Digital Immortality?
Mind Uploading and the quest
for everlasting life

¿Inmortalidad digital?
La transferencia mental y la búsqueda
de la vida eterna

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Abstract

The quest for immortality is probably as old as humankind itself. In recent decades a group of scientists and futurists who describe themselves as transhumanists has explored the possibility of uploading the human mind onto a computer as one possible way to achieve 'immortality'. This article discusses the idea of mind uploading from the standpoint of a theological anthropology and eschatology. It examines the implications of mind uploading on our understanding of the relationship between the body and mind and personal identity and compares this with the christian understanding of resurrection.

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1. Introduction

The quest for immortality is probably as old as humankind itself. Like all the other creatures, human beings have the natural instinct for procreation and survival. Also like all other living things, human beings cannot escape from the grips of death. The human being, however, is distinguished from other creatures in that it alone is conscious of its own mortality. The human being thus inexorably projects its life onto the horizon of its death, a phenomenon that Heidegger has famously described as "being-toward-death" (*Sein-zum-Tode*). The knowledge of their own deaths has not only led humans to inquire about the meaning and significance of life itself, but also to challenge death's inevitability. As Michael Cholbi has perceptively pointed out:

> … the very same cognitive capacities that enable human beings to know of our mortality —our ability to conceptualise self, to measure and anticipate the passage of time, to distinguish between tempo-rary and permanent change, to envision alternative ways the future might unfold— have also led us to speculate whether death *must* be our end. Is death in fact unavoidable and essential to the human con-dition, or is there some prospect that we might evade or transcend death? (1).

The quest for immortality is evident in the works of art, literature and philosophy of every known culture. For example, *The Epic of Gilgamesh*, the ancient poetic epic from Mesopotamia (around 1800 B.C.), examines the earnest but fruitless search for the secret to eter-nal life. Plato —that great philosopher in the greco-roman tradi-tion— made bold attempts to theorise about the soul's immortality in his famous dialogues, such as *Phaedo*. All the religions of the world,

including christianity, have an account of human death and what follows thereafter.

With the breathtaking advances in science and technology in the last two centuries, however, modern thinkers have speculated on how human ingenuity could enable the species to delay or even defeat death. For example, in 1964, Robert Ettinger published *The Prospect of Immortality*, which explores how the science of cryonics could enable the dead to be clinically frozen for future resuscitation (2). In his essay *The Immortalist*, published only a few years later, Alan Harrington, confident that science will one day enable the human species to conquer death, declared that "Death is an imposition to the human race, and one no longer acceptable" (4). Bold speculations about the posthuman future of our species are advanced especially by a group of thinkers who call themselves transhumanists. Transhumanists believe that technology will one day enable human beings to transcend the limitations of their nature, that is, to become post or transhuman. One of these future technologies is mind uploading, where the human mind is transferred to a computer which is subsequently attached to a synthetic body, thereby achieving "immortality".

This essay is a modest attempt to bring this transhumanist vision into conversation with christian eschatology. More specifically, it examines the transhumanists' attempt to achieve "immortality" by whole brain emulation or mind uploading from the christian perspective and compares it particularly with the resurrection. It begins with a brief account of transhumanism, followed by a description of mind uploading and what it entails. It then turns attention to some of the philosophical assumptions behind mind uploading by examining the relationship between the mind (or mental states), the body and personal identity. In the final section of the essay, It provide a brief sketch of the christian doctrine of the resurrection and show the profound difference between the christian understanding of immortality and the transhumanist account. The issues related to this topic are so numerous and complex that it is impossible to do all

of them justice in the limited space of this essay. However, I hope that this discussion will go some way in helping the reader understand the contours of this important and ongoing conversation between christianity and culture.

2. The transhumanist vision

Before examining the ambitious project of mind uploading and offering a critique from the standpoint of christian anthropology and eschatology, it may be helpful to sketch —albeit in broad strokes— the movement called transhumanism. The etymology of the word "transhumanism" can arguably be traced to the fourteenth century when it made its first appearance in Dante's famous *Divine Comedy*. The Italian poet and philosopher used the neologism *transumanar* that he coined to describe *theosis*, the glorious transformation of the christian as he ascends into the presence of God. The modern usage of the word is attributed to Julian Huxley, the evolutionary biologist and first Director General of the United Nations Educational, Scientific and Cultural Organisation (UNESCO). In 1957, as nations were recovering from the devastation of World War II, Huxley wrote:

> The human species can, if it wishes, transcend itself, not just sporadically, an individual here in one way, an individual there in another way, but in its entirety, as humanity. We need a name for this new belief. Perhaps transhumanism will serve: man remaining man, but transcending himself, by realising new possibilities of and for his human nature (4).

Transhumanism as a movement, however, is often traced to the so called extropian movement of the 1980s associated with the work of Max More and others (5). "In simplest terms", writes Ronald Cole-Turner, "[transhumanism] is a movement that advocates the development and use of technology to improve human capacities and enhance human lives" (6). Expanding on this, Nick Bostrom —professor at the University of Oxford and arguably one of the

most philosophically sophisticated advocates of transhumanism—explains that:

> Transhumanists view human nature as a work in progress, a half-baked beginning that we can learn to remould in desirable ways. Current humanity need not be the endpoint of evolution. Transhumanists hope that by responsible use of technology, and other rational means we shall eventually become post human, beings with vastly greater capacities that present human beings have (7).

Bostrom makes it quite clear that the goal of transhumanism is not just the enhancement of human capabilities but to enable human beings to eventually become posthuman. Its vision is for humans to exceed their fullest potential and even to transcend human nature, as we know it. The term "posthuman" has been used in a variety of ways by different authors. But for Bostrom and his fellow transhumanists, the term refers to "possible future beings whose basic capacities so radically exceed those of present humans as to be no longer unambiguously human by our current standards" (8).

Bostrom also clarifies that being posthuman does not have to do merely with the change in self-conception or self-understanding, but a truly ontological transformation. "The changes required to make us posthuman", he writes, "are too profound to be achievable by merely altering some aspect of psychological theory or the way we think about ourselves. Radical technological modifications to our brains and bodies are needed" (9). The transhumanist declaration" fleshes out the anticipated changes in its statement: "Humanity will be radically changed by technology in the future. We foresee the feasibility of redesigning the human condition, including such parameters as the inevitability of aging, limitations on human artificial intellects, unchosen psychology, suffering, and our confinement to planet earth" (9).

The realisation of these new possibilities envisioned by transhumanists such as Bostrom can only be achieved through modern science and technology. To be sure, there is a sense in which transhu-

manism presents itself as a form of religion, complete with its doctrines, creeds and even its conception of eternity (10). However, as most transhumanists are either sceptics or atheists (although there are christian transhumanists), they can only turn to science and its cousin, technology, to bring their imagined future into existence. The futurist and engineering director at Google, Ray Kurzweil, famously envisioned a technological singularity, which he describes in his 2005 book, *The Singularity is Near* as:

> … A future period during which the pace of technological change will be so rapid, its impact so deep, that human life will be irreversibly transformed. Although neither utopian not dystopian, this epoch will transform the concepts that we rely on to give meaning to our lives, from our business models to the cycle of human life, including death itself (11).

Thus, transhumanists follow with great attention developments in every branch of biotechnology and medicine gene therapy, stem cells, nanotechnology, neuroscience, tissue engineering, etc. As Roberto Manzocco puts it, these cutting-edge technologies are "broth in the cauldron in which transhumanists try to prepare their own contemporary version of the elixir of eternal youth" (12).

Theologian Joel Oesch has helpfully described the transhumanists vision of the human future in terms of the three *supers*. The first *super* is *super-intelligence*, which, according to Oesch, is an attempt to "create a situation where society acquires vastly higher degrees of intelligence than it currently has" (10). Super-intelligence is achieved when computers can process information faster than the human brain, and when it can perform all the intellectual tasks a human can do, but at a much greater speed. But super-intelligence could also involve human beings more directly. For instance, it could refer to technologies that are embedded in the brain that dramatically enhances human intelligence. Oesch speculates that "technologies will emerge in the next ten to twenty years that may substantially increase memory, perhaps even facilitate photographic memory" (10).

The second *super* is *super well-being*, which is basically an attempt to "create radically happier, healthier people through the use of tech-

nology" (10). Philosophers such as the British transhumanist David Pearce seek to do this by eliminating all suffering and abolishing all forms of pain. Pearce hopes to achieve this using wireheading (the direct stimulation of the pleasure centres of the brain), utopian designer drugs and genetic engineering (13).

The third *super*, and one that most concerns us, is *super-longevity*, which has to do with the delay or even defeat of what the apostle Paul calls "the last enemy" (1 Corinthians 15:26). Transhumanists reject the view that human beings should accept the inevitability of aging, physical deterioration and even death. With the exponential advances in science and technology, they argue, it is quite reasonable to conceive of a future where human beings will live well past two hundred years. Aubrey de Grey, who is a leading researcher in the field of human life extension, believes that it is our moral responsibility to combat aging and its effects. He goes so far as to assert, quite categorically, that the quest for super-longevity is "the single most important imperative of humanity" (14). Many of the strategies to impede the aging process have to do with the intervention in and modification of the human body, especially the genome. For example, in his book *The Telomerase Revolution*, physician Michael Fossel explores the relationship between the shortening of the telomere and aging and the degeneration that comes with it (15). Taking a different approach, de Grey envisions employing a suite of anti-aging biotechnologies to repair the various types of damage caused by aging that he dubs as Strategies for Engineered Negligible Senescence (SENS) (16).

While some transhumanists think that genetics holds the key to super longevity, others look to cybernetics, especially the use of neuroprosthetics and brain computer interfaces (BCI), as the way forward. In fact, many in this category would go so far as to predict that these technologies will bring to realisation the ultimate vision of transhumanism, which is not just super-longevity, but immortality. Reporting on the Global Future 2045 International Congress (held in June 2013), the science journalist Tanya Lewis clearly articulates this vision when she writes:

> So called "transhumanists" interpret this impending singularity [the point in which technology will surpass the computation power of the human brain to yield a superintelligence] as digital immortality. Specifically, they believe that in a few decades, humans will be able to upload their minds to a computer, transcending the need for a biological body. The idea sounds like sci-fi, and it is at least for now. The reality, however, is that neural engineering is making significant strides toward modelling the brain and developing technologies to restore or replace some of its biological functions (17).

3. What is mind uploading?

"Mind uploading" broadly refers to "the (as yet hypothetical) process of transferring the totality or considerable majority of the mental contents from a particular human brain into a different substrate, most commonly an engineered substrate such as a digital, analogue or quantum computer" (18). Technically this procedure is known as "whole brain emulation", but it is also referred to as "mind copying" or "mind transfer". Whole brain emulation is also sometimes compared to "mind cloning", which is the creation of a digital repository of a person's memories, feelings and thoughts (19).

The concept of "mind uploading" brings to the fore several important philosophical and technical questions and problems —which to date still remain unresolved— that simply cannot be ignored. Broadly considered, the mind may be understood as the general concept that refers to mental states such as desire, emotion, perception, intention, belief, and others (20). To describe this procedure as one in which the "mind" is uploaded situates it in a philosophical milieu where complex questions regarding the definition of the mind are still being discussed. In addition, the relationship between the mind and the brain, which some strategies of mind uploading takes for granted, is far from clear. Theories abound, each with its merits and problems.

Furthermore, mind uploading, which, as we have seen, is the process by which the "mind" is transferred from the biological brain

to another substrate, presupposes that the mind is somehow independent of the brain (body). Put differently, although the mind is in some ways substrate dependent, it is at the same time not tied to any particular substrate such as the human brain. As Randal Koene explains, "The mind continues to depend on a substrate to exist and to operate, but there are substrate choices" (21).

The expression "upload" is also problematic because it is extremely vague. In modern information technology vernacular, this word suggests copying digital contents from a particular source to another location. Terms such as "move", "cut" and "copy" suggest the same act of transferring content from one source to another digital location. "Cut" refers to removing the content from its source to the intended location, while "copy" has to do with duplicating the file to a new location. However, when files are uploaded between computers, the term "upload" generally means copy rather than cut. The problems associated with the term "uploading" has led Keith Wiley to use the term "mind splitting" (22), and Michael Cerullo to prefer the term "mind branching" (23). Be that as it may, mind uploading raises all sorts of important philosophical and theological issues, which we will address in succeeding sections of this essay.

Transhumanists have imagined different ways in which the human mind can be uploaded to a synthetic substrate. All these proposals involve some attempt to copy information about the person such as personal traits and reproduce it in a synthetic substrate such as a robot or digital computer. Some propose to scan the human brain in significant detail so that from the data, its functioning could be simulated by a computer. The simulation can then be coupled with a robotic or virtual body so that the individual whose brain was scanned can be reanimated (21,24,25,26). Others believe that recording the low-level functioning of a live brain could be another way in which data can be gathered for simulation by the computer (27). Still others speculate that it is possible for the human brain (and body) to be gradually replaced by synthetic parts resulting ultimately in the individual being housed in an entirely synthetic or robotic body

(24,25). Whichever approach is taken, the goal is the same: the biological human being before the procedure would become a synthetic human after the procedure. The personal identity of that individual remains the same because his mind has been uploaded or copied onto a synthetic substrate. To some transhumanists, therefore, mind uploading is tantamount to digital resuscitation or resurrection.

The project is so incredibly ambitious that some have questioned its feasibility, although others are more sanguine. As Calvin Mercer and Tracy Trothen put it: "Although major technical barriers must be crossed, and there is plenty of disagreement about the scientific feasibility of mind uploading, some thoughtful critics assert mind uploading will be achievable at some point" (28). Yet even a believer like Randal Koene, who thinks that mind uploading is "the most promising technological path to overcoming our fundamental limitations as a species" (21) admits that it is not feasible at this point. More leaps in technology are needed. For example, in order to detect and register all the important and relevant details of the brain, a high-resolution microscopy is needed. In addition, at the current scanning speed, it would take a long time to capture the entire brain. Translation, which is the analysis of the image and relevant information processing needed to turn the scanned data into something that can be used for the initial simulation, also takes an incredible amount of time. Finally, as Olle Häggström explains, simulation "requires large amounts of hardware capability in terms of memory, bandwidth and CPU, presumably in a massively parallel architecture" (29).

Considering these enormous challenges, many believe that mind uploading will not be possible in the near future. It will be a long and tedious progression involving experimentations with animal brains of increasing complexity and the emulation of different sections of the human brain before the entire brain can be successfully scanned. The emulation of the entire human brain will be a monumental effort that requires the collaboration of scientists and technologists from around the world. But optimistic enthusiasts of mind uploading such as Ray Kurzweil believe that we will see significant breakthroughs in the 2030s.

Even if scientists have successfully transferred the contents of the human mind to a computer, the philosophical and theological questions that were alluded to earlier must still be addressed. Mind uploading, as we have seen, is premised on a particular understanding of the mind and its relationship with the brain (and the body). Most importantly, it is based on a certain philosophical anthropology, that is, a certain understanding of what it means to be human. Hans Peter Moravec has defined a human being in this way, as:

> … The *pattern* and the *process* going on in my head and body, not the machinery supporting that process. If the process is preserved, I am preserved. The rest is mere jelly (24).

This understanding of what constitutes a human being is consistent with that of many transhumanists, as this statement by Ray Kurzweil clearly demonstrates:

> Up until now, our morality was tied to the longevity of our *hardware*. When the hardware crashed, that was it … As we cross the divide to instantiate ourselves into our computational technology, our identity will be based on our evolving mind file. *We will be software, not hardware* … When the hardware is trillions of times more capable, there is no reason for our minds to stay so small. They can and will; grow. As software, our mortality will no longer be dependent on the survival of the computing circuitry. There will still be hardware and bodies, but the essence of our identity will switch to the performance of our software (25).

4. Body and mind

Based on these metaphysical commitments about the true essence of human personhood and identity, it is not surprising that transhumanists have very little regard for the biology body —especially in its current state—. Many believe that natural bodies can and should be replaced by artificial ones, equipped with more superior capabil-

ities and functionalities. This sentiment is clearly expressed by Matthew Zaro Fisher:

> … Why does a biological body take priority over an artificial body, when both are made up of different combinations of elements on the periodic table? (30).

Writers such as Kurzweil believe that there are numerous forms of "embodiment" that one can choose from once whole brain emulation has become a reality. In *The Singularity is Near*, he predicts that:

> By the time we have the tools to capture and re-create a human brain with all its subtleties, we will have plenty of options for twenty-first-century bodies for both nonbiological and biological humans who avail themselves of extensions to our intelligence. The human body version 2.0 will include virtual bodies in completely realistic virtual environments, nanotechnology-based physical bodies, and more (11).

Transhumanists may therefore be broadly described as dualists. They believe that the human being is a composite of two distinct and separable substances, mind (soul) and body. In addition, they hold that it is in the mind (soul) that the essence of a person is to be found, the body being just its instrument. Thus, a further qualification may be made that transhumanists are *Cartesian* dualists. In his philosophical writings, Descartes describes the relationship between the "I" (which resides in the mind) and the body thus:

> My essence consists solely in the fact that I am a thinking thing. It is true that I may have (for, to anticipate, that I certainly have) a body that is very closely joined to me. But nevertheless, on the one hand I have a clear and distinct idea of myself, in so far as I am simply a thinking, non-extended thing; and on the other I have a clear and distinct idea of the body, in so far as this is simply an extended non-thinking thing. And accordingly, it is certain that I am really distinct from my body and can exist without it (31).

Transhumanists could agree with most of what Descartes has written in the above passage. Like Descartes, transhumanists believe that

it is in the mind that the essence of a person resides and that the mind can be separated from the body. But they also hold that it would be good for the mind to be embodied in some sense, especially when the body in question is more superior than the current one. There is a sense in which embodiment is important for transhumanists, but not in the form of the present biological body.

The dualism espoused by transhumanism is inimical to the christian understanding of the human being as a personal (hypostatic) union of body and soul (32). To understand what this unity might look like and why it is significant, we turn to the writings of the great medieval theologian, Thomas Aquinas (1225-1274). According to Aquinas, although we can think of the 'body' and 'soul' (mind) when we speak about a human being, we must not conclude that they are made up two separate substances. Rather, a human being is a complex unity of mind and body such that the one is not reducible to the other. A human being is not a body plus a soul, or a soul plus a body, but is "composed of a spiritual and corporeal substance" (33). In Latin, the word translated as soul is *anima*, which simply means: "that which animates." For Aquinas, then, the soul is the "root principle of life" (33). But Aquinas insists that as *principium vitae*, the soul is closely bound to the body and indeed inseparable from it. Following Aristotle, Aquinas teaches that the soul is the "form of the body." He explains:

> There had been much uncertainty about the way the soul and body are conjoined. Some had supposed a sort of medium connecting the two together by a sort of bond. But the difficulty can be set aside now that it has been shown that the soul is the form of the body. As Aristotle says, there is no more reason to ask whether soul and body make one thing than to ask the same about the wax and the impression sealed on it, or about any other matter and its form … Therefore, just as the body gets its being from the soul, as from its form, so too it makes a unity with this soul to which it is immediately related (34).

Aquinas' anthropology is therefore at variance with that of Descartes and his transhumanist disciples. For Descartes, the human person is

his mind while his body is just something that he possesses or is connected to. For Aquinas, however, the body is not to be in anyway distinguished from the person. He writes:

> For as it belongs to the notion of this particular man to be composed of this soul, of this flesh, and of these bones; to it belongs to the notion of man to be composed of soul, flesh, and bones; for whatever belongs in common to the substance of all individuals contained under a given species, must belong also to the substance of the species (33).

Mercer and Trothen have summarised the essence of christian anthropology (as presented by Aquinas) succinctly when they write: "We are not body, soul, spirit, mind, or other distinct parts glued together. Rather, these words express dimensions or aspects of the holistic integrated person" (28).

Aquinas' understanding of the human being as a hypostatic union of body and soul has not only exposed the naïve dualism of cartesian anthropology that results in a reductionist view of the human being. It has also pulled the rug from under the feet of the transhumanists and the entire project of whole brain emulation. Philosophers and theologians involved in disabilities studies —especially dementia— have become increasingly aware of what has been described as "body memory", which is not just confined to the brain (35). "Body memory" or "embodied cognition" points to a profound connection between biological body and the mind. As Mercer and Trothen describe it, there are 80-90 billion neurons in the brain constantly interacting with other neurons and processes in the rest of the body. There are 100 trillion bacteria living in the gut that can affect our mood and mental wellbeing (28). "With neurons, chemical transmitters, and microbiotic entities", they write, "we are a surging hormonal package, providing a basis for the argument that the mind or self, is inseparable from the flesh and blood body" (28). To suggest that the whole self can be transferred to an artificial body once his brain is copied, or his mind is uploaded to a computer seems quite untenable. If our mind or self is not reducible to memory and

personality, stored as information only in the brain, then a mind leaving the body behind, would not accomplish the purpose of moving the whole person into a new host. Whole brain emulation could leave behind significant dimensions of who we are (28).

5. Personal identity

This brings us to the thorny problem of personal identity in mind uploading. Kurzweil recognises the importance of the question and how difficult it is to give a confident answer. In *The Singularity is Near* he writes:

> Perhaps the most important question will be whether an uploaded human brain is really you. Even if the upload passes a personalised Turing test and is deemed indistinguishable from you, one could still reasonably ask whether the upload is the same person or a new person (25).

Many writers who share Kurzweil's optimism about mind uploading also share his ambivalence about whether the upload will successfully preserve the personality of the original. For example, Moravec muses:

> Is there a chance that we —you or I, personally— can fully share in the magical world to come? This would call for a process that endows an individual with all the advantages of the machines, without loss of personal identity (24).

Hayworth goes directly to the point when he writes: "The debate over mind uploading revolves around a central question, "What do you consider to be you?" Mind uploading is useless if this personal definition of "you" is not successfully transferred" (36).

The answers transhumanists have given to Hayworth's important question ("What do you consider to be you?") have been unpersuasive because they are premised on a reductionist view of personal identity. Kurzweil holds what has been described as the patternist

view that equates information with identity. He could therefore assert that "patterns of information [are] the fundamental reality" (37) and that the "pattern is more important than the material stuff that constitutes it" (25). In a similar vein, Jonah Goldwater, in explaining the patternist view, suggests that mind uploading is analogous to the action of faxing a document. "If the information in my brain is uploaded to a neural network or server," he writes, "then I am uploaded only if I am the information, rather than the object(s) it's stored in" (38). This means that while the human brain is needed to produce the information that represents the emergent self, it can be replaced by a different substrate once that information is successfully retrieved and copied. The "physicalism" of the transhumanists is undergirded by a more fundamental (Cartesian) dualism of mind and body (substrate).

Be that as it may, the question that Kurzweil raises regarding whether the upload (assuming that it is successful) is the same as and stands in continuity with the original remains unanswered. To put the issue differently, what is the relationship between the copy and the original? There are different ways in which the word "same" is used. It can refer to something that is qualitatively (but not numerically) identical with some other thing. Or it can refer to something numerically identical, that is, that same thing. In the case of whole brain emulation, the mind that is uploaded to the computer is the copy of the original. Therefore, it is not numerically identical with the original. This remains the case even if the copy is the perfect replica of the original. Since the upload is just a copy of the original, it can be said to be qualitatively but not numerically identical to it. Mind uploading can perhaps be compared to monozygotic twins, who, although are identical in many ways, must nonetheless be regarded as two different persons.

All this means that mind uploading and the fundamental conception of personal identity that undergirds it have failed to satisfactorily respond to what has been called the "duplication objection" (28). The difficult problem that the duplication objection raises is made even more acute when we think of multiply copies being made from

the original. If (as the transhumanists claim) the upload is truly "you", then there should be ten "yous" if ten copies are made. However, according to the duplication objection, that simply is not the case. Instead, what we have is ten copies that are qualitatively but not numerical the same as the original "you".

The duplication objection presents a challenge to what has been described as the psychological theory of personal identity —favoured by many transhumanists— that can be traced to the seventeenth century philosopher, John Locke (39). According to this theory, the continuity of personal identity is dependent on overlapping or connected chains of mental states, such as memories, beliefs, intentions, desires, and character traits. On this account, the role of the physical body in the forming of personal identity is quite insignificant. Although the body changes over time, the same person persists through this network of mental states.

It is not difficult to see why the advocates of mind uploading have found this theory of personal identity useful. It supports their view that once the mind is successfully uploaded to a computer and given a new (non-biological) body, nothing associated with the personal identity of the original is lost. However, the psychological theory of personal identity is unable to give a satisfactory response to the "duplication objection". The copy is numerically different from the original and cannot be said to be identical with it. In addition, a simple thought experiment would show that the theory is indeed untenable. Suppose the mind (and mental states) of murderer A is transferred to another person's (B) body. Does B, then, bear the identity of murderer A? Should B be brought to justice for the heinous crimes that A has committed? If the psychological theory of personal identity is taken seriously, these questions must be answered in the affirmative. If personal identity has to do only with mental states —memories, beliefs, intentions, behaviour, etc.— then B, who now possesses the mind of A, must be identified as the killer who committed the crimes.

According to christian anthropology, personal identity cannot be attributed to mental states only but is profoundly tied to the physical

body. This is emphasised in Aquinas' holistic understanding of the person based on the hylomorphic conception of the relationship between the body and soul which we discussed above. Transhumanists, however, have downplayed the importance of the body in their understanding of personal identity, a view that is consistent with Cartesian dualism and the Lockean psychological theory of identity. Many transhumanist writers have appealed to the ancient Theseus Paradox to advance their theory. The ancient Greek philosopher Plutarch asked if all the parts of the ship —in this case, the ship of Theseus— were replaced over a period, can we say that it is still the same ship? Or do we have a totally different ship? Analogously, since the human body, including the brain (or mind), regularly replaces its cells over time, can the individual who has undergone a Theseus-like series of part replacements still be regarded as the same individual? Both common sense and the law have answered the question in the affirmative. But if this is indeed the case, the transhumanists argue, does it not imply that it is in the mind (or mental states) that identity truly resides?

This question is pertinent to the Christian doctrine of the resurrection. The apostle Paul claims that the human being, who was born with a "natural body" (*soma psychikon*) will be given a "spiritual body (*soma pneumatikon*) at the resurrection (1 Corinthians 15:44). Yet christians throughout the ages claim that the person who is raised is the same person who had died. Thus, even though the resurrected human being will be given a new body, there is continuity in his personal identity. In what way is this different from whole brain emulation where the uploaded mind is connected to a different (robotic) body? We shall address this intriguing question in our discussion of the christian understanding of the resurrection in the following section.

6. Bodily resurrection of the dead

As we turn now to the christian account, we want to stress at the outset that the resurrection of the dead is not an optional idea but a

central tenet of the hristian faith. In its ecumenical creeds —such as the Nicaeno Constantinopolitan creed— the Church clearly articulates its belief in "the resurrection of the dead, and … life in the world to come." The faith of the Church in the resurrection of the dead is not premised on speculations about immortality and the afterlife, but on the resurrection of Jesus Christ. As German theologian Jürgen Moltmann explains: "Christian faith in God is shaped by the experience of the dying and death of Christ, and by the appearances of the Christ who was raised." "If Christ has indeed been raised *from* the dead", he continues, "then he takes on proleptic and representative significance *for* all the dead" (40). In christian eschatology, immortality and resurrection are synonymous ideas. As Tom Wright clarifies, when Paul speaks of the resurrection as immortality (Cf. 1 Corinthians 15), he is not suggesting a "combination of two disparate beliefs". He is "simply describing resurrection itself, a new bodily life in which there can be no more death" (41). christians therefore do not merely believe in the immortality of the soul (the error of the Corinthians), but in the bodily resurrection of the dead. As Moltmann incisively puts it, "The immortality of the soul is an opinion, the resurrection of the body is a hope" (40).

To contrast the christian vision of the resurrection with the conception of immortality undergirding the transhumanist project of mind uploading, several other aspects of the christian doctrine must be highlighted, albeit very briefly. According to the christian faith, just as death is not the end or cessation of the existence of the human being, so resurrection must not be superficially conceived merely as "a life after death." As Moltmann explains, the "resurrection is also an event belonging to the whole of life." Consequently, "it is the reason for a full acceptance of the life here and means that human beings can give themselves up to the whole of life without any reservation" (40).

Resurrection must also not be conceived merely as a return to this mortal life, or a mortal life in another form. "It is entry into a life that is eternal" (40). Although eternal life cannot be understood simply as a returning to this mortal life or a mortal existence in another

form, it is not discontinuous with this temporal life. If it were so, then describing the event as the "resurrection of the *dead*" would be misleading and wrong. The apostle Paul maintains that the resurrection has to do with the mortal putting on immortality (1 Corinthians 15: 54). Resurrection, then, is the immortalisation of this mortal life, the transfiguration and transformation of human life such that it will no longer experience death but will be healed and complete. Furthermore, according to the christian faith, the resurrection of the individual cannot be isolated from the transfiguration of the sin-marred world into the new heavens and new earth (Revelation 21), individual eschatology cannot be bracketed away from cosmic eschatology.

The christian faith has always underscored the significance of the human body as part of God's good creation. Thus, resurrection involves the body. The significance of the body in the resurrection is seen in Paul's description that that which "is sown a natural body, … is raised a spiritual body" (1 Corinthians 15:44). The distinction between the "natural" and "spiritual" body does not suggest absolute discontinuity, for the resurrection in christian understanding is not a *creatio ex nihilo*. Throughout the ages, the theologians of the Church have taken pains to stress the continuity between the body that died and the body that will be raised. Gregory of Nyssa (335-394) argues that the soul, aided by God, will, at the resurrection reassemble the dispersed parts of the dead human body so that the whole will be restored. In a similar vein, Augustine (354-430) maintains that at the resurrection, God "the craftsman, shall restore wondrously and ineffably the flesh and with wonderful and ineffable swiftness from the whole of which it originally consisted of" (49). Thomas Aquinas (1225-1274), following Gregory, teaches that at the resurrection, the body –however it has dissolved and disintegrated– will return to the soul so that "there might be a living, growing human being" (Aquinas *Supplement*, 78). The preservation of the person's identity and bodily integrity includes even the personal sexual characteristics, that is, masculinity and femininity. The "spiritual body" (*soma pneuma-*

tikon) that Paul refers to in his teaching on the resurrection (1 Corinthians 15:44) is not an immaterial body, but a redeemed human body that is directed by the Spirit. Augustine explains it thus:

> The flesh shall then be spiritual, and subject to the spirit, but still flesh, not spirit … but even in his body he will be spiritual when the same flesh shall have had that resurrection of which these words speak, it is sown and animal body, it shall rise a spiritual body (43).

The point that these theologians, in concert with the teachings of Scripture, wish to stress is unequivocally clear: the resurrection of the dead will be a *bodily* resurrection. Also clear is the emphasis that the dead will be raised with a *human* body, not that of another animal species or a synthetic "organism", or that the soul will be attached to a machine. It is precisely at this point that the transhumanists' comparison between mind uploading and the resurrection —employing the Theseus Paradox— fails, because in whole brain emulation the uploaded mind is joined to a machine. Furthermore, because the christian faith professes the resurrection of the *dead*, the body that is raised —however different it may be— is the body of the person who had died. In other words, it is not a generic human body, but the specific body of *this* individual who had died, which has a shared history with the soul to which it is now reunited at the resurrection. Aquinas stresses that the resurrected body will be the same numerical body —recall the discussion on the duplication objection above— and that God will supply all the missing parts (44). This is totally at odds with mind uploading, which is more akin to reincarnation than resurrection, where the mind is re-*bodied* (re-incarnated) with a totally different 'body' —a machine— that does not share its history.

Put differently, according to the christian faith, the resurrection involves the whole person, it is *this* person who has died that that is now raised, and raised *wholly*, body and soul. To repeat: resurrection is not a *creatio ex nihilo*, but the immortalising of the lived life. "Raising is not a new creation", writes Moltmann, "it is a new creating of

this same mortal life for the life that is eternal, since it is the assumption of human life into the divine life" (40). Now, the whole must be understood as more than the sum of its quantifiable parts. Thus, human beings as wholes are more than the sum of our organs and cells, just as the organs are more than the sum of the cells, and the cells are more than the sum of their molecules. The whole person is his total configuration or *Gestalt*, and it is this that remains, as it were, always "before God", in the Creator's relationship with the creature. As Moltmann puts it:

> If, now, the sum of the parts disintegrates in death, the new quality of the person's totality, as the outcome of the lived life, nevertheless remains in God's relationship to that person, not of course as the organisation of the parts, which disintegrates, but none the less as the lived *Gestalt* "before God" (40).

In the resurrection, therefore, nothing that has to do with the history or identity of the person is lost. But because resurrection is *nova creatura*, the restoration of the fallen human being whose life and relationships are fractured by sin, the individual is raised healed and transformed. His entire lived *Gestalt* is transfigured into that form of living before God that Scripture describes as "everlasting life." To quote Moltmann again:

> To be raised to eternal life means that nothing has ever been lost for God, not the pains of this life, and not its moments of happiness. Men and women will find again with God not only the final moment, but their whole history, but as the reconciled, the rectified as healed and completed history of their whole lives (40).

7. Conclusion

Two important concepts associated with christian eschatology would help to summarise our discussion on the digital immortality. The first concept is *futurum*, which refers to the future as the actualisation

of that which is already present, the future that is created, as it were, by the realities and causative forces that are already available. The second concept is that of *adventus*. In contrast to *futurum*, this concept points to the appearance of something which is absolutely new and which cannot be actualised through human ingenuity or effort. As theologian Ted Peters explains, *adventus* points to a new reality that is not "merely the effect of past causes or the actualisation of existing potential." The kingdom of God, Peters argues, must come as an advent, "as an act of divine grace whereby the creation undergoes genuine renewal" (45). Herein lies the fundamental difference between the "eschatologies" presented by the transhumanists and christian eschatology. Immortality that is achieved through mind uploading —if it were at all possible— or by any other genetic or technological means belongs to *futurum*, while resurrection in the christian understanding is *adventus*. The resurrection of the dead and the new creation is something which only God can bring about.

The transhumanist vision of the human future is therefore radically and profoundly different from that of christianity. The hope of the transhumanists, as we have seen, is a post human *apotheosis*, an attempt to surmount human nature itself with technologies such as whole brain emulation. It is an attempt to be saved from human nature spurred by the refusal to recognise creaturely limits and finitude. As James Hughes put it, it is to "choose to become gods ourselves in order to challenge the Creator(s) for dominion" (46). The christian hope urges rather in the exact opposite direction. It does not envision a time when human beings will become post or transhuman. Rather it envisions that at the *eschaton*, human beings will by God's grace become fully and perfectly human, the impeccable image and likeness of the God who has created them. And it is as resurrected human beings, clothed with the "imperishable" and with "immortality" (1 Corinthians 15:53), that believers will forever be in the presence of God in his transfigured creation, the new heavens and the new earth (Revelation 21).

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