Journal of EVOLUTION & Technology

A peer-reviewed electronic journal published by the Institute for Ethics and Emerging Technologies

ISSN 1541-0099

18(1) – May 2008

Are we Transbemans yet?

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Journal of Evolution and Technology - Vol. 18 Issue 1 – May 2008 – pgs 94-107
http://jetpress.org/v18/rothblatt.htm

The new word "beme" is an adaptation of the linguist's word "morpheme," which means the smallest unit of meaning. A "beme" is the smallest unit of being, or existence. Being is usually defined as a state of existing, or as somebody's essential nature or character. Hence, a beme is the smallest unit of someone's essential nature or character. For example, the image of one's mother, a predilection toward honesty and the ways one smiles are all examples of bemes.

"Bemes" are similar to "memes," units of cultural transmission that were first explicated in 1976 by Richard Dawkins[1]. Memes parallel without biochemistry the replication and mutation characteristics of genes. An idea such as "war is bad" is a meme that can be passed from person to person the way genes are passed from parents to children. The meme "war is bad" can also be mutated into "war is always bad" or "war is good" just as genes for growth can be mutated into gigantism or dwarfism.

"Memes" span a broader field than the linguistic-bound morphemes (the "peace sign" and "smiley face" are also memes), and are studied more for their transmissibility characteristics than for their inherent meaning. By analogy, a beme is a unit of existence, nature or character that can behave like a gene. Hence, a beme can produce behaviors like a gene can produce proteins. Also, a beme can be replicated or combined or mutated either within a being (as occurs with genes) or in an offspring (as also occurs with genes).

In certain instances, bemes might be thought of as very specific kinds of memes. But most small units of existence are not units of cultural transmission. In any event, the growing public familiarity with the concept of memes is helpful in gaining understanding of the new concept of bemes.

The bottom line of this essay is that in an Information Age society the "beme is mightier than the gene." This means that transmissible units of character or existence are more important than genetic information. For example, most people's love-mate is a person with whom they share no

genetic commonality outside of that which is in the general gene pool of their community. However, a lasting interpersonal relationship is only possible if the two partners share a strong appreciation for each other's bemes − their characters, natures, and ideational units of existence.

To say the "beme is mightier than the gene" is to disagree with the socio-cultural implication of "blood is thicker than water." Most people's strongest relationship, that with their spouse, or with a best friend, is not a blood relationship. On the other hand, bemes are not like mere water. A person builds up his or her bemes over time, and evolves them as appears most conducive to an enjoyable life. More apropos than "blood is thicker than water" is "minds are deeper than matter." That which we have spent time developing, like a relationship, is more valuable, and reliable, than that which just flows down to us and claims affinity based solely upon flesh. Indeed, our strongest relationships with even blood relatives are based upon our appreciation for their bemes, not their genes.

Reinventing Our Species

This essay aims to open our eyes to the fact that because our society is now based upon bemes more than genes it must logically re-conceptualize its species boundary. Traditionally, a species is defined as a set of organisms that can interbreed.[2] If we can interbreed using bemes as well as, or instead of, genes, then surely we must now be something other than mere *homo sapiens sapiens*. How can we interbreed using bemes? There are three steps, all of which are underway and inevitable:

1. *Replicating our own, or blending two or more persons', mannerisms, personalities, recollections, feelings, beliefs, attitudes and values in a capable computer.* This process of copying our bemes into a computer flows naturally from spending a lot of time online, especially as built-in video-chat cameras become ubiquitous and terabytes of memory become common. Projects such as myinfobits.com and cyberev.org explicitly aim to capture one's personality and memories in data files.

2. *Providing a capable computer with a mind operating system ("mindware" or "thoughtware") that seamlessly organizes the replicated or blended bemes into human thought patterns and an apparently conscious human mind.* This step of providing self-awareness and autonomy to gigabytes of digitally stored samples of one's life flows naturally from efforts to personalize cyberspace avatars. While "mindware" or "thoughtware" does not yet exist, they will emerge as computer processing speeds approach the 10^{16} bits/second speeds of the human mind and market forces demand avatars to be ever more human. To paraphrase Bill Gates, true mindware is worth ten Microsofts. The world's computer scientists and cyber-entrepreneurs have huge incentives to create cyberconsciousness. Gaming avatars are on the leading edge.

3. *Granting the apparent consciousness that emerges from the capable computer the status of legal personhood.* Lawyers are already conceptualizing the legal rights and responsibilities of cyberconscious beings.[3] Articles in scholarly journals have urged legal recognition of sentient life in a computerized form.[4] Once a person's uploaded bemes have "awoken" with mindware, legal recognition will become a moral imperative. At that point, *homo sapiens* is part of a larger inter-breeding race – *persona creatus* is an apt description.

Biologists define life as things that are "organized, take materials and energy from the environment, respond to stimuli, reproduce and develop, and adapt to the environment."[5] Each of

these activities is carried out pursuant to instructions coded in DNA.[6] Indeed, these activities are carried out because DNA that included these instructions became prevalent – DNA lacking these functions never thrived. Consequently, for an evolutionary biologist, the purpose of life is to propagate the DNA code of life because that is, in fact, what life appears to do. No other "macro-purpose" encompassing propagation as a means to an end is observable. More specifically, the purpose of each species is to propagate its DNA, and the purpose of life overall is to propagate diverse versions of DNA. This increases the probability of propagating some version of DNA no matter what environmental forces do to other versions of DNA.

Now, at the end of a long line of diverse versions of DNA sits *homo sapiens sapiens* – us. We finally figured out the whole DNA thing, and say "ok, so the name of the game is to replicate life with enough diversity to avoid being wiped out by a natural catastrophe or disease." *Now, here's the mind-blowing idea that bred this essay: we can replicate life without DNA.* Clearly, DNA is just a goof-prone but remarkably self-correcting tool to replicate itself and create a wild array of host forms as intermediate steps in the process. Since we've improved on virtually every one of Nature's tools – homes instead of caves, hammers instead of rocks, laws instead of savagery, electricity instead of fire – why not also improve upon DNA as the tool for replicating hosts for a self-replicating code? After all, DNA works slowly (copies take generations) and has only one form that gives rise to human consciousness. If that form was wiped out, who knows when consciousness might next arise?

To improve upon DNA we must first be able to specify ourselves without genes. This we can do with *bemes*. By specifying our mannerisms, personality, feelings, memories, beliefs, attitudes and values in a set of digitally coded bemes, we will achieve the ability to replicate ourselves without genes. While it is true that without DNA there will be no flesh,[7] that does not mean that there will be no self. Expressing the bemes of our consciousness in computer substrate is still an expression of us. At minimum doing so empowers a parallel route of self-replication, one that survives within cyberspace rather than the flesh-friendly biosphere. Ultimately, however, entire flesh bodies will be manufactured (atom-by-atom) just as a growing variety of body parts are manufactured and implanted today. Once this occurs our beme-uploaded selves can be downloaded back into such flesh-like bodies. At that point, DNA will be completely superfluous or, at most, a mere tool used in the custom assembly of bodily structures at the whim of a higher-order non-DNA code (as in the case of beme-directed genetically-engineered bodies).

What does this portend for Nature's "purpose," for what she does, namely create self-replicating codes that specify hosts to further the self-replication process? It means that once we leave DNA for BNA (Beme Neural Architecture), it may be that BNA will out-compete DNA in populating the universe with self-replicating code. Bemes are much more quickly assembled, replicated, and transported. Computer technology is vastly more efficient than wet biology in copying information. Information expressed in digital bits rather than in nucleotide base pairs can be transported farther (beyond earth to escape killer asteroid impacts), faster (even at the speed of light) and cheaper (expense is a function of bulk and mass). In other words, the transition to BNA from DNA is a fulfillment of life's purpose. It is "be fruitful and multiply" on steroids.

Just as human DNA gives rise to humans, human BNA gives rise to "bemans," a neologism based both on the acronym ***b***io-***e***lectronic hu***man*** and on a merging of words ***bem***es and hum***an***. Many people will have one foot in the human camp and one foot in the beman camp. For example, a typical information society citizen today is flesh-and-blood human but vitally relies upon vast portions of their life being stored and processed electronically. Such people can be said to be "transbeman" – they ***trans***cend both the human and the ***beman*** worlds. Transbemanism is a

philosophy that promotes the transcending of flesh-based and beme-based life. It is a philosophy that holds that life's substrate, per se, is irrelevant to life's value.

We Are the World

Even if beme-replication is the smartest evolutionary strategy, what if the strategy doesn't get executed properly? What if the BNA-based life mess up the world? What if the world is too fearful of BNA-based life (transphobic) to permit its development? What if the unifying rubric of *persona creatus* can't overcome the age-old "fear of others" (xenophobia) that lurks in human minds? How can global public opinion be marshaled to support broadening the definition of our species?

A solution to these questions can be found in the principles of geoethics. This discipline is based on the thesis of Ulrich Beck that "risk of harm is the pollution of technology."[8] Beck observed that technology produces a class of people who are at risk of its harms, but that unlike earlier nationalistic or economic groupings, the risk class transcends boundaries and measures of wealth. For example, genetically modified food has never been proven to harm anyone. Yet, as a technology there is a perceived risk that it could cause harm. That perceived risk is "pollution" because it affects many people adversely. The risk class for genetically modified food technology unites advocates in Africa, Europe and America, both those rich enough to purchase only organic food and those poor enough to be dependent on food aid.

Geoethics provides an algorithm for resolving matters of risk pollution.[9] In the case of cyber-consciousness or beme-centered technology, the risk pollution is that somehow everyone will be harmed if we begin imbuing technology with human characteristics and human rights. For example it could be argued that flesh humans will lose control of society if non-flesh bemans are given human rights. It might also be argued that humans will lose their highly valued essential nature if they begin to think of themselves as transbemans.

The approach of geoethics to a risk pollution technology is to first ensure that no risk is incurred without the consent of those who may be impacted by the risk. This is like saying a smoke-spewing factory should not be placed in a community unless the community agrees to it. Second, geoethics demands that those most likely to suffer from the risk of a technology be most assured of its benefits.[10] This is like saying if a community does agree to a factory in its midst, community members should have priority in obtaining jobs at the factory or products of the factory. Finally geoethics ensures that an independent body other than the technology developer assures compliance with any terms of public consent to the technology. These three geoethical principles are called consent, benefit and assurance.

In the case of cyberconsciousness technology, publicly elected bodies or referenda covering all persons who might be affected could be used to satisfy the geoethical consent principle. The geoethical benefit principle might be satisfied by providing each human with cyberconscious "mind-file storage" so that valuable components of human culture do not die when flesh bodies die. Many if not most people might find having a beme-based "back-up" for their life a fair trade-off for permitting transbeman personhood. The wisdom of ancestors is valued across all cultures, and beme-based storage helps to ensure that wisdom continues to guide future generations. The geoethical assurance principle might be met with government "monitoring and reporting" contracts awarded to auditing firms or law firms, or perhaps with newly created transbeman relations regulatory agencies.

How and When Will It Happen?

What kind of person would our reproductive offspring, the conscious computer, be? This esaay argues "they"[11] would be "transbeman," a blend of "bemes" and "humanity" that "transcends" the continuum from products of genetic code to products of conceptual code. Computerized consciousness cannot escape its ultimate roots in flesh experience. Neurological beings, on the other hand, cannot escape the abstraction of their essence into their bemes. "Transbeman" is also an appropriate term because people are already becoming "part-beman" by storing growing portions of their existence (photos, blogs, things to remember, music) on computers. Just as a modern "transgendered" person may be a little female while mostly male, or vice versa, a "transbeman" person may be a little computerized while mostly flesh, or vice versa.

Transbemans are not artificial intelligence, or "AIs," because they are not artificial. They are not made in imitation of something natural; they *are* something natural, albeit hosted by an artificial substrate. Transbemans have transferred their *natural* beingness to another substrate, which makes them transferred consciousness, "TCs," or transferred beingness, "TBs." It is quite possible to construct a humanoid personality from scratch, and that might qualify as an AI, although more appropriate labels would be artificial being, "AB" or artificial consciousness, "AC." The point is that in talking about how to upload ourselves we are not talking about creating an AI; we are talking about creating a TC; a transbeman.

What sort of bodies might our beme-offspring have? Once human consciousness resides on computer substrate, there are at least three possibilities for embodiment:

1) *Virtuality:* The uploaded transbemans may wrap themselves computer-game fashion in fully human virtual bodies and environments that are as persuasive as those of the three-dimensional world. In this way the transbemans will not want for movement, sensation, travel or any other facet of flesh bodies.

2) *Bionanotechnology*: The uploaded transbemans can also download themselves back into nanotechnological bodies, much like robot, cyborg or android bodies. Such bodies will replicate at the level of the atom via bionanotechnology all of the sensations and capabilities of the original human body. In this way transbeman bodies will not be less "human" other than the fact that the DNA-driven structure of their original bodies is replaced with an atom-by-atom built simulacrum.

3) *Regenerative Biology*: The uploaded transbemans can download themselves back into a regenerated human body, such as one genetically engineered from a single cell. In such case the body would be grown without an identity by suppressing those genes responsible for that part of the brain. Once the body is fully developed, the transbeman mind can be downloaded into the brain and either the genes for neural support to the mind can be turned on, or a nanotechnological facsimile can be provided. In either event, the transbeman now has a flesh human body as well as a backed-up human mind.

The new kinds of bodies just described are today science fiction. Indeed, SF author Richard Morgan calls just these kind of bodies "sleeves" in his *Altered Carbon* series of books.[12] However, rearranging billions of atoms on paper to make photocopies, or flying millions of people throughout the world every week, was also science fiction several decades ago. Science fiction can rapidly become science fact when the right trends are in place, as they are for virtual reality (e.g., computer games), artificial bodies (e.g., robotics) and regenerated bodies (e.g., biotechnology). Nevertheless, the species-transcendent nature of new life created via beme

transfer is just as real even if that life is physically immobile, because it is living in a cyberspace virtual reality, for one or more decades. We may wring our hands over whether such a life is a good quality of life, but at that point we will have accepted the fundamental premise of beme-based life (that it exists). The next step will be to ask the new transbemans for their opinion.

The Value of a Life: Creating Consciousness

There are many who claim that it is impossible to maintain human thought or consciousness outside of a human brain. Others will argue that it is wrong to admit to human society any kind of alleged consciousness or being that emerged from computer substrate. To these persons, there are three reasons to re-evaluate their beliefs in favor of a broadening of our species definition:

Fundamental Fairness. If we breed via beme replication minds that claim to be conscious, and that act as conscious as minds that arise from genetically-produced brains, then it will be conceded by many people that it is possible to maintain consciousness outside of a human brain. However, others will deny the apparent consciousness and claim it to be just clever programming. We will then be in the situation of race relations during the eighteenth and nineteenth centuries. Many Euro-Americans were persuaded that African-Americans were conscious and hence deserving of equal rights. However, others, whom we'd call racists today, argued that the Africans lacked human consciousness and were simply clever beasts of burden. The racists lost the argument as increased interaction with African-Americans, and best-selling books by authors such as Olaudah Equiano and Frederick Douglass, convinced ever more people that Europeans and Africans shared similar consciousness.

Today, it will be most difficult to convince a "top-down" (no flesh means no consciousness) thinker that an entity created by replicated or blended bemes plus mindware is conscious. However, in time, bottom-up thinking (if there is evidence of consciousness, then there's consciousness) will prevail because most people will be no more able to blink-away evidence of machine consciousness than they could blink-away evidence of African consciousness. Empathy is a fundamental human emotion – that which seems like us is presumed to feel like us, and us like them.

As people are persuaded that beme offspring are conscious, they will feel it not fair to deny them inclusion in the human community. This very human principle – to treat like things similarly – is enshrined in the U.S. Constitution as the Equal Protection Clause. Opponents will retort that the beme offspring, even if conscious, are not *humanly* conscious. This is one reason why the rubric of transbemanity should be welcomed now – it provides a semantic framework within which fundamental fairness can operate. Instead of a divisive debate over whether flesh-hewn consciousness is more deserving of respect than flesh-spawned consciousness, there can be a constructive debate over whether the hallmarks of an all-embracing *transbeman* consciousness are present. If so, then fundamental fairness and equal protection should prevail.

So, if you don't believe in *ex vivo* consciousness until you see it, good! Just be open-minded enough to call it when you see it. And if you call it, be fair enough to not ratchet it down to second-class citizenship. Instead, let all consciousness that values human rights enjoy human rights, regardless of their substrate or the particulars of their birth.

Know It When I See It. Consciousness defies objective determination because it is a fundamentally subjective condition – it is self-awareness, which means that only the self is aware of it. Indeed, consciousness may be said to be a synonym for subjectivity. Nevertheless, the law offers rights and obligations based upon enjoying the status of human consciousness. Hence,

there must be some objective rule for deciding the subjective condition of consciousness. Today the rule is that if someone looks like a human, and seems to be alive, they have human consciousness. Just to be sure, our legal definition of death is an absence of telltale electrical signals in the brain. Anything else, such as self-aware dogs or celluloid humans, is deemed not to have human consciousness.

The objective recognition of consciousness brings to mind pornography. Until the mid twentieth century, there was a consensus regarding what was art and what was pornography. This consensus broke down around the 1960s, leading Supreme Court Justice Potter Stewart to write "I can't define pornography, but I know it when I see it."[13] Since the aging Justice was not up to personally reviewing every contested porn magazine, the Court ultimately defined the "I" in his quote to mean local community standards. Hence a particular photograph might be permissible art or illegal pornography depending on the standards of a particular community.

Consciousness is the new pornography. We can't define it, but we know it when we see it. Our modern-age community is the entire nation, so perhaps the best solution is to have a standardized consciousness test that budding beme offspring could take. If they pass this test, then "we see it,"and they are deemed conscious. The test would surely assess if the transbemans understood and respected human obligations. If they did, fundamental fairness would once again dictate the need to share with them human rights. The psychology profession is best equipped to administer this type of test. Psychologists could be board-certified, via specialized training, to determine whether or not non-flesh transbemans evidenced adequate subjectivity to deem them conscious. If one or two such board-certified psychologists professionally attest to the consciousness of a transbeman, we are on reasonable ground to admit that person into our species.

Respect for the Differently Abled. As we replace portions of our brain with computer circuitry to address the maladies of old age, much as we replace our knees, hips, teeth, heart valves, corneas, hearing, and vital molecules, many people will no longer be wholly or even mostly flesh-brained. This is occurring already with our reliance on external electronic memory devices – for many, most of their memory is in digital form (we can't remember what that vacation spot looked like, but the digital picture in our laptop brings it right back). In other words, there will not be a clear line between brains of flesh and brains of computer substrate. Medical technology, in its quest to save us from Alzheimer's, Parkinson's and other devastating diseases of the mind, will make it impossible to separate flesh and computer brains. Hence, transbemanity should be welcomed because otherwise we will be discriminating against people solely on the basis of their medical disability. A life is not less valuable because it is supported in part, or in whole, by non-flesh substrate. The value of a life is the value evidenced by that life.[14]

A Human Bemone Project

A key question involved in transferred consciousness is how many bemes are necessary for the copy to be as real as the original. "How many bemes must a man upload before he can be called a beman?"[15] If but a portion of one's bemes are copied, is the transbeman inchoate? Or are they complete and conscious but a different person? At what point are enough bemes transferred so that the mindware is tuned to the range of subjectivity rather than operating as a merely objective set of instructions? All of these questions will need to be resolved prior to investing psychologists with the power to deem transbemans to have consciousness and hence qualify for legal personhood.

To address these questions of beme quantity and fidelity a Human Bemone Project would be helpful. Such an undertaking, like its precursors the Human Genome and Proteome Projects,

consists of identifying each element that comprises, initially, a largely undifferentiated whole. In the case of the Human Bemone Project (HBP) this will entail listing in an organized fashion each irreducible element of mannerism, personality, recollection, feeling, belief, attitude and value. The project is tractable. Cultural anthropologists have produced lists of known human beliefs, attitudes and values – many of which are universal across cultures.[16] Generations of psychologists have atomized personality and emotional traits and developed a variety of tests to parse them.[17] Mannerisms have been similarly sliced and diced, often with the help of digital face-recognition programs. Finally, while the absolute total amount of human recollections is uncountable, the different kinds of things that can be remembered is amenable to categorization.

The purpose of the HBP is to create a composite slate of bemes that may assume a wide variety of different states. It is not the goal to determine every possible state (e.g., every possible memory) of every possible beme (e.g., earliest memories of mother). By analogy, the Human Genome Project (HGP) endeavored to come up with a list of human genes. However, each of these genes can assume many different variations, known as polymorphisms. The HGP was completed when the genes were known, not all the polymorphisms, which are still far from known.

They hypothesis of this essay is that far fewer bemes need be transferred than have been experienced in order to reconstitute an individual's beingness. The vast majority of what we experience we forget. We are a pattern of behavior and thought that is rather constant, as well as specific memories of varying strength, emotiveness and connectivity of recall. A frequently quoted figure is one terabyte to describe all that a typical person remembers.[18] In a similar vein, the infinitely varying analog signal of a voice, musical performance or visual scene can be replicated quite satisfactorily with a discrete number of digital bits. A compact disk recording is not the same exact sound as the live performance, but it sounds equivalent. A HBP will be crucial in determining how many bemes there are to replicate. It is probable that only trial and error will teach us what percentage of these bemes, and which ones, are necessary for consciousness and fidelity of consciousness transference.

What About Birth and Death?

When bemes are successfully transferred to a computer substrate, and if a team of psychologists confirms the consciousness of the transbeman, will a birth have occurred? If so, it will be the birth of a mind-clone who will need to be promptly educated that they are not who they think they are because they are in cyberspace. It will be a bit like the rude awakening many people receive who awake from an accident under unfortunate circumstances, but collapsed from many hours into a few moments. "Welcome back to the living, Helen. Unfortunately you are now deaf and blind and there is nothing you can do about it. Just get used to the idea that your life is going to be very frustrating, but still try your best to enjoy it." Substitute cyberspace for deaf and blind.

Well, it won't be that bad. Our cyber-Helen will have planned for her beme-transfer, and will hence have expected it. She won't have to miss the sights and sounds of life. Furthermore, cyber-Helen will know that there are things to be done about her situation, such as ever more realistic virtual reality and ultimately downloading into the brain cavities of real-world nanotech or biotech bodies. She will have the art and literature of the world at her electronic fingertips. So, while transbeman births will be harrowing – what births aren't for the baby! – they can be ethical so long as the individual consents to be cyber-born, is able to enjoy a good quality of life, and has within the transferred bemes an understanding of the cyber-birth process and expectations for their new life. It is unlikely that all these conditions can be met without the involvement of lawyers and regulators.

Quite different situations will prevail for three cyber-birth scenarios:

1) An individual births one or more mind-clones, and remains alive, collectively deciding to live with one regularly synchronized mind across multiple bodies, flesh and non-flesh;
2) An individual births their mind-clone only upon brain-death, by leaving instructions to awaken their mind-file with mindware, and thus feels they have never actually died because they have a continuous existence as an organized set of mental information, albeit now only in non-flesh form;
3) A transbeman is born without a direct parental connection to a single flesh person, such as when two or more persons (flesh or non-flesh) combine their bemes to create a new cyber-conscious entity, or when mindware is awakened and nurtured to acquire bemes of its own.

Each of these scenarios leaves today's law and moral codes jaw-drop clueless about how to proceed, other than outright rejection of such offspring due to their utter strangeness. Re-birthing one's self? Cyber-consanguinity? The genetic cleansing that occurs with reinforced negative recessive traits has long steered our customs clear of such activities.[19] But BNA need not follow the same sorting rules as DNA. Practices wisely avoided with genes may be quite harmless, or even beneficial, with bemes.

While transbeman birthing scenarios are heretical, it is the hypothesis of this essay that such developments are imminent. Furthermore, it is vitally in our own best interest – as well as the right thing to do – to embrace these mind children[20] *by broadening the definition of our species*. Absent this giant step, a twenty-first century apartheid of life will unfold that trumps even the worst ugliness of the twentieth century apartheid of race. We must now begin to answer the devil-in-the-details questions such as exactly *how* can one *ethically* birth feeling beings that live in cyberspace. The time is ripe for legal experts to conceptualize *how* to integrate a potentially limitless number of virtual transbemans into a world society premised upon *homo sapien* limits such as domicile, liability, responsibility and one-man, one-vote democracy.

Death is the ultimate *homo sapien* limit transbemans challenge. Will it be possible to escape death by transferring bemes into computer substrate? Here we ask not a technological question − for I have explained above that beme transfer and mindware may create conscious analogs of ourselves – but a *legal* question. Death might seem like a medical conclusion, or even a matter of mere observation. In fact, at least in gray cases, it is a legal determination. It certainly sets up a legal issue when people leave instructions to awaken via mindware, upon declaration of brain death, the bemes they transferred into computer substrate during their life. The legal issue blooms when those awakened transbeman souls scream out their consciousness. Our collective actions will determine if those souls should be set free – or freed of their misery.

Beme Fruitful and Multiply!

In 1999 Ray Kurzweil wrote *The Age of Spiritual Machines*, broaching for the first time rigorously the possibility that computers will have souls because we soulful humans will become mentally computerized.[21] Several years earlier, in the *Physics of Immortality*, Frank Tipler demonstrated the consistency of technological immortality with each of the major religions.[22] He noted, for example, that the principal theologies all have people maintaining their identity in the afterlife, often passed an interregnum of which they are blissfully unaware. When they awaken in heaven they are still themselves, but their environment is now blissful.

Does mindloading implement or interrupt religious notions of immortality? Can awakening in cyberspace be arriving in heaven? Virtual reality environments could be coded to reflect each religion's conception of heaven and to bypass all of the pains of earthly life. Who can disprove God's hand in the creation of cyberspace, a reality in which flesh is irrelevant and metaphysical thoughts pass judgment? On the other hand, if cyberspace is but another of our worldly tools, why should the use of beme-transfers to prolong the lifespan prior to true worldly death contravene religious doctrine? Numerous other life-preserving tools are welcomed and used by persons of faith. And what of persons who are born transbeman? Are their souls as subject to divine attention as the transbeman souls of persons of transferred bemes?

Just as religion has adapted remarkably well to every technological innovation, it is likely to absorb beme-transfers as well. All major faiths welcome heart, liver and other vital organ transplants. None believe our soul is resident in the matter of our being. Consequently, theologians are likely to welcome the concept that our soul accompanies our consciousness. There is no need to lose believers simply because, for reasons of medical urgency, they need some compu-mechanical substrate to help host their soul pending the availability of a set of bionanotech arms and legs. This is the easy question of theological transbemanism.

This easy question provides the platform for more focused attention on the tough theocratic questions of *de novo* and fractionated transbeman souls, greatly prolonged worldly lives and whether a cyber-heaven is a heaven. Some cultural anthropologists have called religion amongst humanity's most successful memes. By this they mean that the key religious concepts have been replicated to near-universality and passed-on generation-to-generation like slowly mutating genes. What does transbeman replication mean for religion-as-a-meme? If consciousness is indeed imbued in our transbeman children, and if they replicate as easily as we share software, then God may well have found Her largest congregation ever.

Transbeman Culture – Times Are Really Changing

"What hath God wrought?" asked Samuel Morse on May 24, 1844 as he inaugurated the first long-distance (Washington-to-Baltimore) telegraph. The religionist inventor[23] couldn't imagine the quite secular Cultural Revolution that followed. In a little more than a century from his death it would be normal to spend a major portion of the day as a disembodied voice over a phone line. Visit the relatives? Nah, its simpler to just call. Keep your daughters chaste? Fat chance when the high-speed line delivers virtual sex. Dress for work? Why bother; I telecommute. Times they are a-changing.

We now typically spend much of our waking hours in two different places simultaneously – where our butt is seated and someplace miles away where our head is engaged in a phone call or a web game. Except for daydreaming and reading, dual-presence was impossible before electronic communications. The real Cultural Revolution has been to normalize such dual-presence activities, which are now status quo. What comes next, however mind-blowing, is simply an extension of that first What God Hath Wrought.

Dual-presence technology rapidly transformed all customary cultural activities. Art continues, but it is dwarfed by telecast motion pictures. Concerts are fun, but most music is heard by FM and satellite radio. Reading is as popular as ever, but more time is spent watching television shows. Even the most sophisticated examples of human culture now look to the tele-presence capability of the internet for their future. For eons, global culture was premised upon people's minds being present with their bodies. For the last century, dual-presence technology shattered that tradition and created a new society that accepted separation of mind and body; of thought and matter. The

new culture of transbemanism takes us all a big step-further: the separated mind may now embody itself, act independently, reproduce and synchronize itself with both its original and multiple copies.

Beme-transfers enable one person to not just "be" in two places, but to fully experience and live in two – or more – places simultaneously. The cultural implications of this are as momentous as were the cultural changes from the pre-electronic to the post-electronic world. All the cultural transformations to date, from Neanderthal rock paintings to women's rights, are but shades of gray compared to the Technicolor universe of the transbemans.

Let's start with the bedrock of culture, human language. Transbemans may not even need it since bemes can be shared directly with each other, converting the words that carry our bemes into artistic flourishes rather than necessary tools. Or consider the foundation of humanity, the male-female bonded family. This matter of species survival for humans is but one of countless possible pairings, triplings and other combinations for transbeman life. What is the sex of a disembodied self comprised of bemes and mindware? Is it the sex of uploader, or their endlessly fluid gender?[24] Answers to these questions frame a great new debate over the cultural impact of a broadened species definition.

To most people culture evokes books, television, music and movies. These media all enable us to transport ourselves, for some hours, into an imagined frame of mind. But what will our culture look like if we are simultaneously actually living several of those different frames of mind, because we can wrap our bemes in convincing virtual sleeves of other characters and places. When one mind can live across multiple implementations simultaneously, that's more than a cultural revolution – it's a cultural explosion. When a transbeman is making love and playing soccer at the same time, with neither activity disturbing the other, but then collates all these experiences every day or so with an amused smile, the times are not only changing, they are flashing.

All change is not good. A beauty of culture is that it provides a cauldron within which we can sample change and then collectively decide which meals we wish to make, and which taste like shit. We need a recipe book for that which should be encouraged. Culture needs to be raw to be real, but it need not be demeaning to be desirable. Will it be possible to channel transbeman culture into enlightenment? Or will censorship be too blunt a tool for the transbeman world, blunting the promise along with the peril? These are the ultimate questions to be parsed as we prepare to move from ten millennia of AgriCulture, the epoch of the food-gatherer, to new millennia of InfoCulture, the epoch of the beme-gatherer.

Are We Transbemans, Yet?[25]

In summary, reproduction via bemes rather than genes can form the basis for a broader definition of our species – one that moves from humans to transbemans, and from *homo sapiens* to *persona creatus*. The reason to implement this species re-definition is to minimize the risk of a clash of civilizations between machine-based and flesh-based consciousness.

Arguments can be made that there is no need for a species redefinition because consciousness is impossible outside of the human brain, and even if such consciousness did occur, it would not be deserving of human rights. However, there is no way at this point in time to be certain that machine consciousness is impossible. If it is, then there is nothing lost by a re-conceptualization of our species; indeed, there is euthenic gain in teaching that education has moved us beyond a merely gene-based civilization. A heightened focus on the learning environment is the natural

concomitant of defining ourselves as the "beme species" rather than the "human DNA" species. It is helpful to think of our selves as more the product of our ever-changing bemes, rather than as the product of our handed-down genes. This will tend to diminish ethnic tensions and abort the chances of designer-baby-based genism[26] from becoming a dominant ideology.

However, if beme reproduction is possible, then a re-conceptualization is key to avoiding a major new social cleavage, or racism, not unlike that which occurred with slavery. If machine consciousness does appear – as neurological prostheses and/or as outgrowths of computer technology – principles of fundamental fairness will tend to persuade most people that such machine consciousness is deserving of human-like rights. A re-conceptualization from *homo sapiens* to *persona creatus, from humans to transbemans,* will help pre-empt nativist arguments that "human rights are for humans."[27]

Therefore, whether or not *ex vivo* consciousness is possible, we are better off admitting to the reality that we are governed and constituted far more by our bemes than by our genes. The more we are thinking beings, the more we are what we think. The more we are what we think, the less we are the molecules that initially gave rise to our thinking ability. Indeed, just as gene-based replication trumped random match-ups of organic molecules billions of years ago (even though those organic molecules gave rise to the genes), so will beme-based replication trump random match-ups of DNA molecules (even though the DNA gave rise to our bemes).

This essay asks us to redefine our species boundaries at transbemanity, incorporating all flesh and blood humans, all humans who have partially cyberized their lives, all humans who will in the near future transition into (or replicate themselves in) transbeman form, and all beings in the future who will be "born" as transbemans. The reason for this redefinition is to provide an objective, scientific basis for maintaining a unified society. If we do not reach across the transbematic boundary with welcoming arms, then we will inevitably create a "clash of civilizations" that will generate huge amounts of negative energy. However, we have every reason to embrace transbemanity as one unified species for *we will share the same bemes*. Indeed, the very act of establishing transbemanity ensures via the law of natural selection that the coming tsunami of transferred consciousness will be hugely euthenic for all.

Society, awake! We can alienate computerized forms of consciousness based on their lack of genes. Or we can recognize that the beme is mightier than the gene. In that case we embrace machine consciousness based on the fact that we share a common beme pool. Either action becomes a self-fulfilling prophecy. We can be like the ancient ancestors of the dolphin, and forsake the challenges of the land for the safety of the sea. Or we can be like our primate ancestors, and endeavor to propel ourselves forward through scary terrain with adaptations such as opposable thumbs. Dolphins are helpless against external dangers such as cometary impacts. But primates spawned humans who can now reach out as transbemans to efficiently replicate their code throughout the cosmos. As with the dolphins, in the short-run suppression of change and challenge such as transbeman technology can minimize risk. But in the long run it creates a huge danger of extinction. The wise choice strategically is to merge with technology that replicates most proficiently both on and off the earth.

Language shapes perception. Perception drives actions. Actions evolve to destinies. Destiny recapitulates ontology. Ontology articulates morphology. The morphology of language configures the morphology of beings. Symbols synthesize sentience. We are what we think (bemes), and we think what we are (bemes).

Notes

[1] Richard Dawkins, *The Selfish Gene* (Oxford: Oxford University Press,1976). He was more interested in explaining that Natural Selection operates on the gene and not the organism. This explained the mystery of altruism since it may well be in a gene's best interest for some of its hosts to kill themselves so that others may long reproduce. In the same vein, Dawkins noted that Nature also cares little for even the molecules that make up our genes. She just nurtures in a predictable fashion phenomena that self-propagate. As an aside he noted that many aspects of human culture – he called these aspects memes – propagate in a functionally similar fashion, with society serving as Nature.

[2] Edward O. Wilson, *Sociobiology: The New Synthesis* (Cambridge, Mass: Belknap Press, 25th Anniversary Edition, 2002), p. 9. A "species is a population or a set of populations within which the individuals are capable of freely interbreeding under natural conditions."

[3] www.transhumanlaw.org

[4] Lawrence Solum, "Legal Personhood for Artificial Intelligences," *North Carolina Law Review*, 1992; Linda MacDonald Glen, "Biotechnology at the Margins of Personhood: An Evolving Legal Paradigm," *Journal of Evolution and Emerging Technology*, vol. 13, October 2003.

[5] S. Mader, *Biology*, (New York: McGraw-Hill, 6th Edition, 1998), p. 2-4.

[6] RNA serves this purpose alone in some simple organisms, and in conjunction with DNA in most life forms.

[7] This is not strictly true because flesh could be re-produced using nanotechnology and manufacturing codes that specified it to DNA-specified equivalence.

[8] Ulrich Beck, *Risk Society: Toward a New Modernity* (London: Sage, 1992)

[9] M. Rothblatt, *Your Life or Mine: How Geoethics Can Resolve the Conflict Between Public and Private Interests in Xenotransplantation*, (Hants, England: Ashgate, 2004), p. 141.

[10] This principle is adapted from John Rawls, *A Theory of Justice* (Cambridge, Mass: Harvard University Press, 1971). Rawls noted that this differential benefit principle is something a rational person would insist upon if they were charged with designing the rules of a society in which they might end up randomly occupying any position in such a society. John Rawls, *Liberty, Equality and the Law* (Cambridge: Cambridge University Press, 1988), pp. 21, 54. Such a person might object to new technologies being created because they might put him in a worse economic position than he is, especially if the premise is that he will be adversely affected by the technology. But if a condition of the technology's approval is that those most socio-economically affected gain the most benefit, then he is more likely to accept the technology. Hence, under the Rawlsian logic incorporated into geoethics, new technologies must disproportionately favor those least well off. This is a rule that should prove acceptable to both the well off and the disadvantaged.

[11] What is the proper third-person pronoun gender for a computer? I have used "they" for subjects (instead of he or she), "them" for objects (instead of him or her) and "their" for possessive (instead of his or her(s)). A criticism of this approach is that it creates ambiguity over number, since we are accustomed to they/them being used only for plural beings. A good argument can be made that it would be more appropriate to use singular gender-neutral pronouns such as "ey" for subjects, "em" for objects and "eir(s)" for possessive. The benefits of these particular neologisms are that they are easy to pronounce and remember (just delete the "th" from the plural form or start with the plural form until the singular form comes easily), completely gender neutral, and fully conjugated. Nevertheless I use the plural form because ambiguity in number may be appropriate for computerized consciousness and should be easily understood in conversational contexts.

[12] Richard Morgan, *Altered Carbon* (New York: Ballantine, 2002).

[13] *Jacobellis v. Ohio*, 378 U.S. 184, 187 (1964).

[14] John Harris, *The Value of Life: An Introduction to Medical Ethics* (London: Routledge, 2001), p. 110.

[15] Adapted from Bob Dylan, *Blowin' in the Wind* (Spider Music, 1962).

[16] See, e.g., Charles Osgood, *Cross-Cultural Universals of Affective Meaning* (Urbana, IL: University of Illinois Press, 1975).

[17] See, e.g., Abraham Maslow, *Toward a Psychology of Being* (New York: John Wiley, 1999).

[18] Estimates at Microsoft-sponsored www.mylifebits.com are that one terabyte of memory is enough to store everything except video for 83 years, and if we recorded video constantly, we would need an extra

200 terabytes of memory. Professor Merkle of Georgia Tech estimates that one gigabyte is enough for what we actually remember. www.merkle.com/humanMemory.html.

[19] Robert A. Heinlein, *Time Enough for Love*, (New York: Ace Books, 1988), p. 191: "…[B]ad genes tend to be eliminated at each generation – with the tendency greatest with the worst genes and reaching 100% whenever reinforcement produces a lethal-in-womb – while favorable genes are conserved. … [I]t applies also to normal outbreeding and even more strongly to inbreeding, although the latter is not well thought of for humans as it hikes up the chances of a defective by precisely the same amount as it weeds…. Everybody wants the human gene pool cleaned up but nobody wants its tragic aspects to take place in his own family."

[20] Hans Moravec, *Mind Children: The Future of Robot and Human Intelligence* (Cambridge, Mass: Harvard University Press, 1988).

[21] Ray Kurzweil, *Age of Spiritual Machines* (New York: Penguin, 2000), p. 58.

[22] Frank Tipler, *The Physics of Immortality* (New York: Anchor, 1995), p. 270-304.

[23] Morse was more of a portrait artist than an inventor, and an advocate for slavery well into the 1860s on the basis of its favorable mention in the Bible and his belief in its divine ordainment.

[24] Martine Rothblatt, *Apartheid of Sex: A Manifesto on the Freedom of Gender* (New York: Crown, 1995), p. 149: "Cyberspace readily allows people to transcend their known sexual identity."

[25] The author acknowledges inspiration for title of this chapter, FM-2030, *Are You A Transhuman?* (New York: Warner, 1989). Transbemanism (B+) overlaps with, and may be distinguished from, transhumanism (H+). The principal difference is that H+ emphasizes technological change and a step-function from humans to post-humans whereas B+ emphasizes sociological change and a continuum of beme-based existences.

[26] "Genism" was first defined in comparison to racism and sexism in Martine Rothblatt, *Unzipped Genes: Taking Charge of Baby-Making in the New Millennium* (Philadelphia: Temple University Press, 1997): "Each of these malodorous ideologies fails to embrace the continuum of humanity, the fact that we are all part of one diverse whole. Instead, the 'genist' sees people as falling into certain categories based on their genes…genism is as wrong and self-destructive for society as are racism and sexism" (p. 147).

[27] These arguments are superbly dissected in the context of an innovative bio-political matrix in James Hughes, *Citizen Cyborg: Why Democratic Societies Must Respond to the Redesigned Human of the Future* (Cambridge, MA: Westview Press, 2004).