immaterial but biologically based mind stuffed into a non-living, material-related, artificial or machine consciousness, a so-called virtual space with rules, algorithms and systems that do not currently seem to be equal to each other. Obviously with our present technology and methodology it is not possible to create a perfect converting procedure right now. ‘Uploading a human brain means scanning all of its salient details and then reinstantiating those details into a suitably powerful computational substrate. This process would capture a person’s entire personality, memory, skills, and history’.

Why cannot the transferred mind be the same to us in addition the one discussed earlier?

Comparing the existence of bio and sim, we face some obvious differences. I assume that it is impossible to list all of them, but the main ones enable us to move closer to seeing why we should consider sim persons as other kinds of creatures and why they are created forms of life in general and not formed, developed ones.

In fact, the main similarity between the two analyzed types of beings is what we would like to transfer from ourselves. Therefore, we should find the answer to the following question: What is the purpose of mind transfer? To live as humans but for longer, more healthily and with fewer limitations, while preserving our identity.

The differences between being bio and sim are more than what can be traced back to one substantial difference. If we were to examine the sim from another perspective and try to make distinctions, we would see that almost all of the features that hypothetically characterize the sim belong to computers and not to

living beings. Sims' lives are based on information technology. Thus, the main difference is that a bio has an organic base but a sim has an inorganic base and their inequalities are rooted in this distinction, as has already been mentioned but not expounded upon.

The inorganic system has benefits that are attractive for humankind, but it only supports humanity. In a certain sense it can substitute it. However, with these tools it is not possible to capture the whole personality of an individual.

It is true that there are lots of unknown factors in the operation of the brain and researchers are investing a huge number of sources, but these scanning and mapping methodologies serve finite possibilities. They are suitable only for collecting data, discovering and understanding connections and processes and modelling them. Only for that, but not in a derogatory sense, thereby we can obtain an incredible amount of information and knowledge about the brain, indispensable to understanding of it. However, these methods have limits.

If we accept this, what should we do now?

As a consequence of the foregoing, we have two options. The first is to accept the limitations and to try to use the outcomes as widely as possible: what we are actually doing. The second is to accept the first option and seek a paradigm shift, a change in approaches, perspectives, techniques and tools. If we consider mind transfer a necessary continuation of science and apply this as the next step of the evolution, we should accept the need for change. If this is a stepping stone, then we should examine whether AI can be regarded as such as well. AI can be a transition state of the evolution. It can be beyond classical, biological humanity and before the really functioning transferred minds. However, in the following I would like to prove that AI cannot be a midpoint between bio and sim either.

If we share the American inventor and futurist Kurzweil's opinion that what evolution creates is a new form of life and if we think of AI as a transitional period between bio and sim in the evolution of humanity, we can interpret it as a new form of life as well. However, this does not mean that it is the continuation of the previous life, the bio one. It suggests that humanity is capable of influencing evolution in a different way and hypothetically. We can build new, artificial, intelligent systems with access to consciousness, but only the imitation of phenomenal consciousness – if creating real AI – and not just deep learning, self-learning systems – are possible at all.

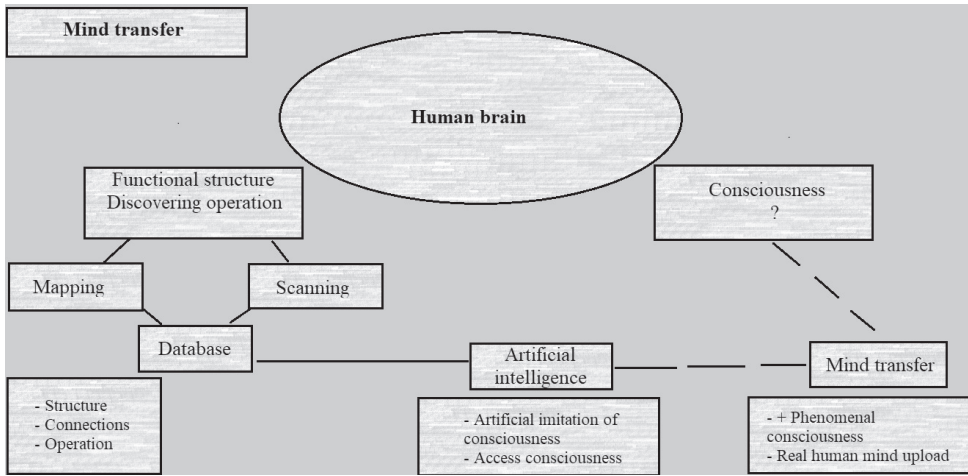


Figure 1. Mind transfer (enclosed as a separate file: Figure1.\_Mind transfer.png)  
(This figure is my own illustration of the mind transfer procedure).

It seems that scientific progress has become stuck, in a certain sense, at a level of creation and that we cannot move it forward with our current technologies and methodologies. We can expand our knowledge and amount of information quantitatively, but we are not capable of expanding it qualitatively and this is the reason why we need new approaches to find the most suitable way forward for development.

As can be noted, science really needs a kind of paradigm shift related to this field, allowing us to see the whole procedure from other perspectives. Otherwise, we have to accept that we will probably never be capable of transferring the human mind completely and perfectly into a virtual space if only these technologies remain available.

In *The singularity is near*<sup>1</sup> we can find an example theory of how a paradigm shift works. Kurzweil distinguishes six epochs of evolution: Physics and Chemistry; Biology and DNA; Brains; Technology; The Merger of Human Technology with Human Intelligence; and The Universe Wakes Up. He claims that ‘it’s the evolution of patterns that constitutes the ultimate story of our world. Evolution works through indirection: each stage or epoch uses the information-processing methods of the previous epoch to create the next’<sup>2</sup>. If we accept this perspective and consider his proposal, then we have an approach for getting started on this

<sup>1</sup> Kurzweil. 2005. *The singularity is near*.

<sup>2</sup> Kurzweil. 1999. *The age of spiritual machines*.

path. We need other views and technologies that use the original ones, but which go beyond them.

Many millionaires and billionaires invest incredible amounts of money to support mind mapping and uploading studies, such as Dimitry Itskov, who wants to achieve eternal life with different tools. As he claims, '[f]or the next few centuries I envision having multiple bodies, one somewhere in space, another hologram-like, my consciousness just moving from one to another'<sup>3</sup>. In Silicon Valley, hundreds if not thousands of researchers are working on and using all the methods available for development with cutting-edge information technologies. Others are trying to find the 'Holy Grail' of life in different fields of science, such as Petra Schwille who is attempting to create life like cells as alternatives for already living ones<sup>4</sup>. These few examples show that there is great interest in these kinds of studies. Perhaps these new paradigms can lead humanity to a better world if we use them properly.

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In this essay I have sought to critically analyze the mind transfer procedure, which presupposes many possibilities, and which is quite popular these days. If we regard it for humans and for the knowledge development process as a phase before our perfection, we can see that with our current mind mapping and scanning technologies, we are able to build an information net, a database in the cloud world where the human is presented as an imitation. Conceivably this is not the human being with all of its unique characteristics and consciousness. It can only be a separated version of the biological, organic form, transferred with limitations into a kind of environment that is about the opportunity of limitless existence, in a certain sense. It is obviously a paradoxical situation that cannot be solved completely. We have to compromise and accept imperfection, the incomplete sameness of the participants. From my point of view, this is the biggest problem with these kinds of attempts. However, it does not mean that all of these attempts are useless and a waste of financial and human sources. If it is unable to fulfil our primary purpose of mind transfer and find the best and perfect way of it – continuation of human life – despite of it all, the investigated time and knowledge can be beneficial for the humanity, because we will be able to possess much more extensive and complex knowledge about how the human brain works and is built up. This information

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<sup>3</sup> Quinn. 2016. *The immortalist: Uploading the mind to a computer*.

<sup>4</sup> Kendall Powell. 2018. How biologists are creating life-like cells from scratch. *Nature*. <https://www.nature.com/articles/d41586-018-07289-x> (20.10.2022).

could be used for other useful aims, such as for understanding and treating brain diseases and injuries. Even if our main target is ultimately not achieved, we do not have to consider the process a useless one. It is true that the use of this knowledge is good for individuals (although maybe not for the entirety of humankind) and it follows the principle of beneficence. Among many other things, this is a moral reason why it should be supported. Admittedly the aim is considerable but we can discover and find many other advantageous treatments and technologies on the way to achieving it.

Sims are a print of us that can have a certain type of life in the other kind of environment and in this way we are allowed to consider them as a new substrate of life – if we assume that such beings will connect with AI and begin to live a certain kind of life – but not a continuation of our own. They can provide a good opportunity to preserve information about us and our knowledge and to enrich the cloud world, but still we must admit that they do not imply a perfect alternative to eternal/exponentially extended life related to our current technology.

Our main intention to achieve mind transfer and prolong the lifespan of humanity strongly points to the creation of AI first, which is already in progress. But the system of it is based on the structure and logic of brain operation but it is conceivable without the creation of human like consciousness. It is imaginable because of the nature of AI, which is an algorithm-based, deep learning mechanism created by humans<sup>5</sup>. If we set quite realistic goals what we can achieve we can be satisfied without disappointment and maybe we can find a new way in the meantime to discover new methodologies that can lead us to the key of mind transfer one day.

AI and machine learning are currently used in a wide range of sciences, but only for improving our capacities with their – for instance – much larger storage capacity and the exponentially faster speed of data processing. They are not used to completely recreate humans. Humans use their knowledge to create tools that can support them and make life easier and better. Furthermore, they try to build a bridge between biology and AI, which indirectly affects our lives and supports the aim of lengthening our lifespan by finding new information related to life in general. According to my way of thinking – as I have already pointed it out – until we do not change the research paradigm and find new perspectives or technologies, we will be unable to use the currently available ones for mind transfer as well, thereby

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<sup>5</sup> It is true that the ‘intelligence’ part of the name suggests more than just a deep learning system, but this procedure does not contain the purpose of the recreation of consciousness as well; it contains the intention of the creation of a kind of consciousness that is beyond the regular, machine-featured one.

limiting the usage of AI and high technology. This does not mean that these current technologies are useless, but that they have limitations, meaning that we may never be able to transfer the mind in the real sense.

The chosen methodology, moving backwards, has helped us detect and introduce the participants of the mind transfer issue and has let us approach the field from different and essential perspectives, although these are still not directly applicable right now. By my reckoning, it has helped us identify at least a few of the main questions of mind transfer in general.

Within the frame of mind transfer it is not possible to avoid the issue of mind-body because the whole procedure is based on examining the opportunity to code and recreate following certain rules of the human mind. Noticeably, I have mostly shared the approach of embodiment theory, which is a part of modern naturalism. This theory states that mind and body together form a unit in which parts refer to each other. The mind belongs to the body and it does not seem to be separated from it. Furthermore, this theory declares that mind and body cannot be defined separately<sup>6</sup>. As far as I am concerned, they cannot be defined separately because we do not have enough information about the real nature of the mind. Moreover, to achieve fuller knowledge, science needs other methodologies and techniques. At this point it seems to me that science is connected to the quite materialistic view, which practically professes that the mind is a kind of materialistic substance. The different perspectives of philosophy of mind have examined the mind-body duality differently and as a result there are lots of definitions and approaches available. In the case of mind research, it seems that the focus should currently be on finding a way, somehow, between the two.

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**Abstract:** In this article, I examine a futuristic but not unimaginable optional opportunity of immortality – mind transfer – which has a strong connection with neuroscience, computer science, cognitive research, artificial intelligence and finally philosophy. I analyse this promising procedure from different points of view, such as regarding the potential difficulties of human transformation and the confusing issue of consciousness. The methodologies of mapping and scanning the human brain demonstrate contemporary technologies' capabilities, but their limitations are apparent, too. I find that using mind transfer to ensure or give humans the opportunity to extend their lifespan is not possible with the current level of knowledge and technology. I prove this through an analysis of a thought experiment and examine the differences between the person and the uploaded copy of it, making clear why mind transfer seems to be an impossible challenge right now. Although the use of AI provides great opportunities to support and improve humanity, we can conclude that its usage within present methodologies and technologies is neither sufficient to achieve eternal life nor remove the limitations of time. With the mind transfer procedure, we can preserve information only about humanity and not the essence that makes it unique.

**Keywords:** Computer Vision and Pattern Recognition, Artificial Intelligence mind transfer, consciousness, human transformation, paradigm shift, ethics.



**Streszczenie: Analiza i krytyka transferu umysłu.** Przedmiotem artykułu jest futurystyczna, ale niewyobrażalna, opcjonalna możliwość nieśmiertelności – transfer umysłu – która ma silny związek z neuronauką, informatyką, badaniami kognitywnymi, sztuczną inteligencją i wreszcie filozofią. Autorka analizuje tę obiecującą procedurę z różnych punktów widzenia, na przykład w odniesieniu do potencjalnych trudności związanych z transformacją człowieka i zagmatwanej kwestii świadomości. Metodologie mapowania i skanowania ludzkiego mózgu ukazują możliwości współczesnych technologii, ale widoczne są także ich ograniczenia. Wykorzystanie transferu umysłu w celu zapewnienia lub umożliwienia ludziom przedłużenia życia nie jest możliwe przy obecnym poziomie wiedzy i technologii. Autorka udowadnia to poprzez analizę eksperymentu myślowego i badanie różnic między osobą a jej kopią, wyjaśniając, dlaczego transfer umysłu wydaje się obecnie niemożliwym wyzwaniem. Choć wykorzystanie sztucznej inteligencji daje ogromne możliwości wspierania i doskonalenia ludzkości, możemy stwierdzić, że jej wykorzystanie w ramach obecnych metodologii i technologii nie jest wystarczające do osiągnięcia życia wiecznego ani usunięcia ograniczeń czasu. Dzięki procedurze transferu umysłu możemy zachować informacje jedynie o ludzkości, a nie o istocie, która czyni ją wyjątkową.

**Słowa kluczowe:** wizje komputerowe i rozpoznawanie wzorców, transfer umysłu za pomocą sztucznej inteligencji, świadomość, transformacja człowieka, zmiana paradygmatu, etyka.

