

So What Will Nick be When he Grows up in 2050?

Some Reflections on Transhumanism

Stefan Lindholm

Redaktör för Theofilos vid NLA Mediehøgskolen Gimlekollen
stefan.co.lindholm@gmail.com

Transhumanism is the idea is that technology will enhance and improve our bodily and mental make-up so that we one day will radically transcend what we now take as the limits of human nature. I provide an analysis of transhuman natures from a broadly Aristotelian perspective, a perspective that has earned wide acceptance in Christian theology past and present. Having introduced some basic concepts in Aristotelian metaphysics, I analyse the notion of a transhuman nature. I then turn to the most radical version of transhumanism, which argues that the human mind will be uploaded on the internet and thus dispose of the biological body. There I argue that Nick in 2015, and when uploaded in 2050, will not be the same person. In a final section I argue that Nick, who in 2050 aspires to be uploaded to the internet as transhuman, will have his high hopes crushed.

Keywords: transhumanism, human nature, Aristotelian essentialism, mind-brain identity

Introduction

Transhumanism is the idea is that technology will enhance our bodily and mental make-up so that we one day will radically transcend what we now take as the limits of human nature. Transhumanists view this development as a stage in evolutionary history: the next phase of evolution will be realized through the conscious and rational efforts of human beings. For instance, the Oxford based Swedish philosopher Nick Bostrom writes:

Transhumanism is a way of thinking about the future that is based on the premise that the human species in its current form does not represent the end of our develop-

ment but rather a comparatively early phase.¹

Another famous advocate of transhumanism, the economist Ted Chu, goes so far as to say “The posthuman future is not *about us* per se, but it is *up to us* to make it happen.”²

Ideas and aspirations such as these are now also part of mainstream pop-culture. Just think of films like *The Matrix*, *Avatar*, the Swedish TV-series *Real humans* (*Äkta människor*) and *Transcendence*. These films ask probing questions about who we are and what we might become in light of cutting edge and future technological advances. It is safe to say that they have an influence on, as well as being an

expression of and catalyst for, popular imagination. Parallel to mainstream culture, there are scholars and scientists such as Ray Kurzweil, as well as the aforementioned Nick Bostrom and Ted Chu, who are pursuing serious research and communicating the transhumanist potentials of their research to the wider world. They are propelled by the impressive number of scientific inventions and discoveries in a variety of fields over the past few centuries, e.g. the genome project, mind reading and “smart” technologies. In other words, the popular and the academic side of the matter are feeding off each other.

This future scenario is loaded with questions about the limits of human nature. I shall confine my inquiry to the fundamental question of whether there can be a *trans*-human. I do not, however, ask about the technological or scientific possibility but on the philosophical possibility of a transhuman nature. Although related, they are two distinct kinds of questions. We cannot answer the philosophical question what human nature *is* solely on the basis of science although our answer has to be informed by science.

I shall begin by briefly introducing some concepts and distinctions drawn from the Aristotelian tradition. I believe that in general the Aristotelian tradition provides the best framework for natural philosophy, metaphysics and in particular anthropology. It will, therefore, serve as basis for my analysis of transhumanism. In the following section I try to characterize a transhuman nature. (There I make a distinction between a transhuman nature that is an extension of human nature and a transhuman nature that exceeds ours.) In the third section I will analyse a most radical version of transhumanism, which argues that the human mind will be uploaded on the internet and thus dis-

pose of the biological body. I argue that Nick in 2015 and when uploaded in 2050 will not be the same person. In the final section, I argue that Nick who in 2050 aspires to be uploaded to the internet as transhuman will have his high hopes crushed. I ask what kind of being Nick will be in 2050 and conclude that he will not be more but less than a human and, consequently, not a transhuman in the sense that Nick had hoped to become when he grows up.³

A Breviary of Aristotelian Essentialism

In this section I will briefly introduce some concepts and distinctions from the Aristotelian tradition in order facilitate the following assessment of transhumanism. (Some further details and clarifications will be introduced later on when needed.)⁴ Aristotelian arguments, notions and distinctions have been commonplace among Christian theologians. Although my analysis here is primarily philosophical, I hope that it will in some small measure contribute to the contemporary relevance of the Aristotelian tradition for Christian theologians.

A good way to begin explaining Aristotelian essentialism is by looking at the role definitions play. An adequate definition captures the essence of an individual in a formula. It marks off the general domain an individual belongs to, the genus, and the most determinate domain, the species. An individual is characterized by a commonality it shares with other individuals, its generic similarities, as well as its own unique way of being a member of that genus, the specific difference. Humans belong to the genus of ‘animal’ since it shares a biological sentient nature with all animals. But humans are animals of a special kind, they are *rational* animals, animals with intellectual and moral

capacities.⁵ An Aristotelian definition is thus very specific as it tries to capture the real and complete nature of a thing, and at the same time very general as it tries to say something about all the members of a genus. To arrive at a definition we start with the effects and operations of an individual and then make inferences about the nature of the underlying causes or formal principles. This is a process that is not easy and in many instances perhaps practically impossible. Still it is a proper goal of intellectual inquiry to look for the essence of a thing. Once we arrive at a definition (or something close to it) we often realize that we already know a great deal about the thing we have captured in the formula. We may have an inarticulate grasp of the essence through experience of and reflection on the effects.

Can all things be captured in a definition then? Traditionally, Christian Aristotelians have assumed that God *cannot* be captured in a definition. Still they have generally resisted the conclusion that we thereby have no knowledge of God. We can know many things about God without having a perfect definition ("God spoke to Moses on Sinai"). The same goes for created beings. For instance, I can describe human beings as "two legged, non-furry beings who naturally tend to organize themselves in political societies and use language". These are central common sense truths about humans – but they do not capture the nature of a human. For a definition is what ultimately allows us to predicate certain characteristics of an individual. Often we do this without much conscious thought or have anything near a definition. For instance we know from acquaintance and common sense reflection that predicating 'bears apples in the summer' of a human being is false and perhaps nonsensical. Since we have a fair-

ly good common sense grasp of apple trees – without having a real definition of apple trees – we know that the this predication is better suited to them.⁶

A definition is a formula that gives unity to all the *effects or operations* that proceeds from an individual, based on common sense judgements as well as scientific investigation. The definition tries to capture the underlying *cause* of the characteristic behaviour of a certain kind of thing. As the scholastics used to say: The mode of operation follows from the mode of being. (*Modus operandi sequitur modus essendi.*) But definition is not intended to put a stop to further questions about an object. On the contrary, the function of a definition is to encourage further and a more focused investigation. For how can we further investigate if we do not know what it is that we are investigating? Establishing the area of study is part of scientific investigation and any legitimate field of scientific inquiry has an area that is clearly marked off (ideally, in a formula). In other words, having a definition of the topic of investigation provides a framework, a definite area, for further discoveries. This view does not preclude scientific "revolutions" or change in "paradigms". There are areas of scientific inquiry in which we have been forced to revise our definitions in light of new facts. Improving or changing a definition is evidently a progress and not an argument against the role of definitions in science. For it is part and parcel of philosophical as well as scientific inquiry to have real definitions of the subject and basic concepts. If that is not sought for, we open up for a *ignoratio elechni*. After all, asserting, for instance, that humans are defined as rational animals is merely to point out a particular focus (right or wrong) in our inquiry

about human nature. It is an invitation to further explorations.

The next thing to note is the distinction between substance and accidents.⁷ A human substance is an individualized essence such as Nick. Substances such as Nick are the carriers of certain characteristic or, as Aristotelians say, accidents such as being 1.80 cm tall, waling about and being located in Oxford. Accidents are simply the ways in which a substance can undergo changes while remaining numerically the same individual or substance-nature. Now, the kind of accidents that a substance can have is determined by the kind of thing it is, that is, what its essence is. For instance, a human substance, like Nick, whose humanity is defined as rational animal, manifests his animality through eating, locomotion, and sensation and his rationality for instance through his use of language, his capacity for moral and intellectual judgements and (perhaps) religious devotion. It is *because* Nick is a human being he can be the subject of a particular kind of accidental predications.

A final distinction is in order before we move on. According to the scholastics, all created entities are composed of an active and a passive principle. For material beings, the active principle is called the ‘substantial form’ or formal cause and the passive or receptive principle the ‘material form’ or material cause. The substantial form, causes the thing to be what it is, to have an particular kind of essence and, as I just mentioned, to have a particular kind of accidents predicated of it. Talk of essence and nature are, thus, referring-expressions for the substantial form, which is the underlying cause of the nature-specific behaviours and properties. However, a substantial form cannot exist on its own any more than there can exist

formless matter. They are always found together as a unity.⁸ The substantial form informs or configures the matter to exist in a particular way, to have certain powers and capacities. Together, the substantial form and matter are said to compose a substance, that is, an individualized nature such as Nick.

Armed with these concepts and distinctions, I shall now turn to the topic of transhuman natures.

Understanding Transhuman Natures

I begin with some terminological and conceptual clarifications. Some use the term ‘posthuman’ interchangeably with ‘transhuman’. Some use ‘posthumanism’ in a radical sense, claiming that a future posthuman existence is literally not merely an extension of our human nature but something other or more than a mere human. I shall use ‘transhumanism’ to cover both meanings although I shall qualify my use as I go along.

Transhumanists are perhaps not so frequently outspoken metaphysical realist or essentialists. Some might be, some not.⁹ Talk of ‘nature’, it seems to me, is taken in a loose and fluid way by most of them. One would probably prefer to talk about “essences” instead of essences. For if one has a sufficiently loose and fluid view of natures the claim that our future transhuman natures will be “essentially” different from our present human natures is not far off. One could, on such a view, make up a rather fantastic story about the development of the human race, moving from the lower to the higher. In fact, one could make up more or less whatever story one wishes if there is nothing inherently essential to human nature to *transcend* more than what we have through tradition and social (most often taken as linguistic and gendered) construction got

used to call human.

However, an *analysis* of transhumanist claims does not have to presuppose or agree with such a view of nature. On the contrary, I hope to show that transhumanists often *presuppose* a view of human nature that can be characterized in three points. And in characterizing such an implicit view one is in a better position both in attacking and defending transhumanism.¹⁰ The two first points are:

(TN1) A transhuman nature is *evolutionary*, that is, it is in a constant process of evolving towards a more advanced state

(TN2) A transhuman nature is *self-transcendental*, that is, it infinitely transcends and realizes itself

We may note that these two points resemble historical positions associated with e.g. George Wilhelm Friedrich Hegel, Alfred North Whitehead and Pierre Teilhard de Chardin. However, I am not interested in transhumanism from a historical-comparative perspective but in its emphasis on the potential of contemporary and future technology to achieve (TN1-2). Thus, we might add a distinguishing feature concerning its relation to technology:

(TN3) A transhuman nature is *technologized*, that is, it has merged with technology so that it can be modified and designed at will

Although each of these points could be discussed at length, they dovetail nicely with the brief quotes from Bostrom and Chu at the beginning of this article and could be supported from a number of transhumanist sources.¹¹ But if such a characterization is to be a fair one, none

of the three points above should be taken absolutely. For if *x* is evolutionary, self-transcendental and technologized in an absolute sense then *x* might become anything. However, if *x* can become anything, then it might become *F* as well as non-*F* absolutely. But nothing can be *F* and non-*F* absolutely, only relatively. For instance, an apple can be red and non-red with regard to different parts so that we may say that the apple's skin is red while its core is non-red. But to say that the apple is both red and non-red in all its parts and as a whole, i.e. absolutely, is contradictory. And if *x* it can become anything, then one justifiably might assume that *x* is nothing at all.

But the transhumanist vision of human nature does not need to take (TN1-3) absolutely (regardless of their view of essential properties). A consistent transhumanist must therefore seek to relativize (TN1-3). However, such a relativized version of a transhuman nature makes it vulnerable to an obvious charge. For nothing in (TN1-3) does necessarily preclude the fact that all developments of a transhuman nature are simply developments of an already underlying capacity to become stronger, smarter and more beautiful.¹² The hope is that we might one day become *super-human* through technological enhancements but, arguably, a superhuman is still human, only a very strong and smart human. Thus transhumanists have not given sufficient support for the claim, that we are one day become something *other* than human.

As I mentioned earlier, such predictions are possible if one has a sufficiently loose and fluid view of nature and essence. One way to think loosely about nature is to say that nature is inherently changeable or malleable. This claim gains support both from evolutionary biology

as well as from some contemporary theologians.¹³ This view could, perhaps, be cashed out in terms of vagueness:¹⁴ since the boundaries of natures are not clear-cut and “eternally” determined there are no natures. Of course, for pragmatic purposes and in order to be able to apply scientific methods to natural phenomena, transhumanists allow for some sort of ‘nominal definition’ of natures with the awareness that they are mere *provisios*.¹⁵ It is easy to see how such a pragmatic view of natures would lend itself to viewing natures as inherently vague.

But vagueness is not necessarily a problem. Perhaps there are some metaphysically vague objects – but then we may object to the idea that vagueness in some objects precludes vagueness in all objects. It all depends on what we are talking about. *Undergirding* the notion of vagueness, at least in some cases, are real essences or species. That is, one could not speak of vague objects or natures unless there was non-vague object to compare them to. For vagueness is a comparative or relative notion. That there are unusual individuals or individuals in some transitional phases “between” two approximate species do not nullify the reality of the notion species *per se*. Because there are normal, representative and fully developed individuals of a species, we have something to compare the ones at the fringes with.

Let me at this juncture also stress the importance of real definitions, in contrast to mere nominal definitions. As I have said, it is admittedly hard to get to a real definition and one must allow for incompleteness, which is an aspect that might be taken for vagueness. But to say that this is hard and therefore impossible to determine a real essence is to confuse the epistemic and the metaphysical sides of vagueness.¹⁶

It is important to keep some rough and ready distinction between epistemic (or methodological) and metaphysical vagueness. My *conception* of an object might be vague without the object itself being vague; it might be that the process of determining some objects are simply very complex and open ended, and perhaps in some cases practically impossible for finite beings. Here is a case that does not, on the surface, seem too difficult to determine. How many objects do I have in my study? Well, there are books, bookcases, a desk and a couple of chairs. But these are made up of other things, like wood, steel and paper. And these elements are made up of physical and chemical particles. And so on. Unless we want to end up in an infinite regress, we need a notion of what constitutes the identity of an object numerically and in terms of species. According to Aristotelian essentialism, we do not have to go down the rabbit hole since there are levels of unity in reality that can be effectively observed and studied. The solution is common-sensical. It distinguishes between natural and artificial substances. A book is an artificial substance, made up of other more primitive substances whereas a human being is a natural substance because it is not made up of other more primitive substances.¹⁷ Protected by the distinction between natural and artificial substances, we may avoid the rabbit hole. A book is a substance with an externally imposed unity whereas a human is not, it has unity through itself (*per se*). Now it is of course this very distinction between artificial and natural that the transhumanist would challenge – just think of (TN3). I shall return to that shortly.

Further, we should not confuse quantitative with qualitative vagueness. For instance, there is an intuitive difference

between the vagueness of (i) the number of objects in my office (what constitutes an artificial object is sometimes arbitrary and/or vague and thus makes counting them very difficult) and (ii) the identity of the substances in my study (what makes them individual members of some species). If we have no robust distinction between (i) and the (ii), that is between quantitative and qualitative vagueness, we may be telling whatever story we like about my study. Confusing the two, it seems to me, is exactly what the transhumanist is in danger of doing.

As is well known, it is (in many cases) fallacious to argue from a quantitative change to a qualitative change. On the other hand, adding a new quality (often) makes a new kind of thing. For example, adding more stones to a heap does not make the heap into anything else than a heap of stones. But add the quality of a particular artificial structure that supports some function and the heap becomes a wall or a house (depending on the imposed structure). With this in mind, I suggest that we might distinguish between two different transhumanists. Some seem to commit the fallacy of thinking that adding more of the same makes something else while others seem to think of human nature as a heap that can be rearranged by adding some new quality to it. Accordingly, we may call the former *quantitative transhumanism* and the latter *qualitative transhumanism*.

Quantitative transhumanism is fairly easy to respond to, and since others have effectively done so I shall merely briefly indicate a type of response I think is to be preferred.¹⁸ Quantitative transhumanist natures are in fact nothing else than *enhanced* human natures. If they claim anything more than that, they overstate their case. No enhancements or “impro-

vements” – of body and mind, so that life span, cognitive, emotional and physical powers vastly exceed those of ours – will not result in the emergence of a new species. For all these enhancements will simply be making more of what is already “in potency” in human nature. Thus, a monstrous being with an enormously developed body and super-rationality would still count as much human as us, as long as the body is generically animal and the mind of a rational kind. The same holds for some unknown alien species. This response admittedly forces us to extend our common sense notion of humanity, but it follows from the definition of human nature as a rational animal. Since I am not sure that this sort of argument has much philosophical purchase on transhumanists, I will for dialectical purposes keep this sort of argument short.

Instead, I would like to take issue with the qualitative transhumanists that want to add a new quality to human nature so that it transcends the definition of human nature as rational animal.

Radical transhumanism: Uploaded Minds

A most radical version of qualitative transhumanism claims that the human mind can be uploaded on a hardware and thus effectively dispose of a biologically conditioned body. The transhuman can thus continue to exist disembodied on the internet (or some advanced equivalent). I take it that these claims constitute a powerful transhumanist position that makes a claim on a new sort of nature, other than the “old” human. This claim raises questions, not merely technological or scientific but also philosophical and theological. For instance, what would the freedom of the will and moral as well as intellectual virtues and vices look like in

an uploaded mind? Can an uploaded mind have (genuine) feelings without a body? Can an uploaded mind be a person, a carrier of the *imago dei* and in need of the forgiveness of sins as Adam's race was? These are pressing questions that are worth pursuing at length. More fundamental is the question about the *identity* of an uploaded mind, and this marks of my present area of inquiry.¹⁹ I want to begin reflect on this question by quoting John Sullins, who claims that uploading a human mind will result in the loss of personal identity:

Our personal identity is based on the fact that we are embodied in a particular way and have experienced a certain, reasonably continuous, spatio-temporal history without which we have no identity, we are not a person.... We will not be able to upload our mind into a machine and still remain ourselves for long. Even if uploading our consciousness into a machine was somehow technologically feasible, all we would achieve is the slow annihilation of our personality as it melted into the functions of the machine over time. At best we would create a new machine personality with a new distinct individuality.²⁰

I agree with what seems to be the common intuition behind Sullins' analysis, though I would like to add a more explicit metaphysical dimension to it.

We should note that Sullins' analysis does not cohere with the intention of uploaded mind transhumanists. For they seem to assume that detracting of animality and continued existence in an electronic environment amount to the constitution of a new species. Is that possible, though, through adding or detracting some property of quality? The uploaded mind transhumanist might escape the

fallacy of arguing for a qualitative change from a quantitative change if she argues that the transhuman nature emerges in part through a liberation from a limiting and non-essential property – the (generically animal) body. However, I do not think that uploading the mind and getting rid of the body is the kind transmutation hoped for. Although it escapes the immediate *additive* quantitative fallacy it fails because an uploaded mind has lost a quality that, consequently, makes it less than human. We might, rather inelegantly, call this a *detractive* quantitative fallacy: detract a part of some thing and you get a new and perhaps better other thing. Instead of a *trans*-human what we get is a form of *infra*-humanism.

Consequently, the detractive fallacy is, in my view, a cousin to the so-called homunculus fallacy. Traditionally, the homunculus fallacy assumed that inside a person's brain there was a little person (an ego or a consciousness) looking out through the eyes and controlling the body. That gives the impression that inside a human person is a small person. The problem then is that inside the ego, we might assume that there is another smaller ego looking out and controlling the "other" ego. And so on. The problem is not merely the implausible anthropological model but also that we end up in an infinite regress. Similarly, the transhumanist think that there is an ego inside a person that can be liberated: inside Nick, there is little Nick who, in his own view, is the greatest and truest Nick there ever will be. However, inside the little Nick, there might be yet a smaller Nick, who thinks that he is just as great and true as the "other" ego. And so on. Please note that this is not intended as a pun or an *ad hominem attack*. In all fairness, detracting an essential part of human nature

(animality), something new comes into existence. But the problem at hand is that when *x* ceases to exist, it is far from obvious that whatever entity that survives, *y*, is necessarily something more than *x* – or any sort of thing at all. And this is contrary to the intention of the transhumanist view of human nature, which states that the an uploaded mind minus the body is something more than human.

Perhaps it could be argued that we are really talking about an *exchange* of some quality: from a biological to a hardware *interface* for the mind. What makes this a plausible interpretation is that transhumanists are materialists. Also the mind needs a material interface. If so, we might argue that there is some new quality added to the human mind. However, for reasons that will become clear, I also object to this possibility.

In order to make progress I want to further characterize the uploaded mind version. It seems to presuppose that:

- (UM1) the mind is a material information pattern
- (UM2) personal identity is expressed in terms of mind-brain identity
- (UM3) the organic body is not essential to human or personal identity
- (UM4) the body is constituted apart from the mind

A few contrasting comments are in order here. I begin from the bottom of the list. That the body is constituted apart from the mind – (UM4) – might sound like an uncontroversial principle and the relevance of it will become clearer as we go along. Suffice to say here that, according to Aristotelian essentialism, the body is *not* constituted apart from the soul but in unity with the soul. The soul is not “hooked up” with a body since the soul is

the “humanizing” principle of the body. There simply is no *human* body unless it is in-formed by the rational soul. Thus, to say that the body is constituted apart from what makes it human would be a contradiction in metaphysical terms.

What of (UM3-1) then? Here we may take a step back and note that Cartesianism and transhumanism reveal a structural similarity since it does not matter very much if we think of psychological identity as ‘consciousness’ or ‘information patterns’ as it is thought that these states are what constitute personal identity over time. To demonstrate the mistake here one might argue from the fact that people with a broken personal identity (people with a brain damage or psychological personal disorder) can nevertheless remain the same persons numerically. There could be a number of different explanations to this but it seems clear enough that Cartesianism and transhumanism do not have a convincing explanation. As a Christian Aristotelian I think of persons in a more fundamental sense than what is assumed in (UM3-1), a sense that often is disregarded in contemporary theology and philosophy. Due to the influence of Descartes, human (and divine) persons tend to be seen as fundamentally ‘selves’, ‘minds’ (and lately these selves and minds are conceived as fundamentally ‘relational’ and ‘social’). None of these observations about human persons are false, only inadequate as descriptions of what a person fundamentally is. Persons are, by nature (indeed, it might be said to flow from their essence as rational animals) all carriers of selves and consciousness, but persons will never be or develop a self or become conscious unless they are persons in terms of something more fundamental. In other words, psychological attributes are not possible unless there is a proper

metaphysical base or structure for such predications. I find that it better to say, along with the scholastic tradition, that persons are most fundamentally individual substances of a rational nature (*Persona est rationalis naturae individua substantia*).²¹ Thus conceived, the concept of personhood denotes a metaphysical reality and applies *mutatis mutandis* to humans, angels and the persons of the godhead alike. Take care to notice that this concept of personhood is neither rationalistic nor anti-psychological or a-social (turning a human into an “it”). It only says that psychology (the self) is not the sole guide to personal identity. The primary reality of a person is metaphysical, and *because* a person is of a rational nature, she may be the subject of psychological attributes. Thus, we may in Aristotelian terms talk about a ‘surplus of meaning’ of persons: a person is always more than the sum of all her experiences, conscious states and information patterns.

Now, (UM1) and (UM2) are perhaps the more controversial aspects. We may begin by noticing that the transhumanist assume that the “old” or “traditional” human make-up defines personal identity in terms of mind-brain identity. Structurally the “new” human or “transhuman” also has a mind-brain identity – the brain is now a complex electronic hardware. Think of Nick who in 2015 is identical to some particular mind-brain configuration M+B and Nick in 2050 who is identical to some mind-hardware configuration M+H. Thus ‘brain’ is here taken in a flexible sense, as a *physical interface*.

Some problems immediately present themselves here. Is really M+B = M+H, that is, is Nick the same in 2015 as he is in 2050? If he is not, then which one is the “real” Nick? Unless we have some robust criteria of identity, we will not be

able to answer this and probably many other less radical questions concerning Nick’s identity. This is not one problem, but two. First, it is the problem of whether Nick is a *human* in both 2015 and 2050. I believe that is not the case, since no substance can survive a substantial change. I have so far loosely talked of substantial change as a qualitative change. But the language of substantial change adds a deeper view of changes. A substance has a nature (a *whatness*) without which it cannot continue to exist even if there are remaining parts left after the destruction of the substance. (Conversely, the coming into existence of a substance often means the destruction of some other.) Whatever the details, Nick in 2015 is clearly a human substance, an individual rational animal. If Nick one day – due to uploading his mind or death, which is another sort of substantial change – fails to continue *qua* human substance, there is no Nick anymore.

But if Nick is not a human in 2015 as well as in 2050, then Nick cannot be the same – for Nick in 2015 was essentially human. Things would have been different if the change was accidental, a change that the substance survives. For instance, if Nick in 2050 has been endowed in the way that the quantitative transhumanists think of our future (by adding sophisticated bio-technic engineering to his human nature) it is likely that he would be substantially the same although not accidentally. Moreover quantitative transhumanists would also have to admit that M+B \neq M+H for they have not in fact argued that the transhuman state is literally something more than an enhanced human.

The second problem here is that of individuation, or more precisely the *cause* of individuation.²² This is where (UM4) is

important, the separate constitution of the body. I have already proposed that we should think of personhood in terms of a basic metaphysical constituent, not identical to a mind. A *human* person is nothing else and nothing more than a composite of soul and matter. The soul is the principle or cause of unity, making the person to be the kind of thing it is, and the body is the principle of diversity, making it distinct from other human persons.²³ It follows from the definition of humans as rational animals that they should be embodied and thus located in time and space. The human body has quantitative dimensions and thus locate or individuate a person in time and space. Therefore, the physical body is the criteria for the individuation of a human being.

Nick in 2015, being a mind-brain dualist, does not think that the body individuates him as the person he is. Perhaps we are allowed to think that, in 2015, it was his brain's quantitative dimensions that individuated and kept Nick as Nick over time. But there was a radical break in the physical history of Nick somewhere between 2015 and 2050. His brain is substituted for the hardware system. Such a rupture in his lineage seems to warrant the conclusion that Nick is not the same in 2015 as in 2050 at least not if we take the B or H as the criteria of individuation.

It could be objected that an assumption here is not warranted, namely, that the break in physical history of Nick is so radical as to assume that Nick has lost his personal identity.²⁴ For some would argue that the transition could be done gradually via a series of cyborg modulations. That is, if Nick is changed gradually from biological existence to biological *cum* technological existence to fully technological existence the change is possible. This

objection is fair as far as it goes. However, it rather seems to be a supposition about the possibilities of technology, which is not what I am arguing against here. My question is: if that it is technologically possible for Nick to transition from his 2015 version to his (putatively) future version 2050, what will Nick be in 2050? The technological possibility of a transition does not determine the metaphysical possibility of Nick's survival. (It would be the same mistake as to ask a cartographer to make a judgement for a social scientist about the ownership of a piece of land.) Imagine a crafty engineer who could gradually change my car into a moped via a series of intermediate states and then claim that my car is now a moped. Such a conclusion seems correct on the surface, only that my car is no more and (therefore) cannot be part of anything else. There are, perhaps, parts of my old car – or the intermediate – that now compose my moped. But this does not warrant the conclusion that my car is now a moped. The reason is that a car is one kind of thing and a moped another kind of thing. Unless we would like to argue for the absurd thesis that a car can be *part of* a moped we should reject the conclusion that my car is now a moped. No car can metaphysically speaking be part of a moped. (Please note that I am not commenting on the limits of technology but on the metaphysics of cars and mopeds.) Analogically, I argue that Nick in 2015 is one kind of thing and in 2050 another kind of thing (or, as will become clear, perhaps not any kind of thing at all). Moreover, it would be absurd to assert that Nick in 2015 is part of Nick in 2050 for no person can be part of another person just as a car be part of a moped. It belongs to the logic of substantial predicates not to be predicated of each other: Peter cannot be predi-

cated of John (unless, it is so that they both refer to the same individual under two names but that is not relevant to my case). Thus, Nick in 2015 cannot be part of Nick in 2050.

Perhaps Nick and his transhumanist friends are more likely to adhere to Derek Parfit's view concerning personal identity.²⁵ In one of his examples (almost as radical as the uploaded mind) the brain hemispheres of a person A are surgically divided and put into two separate bodies, AB and AC. Given that the surgery succeeds, the puzzle is then to answer whether A is identical to AB or AC, both AB and AC or neither AB nor AC. Parfit argues that A is identical to neither AB nor AC but that A *survives as* AB and AC. This is a decent answer as far as it goes, for it tries to preserve the insight that something important is not lost in the change. But does it help the uploaded mind transhumanists? Well, it seems to me that they want to have the cake and eat it; Nick wants to stay Nick but not be human in 2050. So the best Parfit can offer Nick is that he *survives as* Nick 2.0. And perhaps this is all that Nick ever wanted.

However, I have already argued that nothing can survive a substantial change. And my sense of 'survive' seems to be the same or close enough to that of Parfit's sense. A flower at the top of Kilimanjaro cannot morph (hopefully, the reader can survive a hyle-moprhists word pun!) into, say, a fruit tree or an insect and remain the same individual. For the flower's being the individual it is, is dependent on being the kind of thing it is.²⁶

Perhaps there is a weaker form of survival where we may say that the parts of a substance survive in the reconfiguration into a new substance. Assume, then, that the most important and identity-shaping

part, the mind, survives in a reconfiguration. This assumption could support Nick in the future. The reason seems to be that transhumanist's personal identity is not dependent on any materialist principle of individuation at all. I have so far assumed something that could be questioned, namely, that Nick's *mind* will be the same in 2015 as in 2050. If it is, it seems that it needs no material principle of individuation. Suppose it is the case that the mind somehow individuates itself, perhaps through its content and history (i.e., the mind is not epiphenomenal). If that is so, we should think of the mind as independent from the brain. However, transhumanists tend to be reductive materialists. Thus, independence of the mind from the brain cannot be thought of in immaterial terms. For they are not Cartesians believing that the mind (of a person) is an immaterial and un-extended *res cogitans*. The information patterns or the mind (of a transhumanist person) cannot exist immaterially and un-extended since it needs a physical interface. Having disposed of all biological dependencies, the transhuman has substituted a brain with electronic hardware. By the same token, the transhumanist mind has bound its future existence to the new physical interface. But it is the technological possibility of substitution of physical interface that seems to reveal a level of independence. Here we may think of the mind as an emergent phenomena, as something that arises "naturally" from a suitable structured physical interface. However once emerged, it reaches a level of independency (i) as it begins to function on the basis of emergent properties and causes and (ii) it can be transferred from a biological to a technological interface.²⁷ Although the mind needs *some* physical interface to exist, it is a contingent matter, according

to the transhumanist, *what kind* of matter and *which particular* matter it is as long as it is suitably configured. Thus, we have a more complicated view of (UM1) and (UM2) than we first assumed. We might reformulate them as:

(UM1*) The human mind is information patterns effectively convertible from biological to electronic media

(UM2*) Personal identity is cashed out in terms of (a) mind-physical interface identity for (b) some physical interface is necessary but (c) it is a contingent matter whether the interface is biological or electronic

From this the radical transhumanist might conclude that the mind of Nick is the same in 2015 as in 2050 due to its conversion from biological to electronic media. For conversion is possible since it seems to be an integral property of the uploaded mind to enjoy a level of physical independence. Perhaps this independence should be understood as a sort of supervenience. Once Nick's mind has developed to a sufficient level (as well as the technological advancements have reached a sufficient level), it can supervene on a suitable physical interface other than his brain. And once this level of supervenience is reached, there is also a top-down causality such that the mind can act autonomously through suitable physical interfaces.²⁸ Despite such a supervenience structure on the hardware, the implication seems to be that his mind is no more than a digital copy of what once was a human mind. This assertion will be examined in the next section.

However, for reasons already given, I find it very unlikely that Nick is human in 2050 since, first of all, he seems to have

gone through a substantial change – he has become something less than human – and, second, he has lost the most important physical condition for individuating him in time and space. There is a remaining question: What will Nick be When He Grows Up in 2050?

What Will Nick be When he Grows Up in 2050?

Imagine that Nick in 2050 will succeed to upload his mind to a gigantic hardware system. This is a sort of *rite de passage* or a coming of age for a transhumanist. So, what, then, will Nick become when he grows up in 2050?

We have already said that he will neither be a human nor himself anymore. I think that Sullivan's observation (quoted above) is right, that the uploaded mind is at best "a new machine personality with a new distinct individuality". However, this begs many questions. For instance, what is "a machine personality"? I think that my characterization at the end of the previous section as "digital copy of what once was a human mind" is more to the point. Personality is in the Aristotelian tradition a term reserved for *subsisting* rational natures. But it seems that the idea of a "machine personality" is caught in the idea of a materialist version of personhood as 'consciousness'. It seems more correct, then, to say that Nick in 2050 has lost his (metaphysical) personality and that he, at the same time, lost the possibility of having a human consciousness.

I concede that such Aristotelian objections are not likely to gaining much territory on transhuman ground. Let pause for a while and take stock. We know that Nick by 2050 hopes that he has turned into a super-intelligent being²⁹ and that has left his biological condition behind.

“He” continues “his” career as information patterns on some hardware. Inside the hardware he can wilfully control his emotions and thoughts and imagination perfectly. But we should not think that Nick is a solipsist. Nick can communicate meaningfully and intimately with other “machine personalities” or “digital copies”. And not only these, he can communicate with the cyborgs, the half-and-half beings who have not (yet) completely given up on biological existence as well as with “old” humans of flesh and blood, should there be any left. For even if Nick now lives his life in the hardware, he has in this brave new world the possibility to control (machine and biological) bodies and thus communicate with the “external” world.³⁰

In order to give a more creative answer to the question about Nick’s identity in 2050, let us turn to an alternative ontology, one that is richer than the mere substance metaphysics that I have used so far (although compatible with it). According to traditional Christian creational taxonomy, a disembodied intelligence, such as Nick in 2050, is classified as an angel. There are, of course, significant differences between an uploaded mind and an angel. Angels are *immaterial* rational substances. We have at least seen that uploaded minds are somehow independent of a particular kind of physical interface and they can use “external” bodies to make changes in the world. For even if angels are essentially disembodied beings, they can at least manifest themselves in physical form and make changes in time and space. So, although uploaded minds are not strictly immaterial, they are sufficiently like disembodied rational substances to make the comparison since both the Archangel Gabriel and Nick in 2050 enjoys (from a human perspective) an

impressive or godlike level of independence from physical matter. Having conceded this much, and perhaps that is too much, there is another reason for disbelieving the comparison.

The reason concerns how Nick and Gabriel relate to physical space and time. On a standard scholastic analysis, angels are not present in one place in a circumscriptive manner.³¹ To be circumscribed is to have one’s being limited by a physical place: the human person (body and soul) is present in one place by being circumscribed by it.³² That is, a person has no proper parts outside the boundaries of, or detached from, the place she is in. Granted, an uploaded mind might be said to be present in several places at the same time – perhaps by sectioning itself up – but it will always be present in those places in a restricted and circumscribed fashion since it is causally bound to a hardware matter and operate “externally” through machine bodies. However, it is clear that the “external” operations are made through instruments that are not proper parts of the uploaded mind. It seems not so different from me using contemporary mobile technology to start my automatic lawn mover and regulate temperatures in my house simultaneously (perhaps from a pre-programmed schedule) while at work. It would blur the concept of ‘being present in more than one place’ in a very unhelpful way if I claimed that I was *literally* present at home having my machines performing these things for me while at work.

According to the scholastics, an angel is not present in a place in this way – it is present in a ‘definitive’ or ‘dimensive’ manner.³³ Among many things, this means that the Angel’s *being* is not bound to some particular body since ‘pure intellectual substances’ do not depend on

bodies to operate. Thus, the angel who spoke to Joseph at Bethel did not form a species-unity with the matter that necessarily is in a place in the same way that Joseph did with the particular matter we call his body that necessarily is in a place. Joseph simply is a rational animal, whose rational soul is naturally united to matter in order to form a human body. Angels do not have the same inborn capacity to be united with physical matter in order to form a “metaphysical hybrid” nature such as the human. Thus, angels are not bound up to physical bodies and place in the same way as humans.

Imagine that Nick in 2050 were to cause a fire-like effect in a place where there is a bush when staging the biblical story of Moses to keep the myth alive to some remnant old humans he keeps as his pets. This is a technological parallel to what theologians talk of as divine theophanies where the God reveals himself through an angelic ambassador. Like an angel, Nick would not form a species-unity with the matter of the bush. And because Nick and angels can reveal themselves in matter without forming species-unities with that matter, the angelic analogy seems plausible. But it is only so metaphorically. An immaterial angel like Gabriel and Nick in 2050 are radically different and their manners of causing (material) effects are equally different. Gabriel causes the changes immediately (through ‘virtual contact’, as Aquinas would say), whereas Nick in 2050 would have to do so in a mediated way, through a complex series of physical causes and effects in time and space. The differences between the presence of an angel and Nick in 2050 are vast, because Nick in 2050 is still much more like me controlling my lawn mower from a distance than an angel being present in a place.

Recall what we have said about quality and quantity: by uploading his mind to the hardware, Nick in 2050 has not added a new quality, which makes him able to be present in an angelic manner, but, as I said, at best merely detracted a quality (animality). Had he, for instance, added a genuine non-technologically based telekinetic power, a la Neo in *Matrix Revolutions*, things might have been different. But, since no such claims have been launched by the radical transhumanist, I shall not consider that possibility.

So the angelic analogy is at best a comparison for illustrative purposes but not for determining what kind of being Nick in 2050 really is. And the same reason holds, *a fortiori*, for the suggestion that uploaded minds will be or be like (a) god. Well, that holds true if we cast our nets narrowly and only include the traditional Christian concept(s) of God. We might want to argue that uploaded minds are more like the ancient Greek and Roman deities Zeus and Hera. As far as I can tell, such divinities were in some sense circumscribed by time and space in ways that make them inferior to the (medieval) Christian view of angels – not to mention God almighty. Greek and Roman deities can take on or even have some sort of physical form, as well as use existing bodies to effect changes in several places at the same time. The similarities seem less farfetched than the angelic analogy. Thus, at best, the radical transhumanist might in the future, unbeknownst to himself, be in the business of making the ancient myths true. Lovers of *Marvel* can only marvel about this! As an analysis about what an uploaded mind is, however, it leaves much to ponder.

One of the best metaphysical answers to what Nick will be in 2050 from an Aristotelian perspective is perhaps

Aquinas' answer to the question what a separated human soul is.³⁴ Like Cartesians and Platonist, he believes that the human soul can survive death. But the soul's survival seems to be an exception to the normal course of material substances when destroyed. (And unlike Cartesians and Platonists, Aquinas does not identify the human person with the soul.) Thus, Aquinas says that the dead corpse is no longer a human body more than in an equivocal sense: it is an accidental unity of chemical processes. This is a very blunt answer, but it is nevertheless plausible. So what then is the separated human soul? Just as the dead corpse is no longer a human body, the separated soul is no longer a human soul. The reason is that they are no longer parts of a human nature. The separated soul continues to exist without a determinative quality and is not classifiable as a species. It is, as Aquinas say, a only "this something" (*hoc aliquid*); a reality or thing (*res*) without a determinative or species limiting quality. In a similar fashion, then, we may view Nick in 2050 as a thing without a determinative or species limiting quality. However, I would to add that if something is not in a species we have reason to wonder whether it really exists at all or at least in what

sense. For how could there be anything that is not a particular kind? If that is so then Nick in 2050 will risk being a person only in an equivocal sense since his species-identity is incomplete – and if incomplete perhaps Nick will not be at all.

A final and perhaps more benign suggestion is that Nick in 2050 might be viewed as a property (or part) of something else, or more precisely a software property of a gigantic hardware. For whatever Nick is, he is at least a thing without a species limiting quality and that resembles many past and present philosophers' way of conceptualizing properties: a property is a reality that by its nature depends on something else for its existence. Nick might, then, be a property of something else that has an essence. But a fatal consequence of this way of thinking about Nick in 2050 is that he then will no more be an agent or person in his own right, since no person is a properties but a carrier of properties.

In sum: if we wish Nick well, we should at least hope that he is a "this something" or a software property. However, both of these alternatives are a far cry from what Nick had set his own hopes to become by 2050.

Notes

1. Nick Bostrom et al., *The Transhumanist FAQ*, version 3.0 (2008). Copyright 1998, 2003, and 2008 by the World Transhumanist Association. Available at <http://humanityplus.org/philosophy/transhumanist-faq/> (Accessed 3rd May 2016).

2. *Human Purpose and Transhuman Potential: A Cosmic Vision for Our Future Evolution* (San Rafael: Origin Press, 2014), 21.

3. I am here alluding to Nick Bostrom's instructive article "Why I want to be a Posthuman When I Grow Up" in *Medical Enhancement and Posthumanity*, eds. Bert Gordijn and Ruth Chadwick (Springer, 2008): pp. 107-137.

4. The kind of essentialism I describe here is shared by a good number of theologians, notably among the medieval and protestant scholastics; hence, I shall feel at liberty to occasionally refer to scholastic authors and opinions. However, Aristotelianism is not a monolithic tradition. Thus, what I am portraying here is a general picture that hopefully most scholastics would have recognized as Aristotelian. For a contemporary defence of Aristotelian essentialism see David S. Oderberg, *Real Essentialism* (Oxford: Routledge, 2008).

5. For a defense and exposition of Aquinas' anthropology, see Jason Eberl, "Aquinas on the Nature of Human Beings" *The Review of Metaphysics*, Vol. 58, No. 2 (Dec., 2004), 333-365. See also Robert Pasnau, *Thomas Aquinas on Human Nature* (New York: Cambridge University Press, 2002); Norman Kretzman's, *The Metaphysics of Creation. Aquinas's Natural Theology in Summa Contra Gentiles II* (New York: Oxford University

Press, 1999) and William Wallace, *The Modelling of Nature: Philosophy of Science and Philosophy of Nature in Synthesis* (Washington D.C.: The Catholic University of America Press, 1996), chs. 4-5.

6. We might also want to add that Aristotelian definitions are so called 'real' in contrast to 'nominal' and 'lexical' definitions. For this see, Christopher Childs, *Aristotle* 2nd ed. (Oxford: Routledge, 2013), 116-23.

7. I do not include the notion of 'categories' in my discussion. A category is a way of being and/or a way of predicating something depending on ones interpretation of categories. Many scholastics have assumed that Aristotle counted ten *categories*: one category of substance and nine categories of accidents. However, exact details as well as the number of categories have been much discussed and need not detain us here. We may note that, even if we reduce the nine accidental categories to one, say quality as William of Ockham did, we may still be called Aristotelians.

8. Here I set aside the rich scholastic dispute over the various kinds of distinctions made between form and matter and other part-whole relationships. The thing I want to draw attention to here is simply that there is some kind of distinction between form and matter to be made. Scholastics felt free to make distinctions within things, so to speak, that did not mean that the parts or properties of a thing were separable in reality. They had a rather fine-tuned way of making distinctions as well as talking about identity.

9. Those who are not might agree with Quine's rejection of Aristotelian essentialism. However, such a criticism seems misguided and the interested reader is directed to Vincent Spade's delightful refutation "Wrap and Woof of Metaphysics" at <http://pvspade.com/Logic/docs/WarpWoo1.pdf> (Accessed 8th October 2015).

10. I say 'characterize' here since I am not claiming that all essentialists have to account for natures with reference to robust definitions.

11. For instance, *Transhumanist FAQ* "Transhumanism is a way of thinking about the future that is based on the premise that the human species in its current form does not represent the end of our development but rather a comparatively early phase....Transhumanism is a class of philosophies of life that seek the continuation and acceleration of the evolution of intelligent life beyond its currently human form and human limitations by means of science and technology, guided by life-promoting principles and values."

12. I use the term developments here in the broad sense, because, I think that there are reasons to assume that not all developments that transhumanists envision are perfections. To simply become stronger or enhanced does not by necessity perfect a human nature. Arguably, it might in some instances destroy it. I hope to develop this and other related assumptions at some other point.

13. Joshua M. Moritz recently wrote: "Moreover, taking into account a gradualist evolutionary perspective, there appears to be no philosophically consistent or theoretically unproblematic way to establish biological essences or empirical natures within a Darwinian framework. It remains to be seen, then, how one might accept both Darwinian evolution and a scientific conception of human nature." In "Does Jesus Save the Neanderthals? Theological Perspectives on the Evolutionary Origin and Boundaries of Human Nature" *Dialog: A Journal of Theology* 54/1 (2015), 52.

14. See <http://plato.stanford.edu/entries/vagueness/> (accessed 29th April, 2016).

15. For nominal and real definitions, see: <http://plato.stanford.edu/entries/definitions/#ReaNomDef> (Accessed 23rd May 2016). Conceptually, the human species went extinct when the concept of species morphed from real definition to nominal varieties. It might be thought that natures are simply arbitrary acts of naming something. "What's in a name?", Julia asks herself in Shakespeare's famous *Romeo and Julia*. The reasons that she cannot be united to her beloved Romeo is some past arbitrary act of naming their two families, which divided their love and makes them enemies. But naming a nature is not an arbitrary act. It is, as I have said in the previous section, an attempt to approach the essence of a thing.

16. Although I have not argued for it and I am not convinced of it, I should not completely precluding that there might be objects with an inherent qualitative, metaphysical, vagueness. What I resist is that the notion that vagueness in some special cases makes all species vague. Oderberg makes a strong case against vagueness and is worth pondering in *Real Essentialism*, 224-234.

17. See Eleonore Stump, *Aquinas* (Oxford: Oxford University Press, 2003), 39-43.

18. Oderberg notes the following: "No difference of degree could ever change the species. Knowing more, living longer, being stronger . . . none of these could ever turn a human into a non-human, or be that in virtue of which one being was human and another not. All would be rational animals, humans in the true metaphysical sense regardless of how we classified them based on narrow biology alone. Here is the a priori argument in full. A superhuman in the transhumanist sense either has more rationality or more animality. (For example, if it knows more it has more rationality; if it is stronger it has more animality. This is a deliberately forced way of speaking, but I cannot think of a preferable way of making the point.) No difference of degree can make for a difference of species. So the superhuman would still be of the same species, namely a rational animal." ("Could There be a Superhuman Species?", *The Southern Journal of Philosophy* vol. 52, no. 2 (June, 2014), 222). See also John H. Boyer and Groffery Meadows, "Thomas Aquinas: Teacher of Transhumanity?" *Thomas Aquinas: Teacher of Humanity*, in John P. Hittinge and Daniel C. Wagner, eds. (Newcastle Upon Tyne: Cambridge Scholars Publishing, 2015), 186-197.

19. On the recommendation of an anonymous reviewer I should say a word about Nick's identity over time although I do not have space in one paper to discuss this question at length. Temporal identity is often discussed in terms of whether or not a thing has temporal parts. It seems to me that an Aristotelian's view of substances is most naturally characterized as 'endurantist': that is, a substance has no past or future temporal parts. The whole of a substance exists now. Perdurantism, the opposite position with regard to the problem of identity over time, has it that there are temporal past, present and future parts of a persisting object. Physical objects are like worms stretching through time. The endurantist objects that these parts are simply fictitious locutions that are metaphysically misleading if taken literally. Thus, an endurantist solution to the problem of Nick's identity over time would straightforwardly argue that Nick's existence in 2015 is not a temporal part of Nick's existence in 2050 since there are no temporal parts – only enduring substances. Perhaps an Aristotelian can allow temporal parts for some artificial substances since they depend on their identity on proper substances. Also homogenous wholes like waves, might be said to have temporal parts. However, none of these exceptions alter the basic solution to the identity of Nick over time.

20. As quoted in Stephen Lilley, *Transhumanism and Society: The Social Debate over Human Enhancement* (Heidelberg: Springer), 201

21. Boethius in *Liber De Persona et Duabis Naturis Contra Euthycen et Nestorium*, ch 3. in Minge Patrologia Latina vol. 64., 1343. At: http://www.documentacatholicaomnia.eu/02m/0480-0524,_Boethius,_Severinus,_Liber_De_Persona_Et_Duabus_Naturis_Contra_Eutychem_Et_Nestorium,_MLT.pdf. (Accessed 12th October 2015).

22. See Jorge E. Garcia (ed.) *Individuation in Scholasticism: The Later Middle Ages and the Counter Reformation (1150-1650)* (Albany, NY: State University of New York Press, 1994).

23. See, for instance, Christopher Brown, *Aquinas and the Ship of Theseus: Solving Puzzles About Material Objects* (London: Continuum, 2005). Philosophers distinguish between individuation and (diachronic) identity over time. In my treatment I do not make such a sharp distinction since in the issue at hand as the two are intimately related.

24. I have added this paragraph in response to an objection raised by an anonymous peer reviewer.

25. See a convenient summary at: <http://plato.stanford.edu/entries/identity-time/> (Accessed 8th October 2015.)

26. Here evolution seems to constitute a case against what I have just said. But appearances are deceptive. That a species have several ancestor species does not imply that the ancestors somehow exist in the later species. A human is not a higher primate than its ancestors but something else. An important assumption here is to distinguish between origin and constitution. However, a taxonomy based on that distinction does not preclude that there is an historical lineage with several transitional species or varieties of species from lower to higher organisms.

27. There are connections to my analysis of radical transhumanism and emergent dualism. An anonymous reviewer suggested this comparison with emergent dualism with reference to such thinkers as William Hasker's *The Emergent Self* (Ithaca: Cornell University Press, 1999). I fully agree that the comparison is relevant but have to leave the controversial parts of the topic outside of the present context as I think that it deserves an article length discussion. From an Aristotelian point of view, Johan Haldane has summarised the central problem with the notion emergence in the philosophy of mind. "The Mystery of Emergence", *Proceedings of the Aristotelian Society, New Series*, vol. 96 (1996), 261-7.

28. I have argued that naturalism is self-contradictory in the philosophy of mind "Vad tänker naturalisten med egentligen?" *Theofilos* no. 1 (2010). The same sort of argument holds against radical transhumanism also.

29. Cf. Nick Bostrom, *Superintelligence: Paths, Dangers and Strategies* (Oxford: Oxford University Press, 2014).

30. Here, I am not excluding the possibility of an uploaded mind controlling more than one body at the same time.

31. See Aquinas, ST, I, qq. 50-53. See: David Keck, *Angels and Angeology in the Middle Ages* (Oxford: Oxford University Press, 1998), 75–114; Helen S. Lang, "Bodies and Angels: The Occupants of Place for Aristotle and Duns Scotus", *Viator*, 14 (1983), 245–66; Martin Pickavé "Henry of Ghent on Individuation" and Giorgio Pini "Scotus on Individuation", *Proceedings of the Society for Medieval Logic and Metaphysics*, Volume 5, 2005, 38-49 and 50-59; For two related discussions see also my *Jerome Zanchi (1516-90) and the Analysis of Reformed Scholastic Christology* (Göttingen: Vandenhoeck & Ruprecht, 2016), ch. 6 and Marilyn M. Adams, *Some Later Medieval Theories of the Eucharist: Thomas Aquinas, Giles of Rome, Duns Scotus and William Ockham* (Oxford: Oxford University Press, 2010), 111–231.

32. I would argue this is true even in the putative counterexample of siamese twins who share parts of the same continuous body.

33. See, e.g. ST, I, q. 52, art. 1, resp: "It is befitting an angel to be in a place; yet an angel and a body are said to be in a place in quite a different sense. A body is said to be in a place in such a way that it is applied to such place according to the contact of dimensive quantity; but there is no such quantity in the angels, for theirs is a virtual one. Consequently an angel is said to be in a corporeal place by application of the angelic power in any manner whatever to any place. Accordingly there is no need for saying that an angel can be deemed commensurate with a place, or that he occupies a space in the continuous; for this is proper to a located body which is

endowed with dimensive quantity. In similar fashion it is not necessary on this account for the angel to be contained by a place; because an incorporeal substance virtually contains the thing with which it comes into contact, and is not contained by it: for the soul is in the body as containing it, not as contained by it. In the same way an angel is said to be in a place which is corporeal, not as the thing contained, but as somehow containing it.” 34. ST, I, q. 75, art. 2 and 4.