Dead Ends in the Pursuit of Immortality:
Helpful and Harmful Marketing Trends in Transhumanist Sectors

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Introduction

Transhumanism is a philosophical movement that promotes the enhancement of human intellect and physiology through the integration of innovative technologies. Enthusiasts can look back on history and see the impact that early transhumanist philosophers and scientists had on modern scientific advancement; however, given the technological limitations of manufacturing live-extending and death-defeating products, transhumanists tend to think on a future oriented, long-term scale in relation to when and how certain scientific advances may affect future generations. Nonetheless, the accelerating rate of technological development compels transhumanists, as well as legislators, product managers, and consumers to consider as well the current and short-term ethical and safety implications that investment in this industry might entail. Marketers have immense power to shape the public perception of those sectors, but they must also embody the as well the habit of future thinking for potential consequences.

In this paper, three sectors - cryonics, gene editing, and mind uploading - will be examined in order to extract marketing trends common in the transhumanist industry, as well as identify factors that influence those sectors' social acceptance and profit potential.

History of Transhumanism

The timeline of transhumanist philosophy extends far back into early human history, and geographically spans many continents. The earliest record of transhumanist thought, the Epic of Gilgamesh, was recorded in the third millennium B.C. in Mesopotamia, and tells a story about a tyrant who goes on a quest to receive immortality from the gods. A mythology featuring a Fountain of Youth was introduced in the fifth century B.C. in ancient Greece and has since been mentioned in many other cultural folklores. The formulation of the Elixir of Life was first pursued by alchemists in China and India in the third century B.C., and continued to be pursued by Nicholas Flamel all the way up in 17th century France. About two hundred years after Flamel's death, modern transhumanist philosophy debuted as an argument for eugenics, principally disseminated by Charles Darwin's cousin J. B. S. Haldane in 1923. However, not long after, the elimination of undesirable traits was phased out as the main transhumanist focus, with space colonization and intellectual enhancements as suggested applications, realized through assistive bionic and cognitive implants, as proposed by Christollogist J.D. Bernal in 1929.

And though transhumanist endeavors have largely transcended time and space, the first iteration of the term was used not so long ago in a work of science fiction, in Dante's 1814 *Divine Comedy*: when interpreter Henry Francis Carey translated the story to English, he described Dante as being "transhumanized" during his heavenly ascent with Beatrice. And as more diverse theoretical applications for transhumanist technologies began percolating in the early 20th century, so did the academic use of the term: it first appeared in a 1940 lecture, and later essay, *The Law of Cosmic Evolutionary Adaptation: An Interpretation of Recent Thought* by Canadian philosopher W. D. Lighthall, who used transhuman as a way to describe the connections between cosmic, organic, and cultural developments; the word was later

popularized by biologist Julian Huxley after his 1951 lecture and later publication in the journal *Psychiatry,* where he claimed that “Such a broad philosophy might perhaps be called, not Humanism, because that has certain unsatisfactory connotations, but Transhumanism. It is the idea of humanity attempting to overcome its limitations and to arrive at fuller fruition.”

Transhumanist Sector Analysis

In terms of fruition, the fulfillment of the transhuman condition is more attainable than ever due to the exponentiating growth of medical discoveries and artificial intelligence. Products and services in cryonic, gene therapy, and mind uploading sectors, despite having relative degrees of completeness, all are nonetheless currently available in some form in the marketplace.

Cryonics

The idea to store humans in very low temperatures in order to preserve their brains and bodies over long periods of time was, similarly to the term “transhuman,” first introduced in a body of literature, in an 1887 book called *The Frozen Pirate* by William Clark Russell. Scientific theories followed in 1901 by Russian physicist and biologist Porfiry Ivanovich Bakhmetyev, who suggested cryonics as both a way to prolong human life and travel into the future. Further applications as well as a proposed methodology was outlined in the 1948 publication of *The Prospect of Immortality* by Robert Ettinger, the so-called “father of cryonics.” By 1961, the first milestone was reached with the preservation of male sperm cells and soon after the first human trials were conducted in 1966. Since then, until as recently as January 2019, 416 people have been and remain cryopreserved, with the goal to revive them in a time where their death or disease can be cured.

Of the seventeen people that were cryopreserved from 1966-1973, only one client remains, likely because the operation was financed through a pay-as-you-go model, and family members lost interest in paying maintenance fees for an unknown amount of time. Currently, cryonics providers charge flat rate fees, with the market average at $200,000 for whole body cryopreservation, and $80,000 for brain cryopreservation. These fees are financed by payouts on life insurance policies, for which people under forty may pay as little as $100 to $300 USD a year. The prices vary by provider, of which there are four: Alcor, Cryonics Institute (CI), and American Cryonics Society (ACS) in the United States, and KrioRus in Russia. Alcor and CI are both non-profit organizations and each currently preserve around 150 clients.

Cryonics has been important in redefining the concept of death. A few decades ago, if someone keeled over on the street and was found to not have a pulse, they would have been pronounced dead. Today, death is qualified by the absence of a heart beat between four to six minutes, as that is how long the brain can survive without oxygen. However, cryonicists are pinning their hopes on new molecular reparation treatments that may expand the timeframe in which brain death occurs, up to sixty minutes past cardiac arrest.

Technologically, cryopreservation is fairly low maintenance and requires no electricity. The bodies themselves are vitrified to prevent the formation of crystals and subsequent tissue damage, and they are kept in a container that is filled with liquid nitrogen. As long as the body has been preserved quickly enough after death, and the liquid nitrogen is systematically replaced every three weeks, a body can be preserved infinitely, in theory. However there are two critical limitations to reviving a cryopreserved body: first, the method of revival likely will require the advent of molecular nanotechnology that reboots the client's metabolism and other cellular functions; and second, the recovery of the client is reliant on yet unknown medical treatments to cure their actual cause of death.

Restrictions on the ability to market, although enforced only in British Columbia, nonetheless create limitations for the growth of the cryonics sector. Section 14 of the Cremation, Interment and Funeral Services Act passed in 2004 prohibits the sale of equipment which stores humans intended to be resuscitated in the future. According to cryonicists in Canada, this law was silently passed without their knowledge or understanding of why it was legislated, and now appears inconsistent with the rest of British Columbia law due to euthenasia having been legalized in 2016. In the United Kingdom, the marketing and implementation of cryonics is currently unregulated, but a push for its illegalization has been spearheaded by doctors who claim that cryonic technology exploits extremely vulnerable people on the verge of death, and that this delicate emotional state might influence clients to instigate an early, voluntary death as soon as they become ill to better improve their chances of revival, even though revival at this point remains theoretical. Statements from skeptical public figures, the President of the National Council of Health Fraud, and editors on Quackwatch.com all denouncing the industry help paint the image of cryonics as a cult.

Skeptics also point out that though medical treatments to fight disease already favor those with more wealth, cryonic services threaten to further disproportionate the haves versus the have-nots when it comes to longevity. This is more salient when comparing responses from survey participants in different socio-economic rungs: individuals making more than $100,000 USD per year had a more favorable attitude towards cryonics, while the general public considered it cultish and the clients themselves selfish and immoral, "stealing" resources and opportunities from future generations (Badger, 1998). However, the finance model for cryonics seems to not be prohibitively expensive: insurance coverage priced in a range between $100 and $300 USD per year, though not accessible to perhaps those dwelling in lower economic strata, is within reach of those with middle-range annual incomes in developed countries.

Given the prohibitive costs of cryogenic market research and forecast studies, market growth is assessed empirically instead: the flat-rate financing models, technological advances, and the approximate 1,500 Alcor and CI clients subscribed to be cryopreserved upon their death in the face of conflicting public opinion and marketing restrictrictions make it so that it can be predicted that the cryonics sector will continue to have high share actors in a low growth market.

Gene Therapy

Today, genetic science is a highly diverse and controversial field of study, however, two methods play an important role in the conversation of transhumanism: gene therapy seeks to

alter genes in order to correct genetic defects and thus prevent or cure genetic diseases; this is distinct from genetic engineering, which aims to modify the genes to enhance the capabilities of the organism beyond that which is normal.

In the past, writers were not thinking of genetics, per se, when they first fictionalized genetically modified characters,most famously by Mary Shelley in her 1818 novel *Frankenstein*. The understanding of genetic function was not uncovered until nearly a half-century later, when Gregor Johann Mendel conducted experiments from 1856 to 1863 and from which the rules of heredity were born. The first modern-day groundbreaking event quietly occurred in 1987 in Japan, where Yoshizumi Ishino and colleagues at Osaka University had mapped one of an E. Coli's gut microbes, called iap. In doing so, they uncovered five identical segments of DNA, each comprised of the same 29 nucleotide bases and separated from each other by 32 uniquely sequenced nucleotide bases. This discovery was published with the iap genome without much fanfare, as Ishino had no theories for its existence at the time. However, as time went on and DNA sequencing techniques became quicker and cheaper, researchers noticed that these gene sequences were not unique to E. Coli but a multitude of microbes, and also noticed that these sequences were always grouped near a cluster of genes that programmed enzymes to cut DNA, though like Ishino, researchers could not say why. These sequences were becoming so familiar, despite their unknown use, that in 2002 Ruud Jansen and colleagues of Utrecht University in the Netherlands coined the term "clustered regularly interspaced short palindromic repeats," or CRISPR, for the repeating five gene sequences, and "CRISPR-associated genes", or Cas9 for short, for the neighboring snippy enzymes. When word of this phenomenon reached Eugene Koonin of the National Center for Biotechnology Information in the United States, he realized that these strings of code were a bacteria's defense mechanism against viruses, wherein they use Cas9 enzymes to grab bits of viral DNA and insert them into their own CRISPR sequences, essentially creating an index of previous invaders to help them more easily recognize and fight those invaders in the future. Jennifer Doudna from the University of California in the U.S. and Emmanuelle Charpentier from the Helmholtz Centre for Infection Research in Germany were the first to use it to edit the genome, an act that led to them receiving the 2015 Breakthrough Prize in life sciences.

Since Doudna and Charpentier's application, CRISPR technology has been used far and wide, by botanists trying to engineer better food supplies, by evolutionary biologists trying to revive woolly mammoths, by oncologists trying to cure blood diseases and cancer, and most recently by a geneticist in China who had a gene removed from two babies so as to make them HIV-resistant, controversial in the fact that the scope of effects of this gene removal won't be known possibly until problems arise. Some scientists propose waiting for the invention of supercomputers with exponentially more computing power than those of day so that possible effects may be simulated before human trials are conducted.

Investments in predictive analysis may be necessary at some point for U.S. researchers to continue moving forward in the face of restrictive legislation. National lawmakers have banned budget allocations to research germline editing due to concerns about incentivized abortions and research using fetal tissue which is believed by some to be sentient. Despite these attempts, however, life, as well as humanity's insatiable curiosity, finds a way: as recently as July 2019, a U.S. research team successfully corrected a mutated gene that causes

hypertrophic cardiomyopathy on an embryo, all well within the guidelines set by the National Academies of Sciences, Engineering, and Medicine; however the controversy here lies in the fact that existing embryonic testing can already prevent the birth of children with this disease, and that money is better spent on curing those already living with the condition.

The prospect of success in this industry is reflected in CRISPR price decreases and the products available to the public. The price of CRISPR technology is 1% of that when it began, and at-home gene therapy kits for sickle-cell anemia currently cost $65 USD. DIY genetic engineering kits, though technically illegal, have already emerged in the market and due to legal entanglements, in particular with a brand called the Odin, became highly publicized and scandalized. The fact that this product was later discontinued due to concerning questions and improper use by customers may be an ominous sign for at-home gene editing treatments, and begs the question as to whether progress in this field will continue to outpace regulation for public use, and the associated risks thereof.

Ethical objections are notably raised in the subject of preventative treatments, where the eugenics rhetoric may reemerge as part of the answer to the question of what qualifies as an undesirable trait. This question is of course heavily subjected to interpretation. A parent may think that this is down syndrome, dwarfism, or autism, but someone living with one of these “undesirable” traits may think that their condition has given them a meaningful life experience. Another ethical concern is touched upon when figuring market prices for the continued development of gene editing technology: in contrast to preventative treatments, of which there are a finite number, enhancive treatments will likely be more lucrative due to the possibly infinite number of applications. More valuable genetic traits will have higher market values, which may further divide socio-economic classes by intelligence, beauty, strength...whatever suppliers and wealthy stakeholders deem to be an important attribute in society. This in turn may facilitate wealthy clients in evolutionarily solidifying their positions of power, and giving them the tools to shape the future as they want, possibly in their own self-image.

Nonetheless, despite ethical quandaries, companies in the gene editing sector have seen tremendous growth in the past few years: the top two public players, CRISPR Therapeutics and Horizon Discovery Group, each made over $40 million USD in revenue in 2017. The CRISPR/Cas9 segment accounted for 46.6% of the entire gene editing sector’s compound annual growth rate (CAGR) in 2017, helping to value that market at $3 billion USD and to grow it at a predicted 14.5% CAGR between 2018 to 2024. The flurry of companies engaging in gene editing services and products make it so that this is a low share, high growth market.

Mind Uploading

Mind uploading is the hypothetical concept of storing a person's personality in more durable media, which could either remain static or continue to learn autonomously, for the sake of achieving digital immortality. Of all the three sectors, mind uploading is the most infant, even in fiction.

An early and important piece of fiction that captured the mind uploading concept was written by Edmond Hamilton in 1936. The story, *Intelligence Undying,* describes the successful

and long chain of the main character's brain transference to babies in an attempt to live forever, an enterprise which the narrator comes to later regret. Much later, the idea of mind uploading was scientifically baptized as “thanatechnology,” coined by researcher Carla Sofka in 1997. Scientific progress in this field was notably reached in 2014 when researchers Sibel Adali and Jennifer Golbeck accurately predicted personality traits from online digital traces in 2014.

The majority of neurological scientists agree that the human mind is defined more by the information highways rather than the actual brain in which information is shared. On this basis, mind uploading technology can theoretically be designed by replicating commonly known brain functions and neural pathways. Conceptualizations of mind uploading can range from a responsive chat bot to a fully-fleshed cyborg, both of which are designed to have an accurately reflective personality of the individual it is built to represent. For now, both sides of this spectrum are technologically out of reach: an accurate personality profile is theoretically gathered through a mix of an individual’s social media/internet use, artificial intelligence, and semantic analysis, however, the latter remains the most difficult challenge for engineers. Once this is achieved, however, more applications for uploaded minds will become available, for example: public-facing products, such as interactive avatars of deceased people that provide emotional support to individuals, or institutional knowledge to companies; or individual services, possibly a personalized computer program in which an individual’s brain could theoretically live forever after their body has died.

Startups in this mind uploading sector are cropping up and promoting their services as developers of responsive chatbots, freely subscribing early enthusiasts so that they may help beta-test the product. Eter9 and Eternime are the promotement leaders in this young sector, and between them have 94,964 subscribers as of July 3, 2018. While both companies intend to deliver an avatar that will store an individual’s memories and interact with people wanting to access those memories, the methods are different: for ETER9, one must interact with a software so that it learns, however there is no obvious way in which one can access their own avatar in order to see how well they are developing, if at all; for Eternime, personal data are apparently mined from Facebook, Fitbit, Twitter, email, photos, video, and location information, and channeled through pattern matching algorithms so as to create an image of the individual’s personality, however the company is as of August 2019 not yet a public stock option, so verification of any claims or underlying technological use are not yet available.

While in its beta testing phase, mind uploading technology is accessible to everyone and doesn’t have much impact on the deepening of wealth inequality. However, the technology required to understand the ways the brain works may require the enhancement that might ultimately accelerate risks from uncontrolled AI. In addition to AI concerns, some people are disquieted by the idea that their entity could all be whittled down in bytes of data, and that this transfer of the mind onto hardware rejects the idea of a soul or consciousness. Nonetheless, mind uploading aficionados claim that the earliest digital immortality could be reached by 2045, perhaps giving scientists enough time to solve address this in their research.

Though the sector receives scrutiny about its technical and spiritual legitimacy, the digital transformation market (which includes cloud computing, big data and analytics, social media, cybersecurity, and artificial intelligence, all of which are required to upload a mind) is predicted to increase from $290 billion USD in 2019 to $665 billion USD million in 2023, representing an

18.1% CAGR. Market segmentation is possible down to the potentially the individual, and therefore carries the promise of a high supply of clients for companies that corner the market early and promote the continued development of mind uploading technology. However, a minimum viable product may still be decades away, which threatens these companies a stemming of seed funding. Given that there are two prominent companies already active in this sector, this represents their rather high market share in a low growth market.

Transhumanist Marketing Phenomena

When viewed less myopically, the reviewed transhumanist sectors appear to all experience and be influenced by a number of market phenomena. These phenomena however are manifested in and effect every sector differently, depending on their role in fiction, the timing of their arrival to the marketplace, their consumer appeal, and their metaphysical acceptance.

Product Placement through Folklore and Science Fiction

Transhumanist technologies have been largely conceived and promoted through folklore and science fiction. In all the reviewed sectors, fiction stories all predated real scientific advances, helping society to gain awareness of the applications of such transhumanist technologies. Moreover, as these fictional bodies of work featuring transhumanist technologies are majoritively foreboding and satirical, they serve as an important petri dish for debate and risk mitigation plans in an attempt to prevent them from becoming prophetic.

Cryonics is sometimes featured in science fiction as merely a means of transport, but has also been depicted ominously, detailing the fateful consequences of technological and human errors in using cryopreservation, or in building the society in which the protagonist awakens. In Wes Craven's 1985 film *Chiller*, a corporate executive dies and is cryopreserved only to be revived ten years later without his soul. In Woody Allen's 1973 film *Sleeper*, the main character is cryogenically frozen in 1973 and revived 200 years later in a police state. In Mike Myers' 1997 film *Austin Powers: International Man of Mystery*, the villain, Dr. Evil, cryopreserves himself to escape capture. In Mike Judge's 2006 film *Idiocracy*, the protagonist, the U.S. military's most average person, is accidentally transported 500 years into the future where he is then the smartest man in the country, where the disproportionately high number of children born of low IQ individuals is largely facilitated by huge investments in penis enlarging research and technology - but a reminder that marketing enhancements to just some individuals could potentially have the power to shape the rest of humanity in an irreversible way.

Science fiction films casts gene edited creatures, and those observing their behaviors, with remarkable complexity and sometimes sympathy. In *Brave New World*, a novel published by Aldous Huxley in 1932, genetically modified babies are born in artificial wombs and sifted into castes based on their intelligence - the main character is born in a land outside of this system, and when he returns to surprise his father with his existence, becomes deeply depressed and ultimately suicidal in witnessing only socially engineered and drug-induced states of happiness. Another key film was Ridley Scott's 1982 *Blade Runner*, in which blade runners are hired to

track down rouge superior bioengineered beings, known as replicants, and "retire," rather, kill them. These replicants, though designed to be stronger and smarter, are enslaved by corporate interests, with some even programed to believe they were human. In Andrew Niccol's 1997 film *Gattaca,* the protagnist is conceived outside a eugenics program and faces intense genetic discrimination while pursuing his dream of being an astronaut, which illistrates the perhaps the most pertinant potential impact of modern gene editing.

Mind uploading also seems to be a critical tool in espionage and forming dystopian societies when characterized in science fiction. In Wesley Barry's 1962 film *The Creation of the Humanoids,* post-nuclear war androids try to infiltrate humankind by embodying a deceased person and using a "thalamic transplant" to absorb their memories. Masamune Shirow's 1989 film *Ghost in the Shell* portrays a future world in which humans transhumanize sometimes to the point of total mechanical replacement of the body and mind, and *Ghost in the Shell 2: Innocence* elaborates in great detail the complex philosophical consequences of this mechanization. James Cameron's 2009 *Avatar* is explores human consciousness that can be uploaded into avatars so as to integrate into a society of aliens and inconspicuously take over the alien land for mining purposes. This latter story serves as an example of the exploitative power of technology that is controlled by those with private interests.

Outside of fostering public awareness and discourse, science fiction's influence on transhumanist progress may also be seen as paradoxical: on the one hand, though the plot of a story might take place in the future, the publication of the story in the present could make transhumanist products and applications seem more feasible than they actually are, creating hype; on the other hand, the very fact that transhumanist technologies are introduced and popularized in science fiction categories may dissuade scientists and investors from taking the idea seriously, dampening hype. This paradox may damage a transhumanist product's presale value, on which all of these sectors depend.

Presale

Arguably, the need for increased longevity has been in the market since Gilgamesh, but the solutions are still unacheived due to remaining gaps in medical technology. That does not stop, however, cryogists, geneticists, and computer scientists from peddling not-fully existent products for existing the pain point, "I can't live longer/forever." There is an advantage in this strategy: early involvement in product development is a smart move to dominate the market share. Even a failure to develop a product still helps a company to promote itself and make money, as exemplified in the case of Humai. This company, active in the mind uploading sector in 2015, promised to invest money from public and private entities into working with neuroscientists to develop the nanotechnology and biotechnology required for a fully functional mind uploading scheme. But Humai did not, nor did it need to: the attention it received in the press still provided and possibly still provides the company attention. This shares a similar theme with the story of Fenix, a Swedish funeral agency which in 2018 claimed to seek volunteers for a "Black Mirror-esque" artificial intelligence project, much like that promised by Eter9 and Eternime, though their website shows no reference to this service whatsoever; however, the claim still draws traffic to the site. Nonetheless, this presale strategy risks those

technologies failing due to a lag between public interest and technological readiness. Companies that manage to sustain hype and meanwhile promise technological breakthroughs may also put consumers at risk of financial exploitation. Furthermore, companies that rouse mass excitement may be pressured to deliver a product as quickly as possible in order to avoid breaching consumer trust, which may lead them to release a product that is not fully ready and thus compromise user safety.

All of these sectors promise services that are technically before their time, but some do so more than others. In the cryonics sector, science fiction predated scientific thought by nearly 100 years, and scientific thought predated technological feasibility by just over fifty years. Given that cyronics has been in the market since the mid-1960s and is still in the market, albeit a slow growing one, it seems any hype for cryonics as perpetrated through fiction and philosophy did not crest too soon to deem it fully scientifically implausible. In fact, the cryonics sector doesn't need to have a fully operational system to sell the idea of longevity: it only needed to manage the vitrification and the liquid nitrogen replacements to release a minimum viable product; it could be possible that cryonic businesses have a vested interest in *not* investing in cures for death and disease, as cures for those would ultimately rid the need of cryonics. This reverse incentive, and the still theoretical stage of molecular nanotechnology makes it so that there is possibly a relatively large risk of consumer exploitation.

Though the idea for gene editing is clouded by the murky subject of eugenics, it is also shared by those who simply appreciate their health and longevity, and that of their children. Gene editing has on one hand been normalized through regular embryonic tests of expecting parents and the long debate over nature versus nurture, but on the other hand been hyped up by rapid recent advances in medical and artificial intelligence fields, all of which has helped foster public acceptance, reduce the dissonance between hype and readiness, and keep the gene editing market growing strong. The fact that treatments are already available to living and soon-to-be living individuals makes it so that companies are more accountable to their clients, and there is therefore relatively little room for exploitation in this sector.

The mind uploading sector is another story: it is the most nubile in terms of science fiction and fact. The recent hype for it has been heavily influenced by a wave of TV shows and movies on the subject, however even among advocates, the technology is not feasible for another twenty years. This large time gap between the idea of mind uploading and the development of the relevant technologies may well guide the public attention away from this sector. Moreover, the dark portrayals of mind uploading in science fiction also may also undermine the necessary research needed for this sector's maturity. Concerns around data protection and cybersecurity may also dissuade wide social acceptance. The potential for exploitation will depend on how mind uploading companies devise their business models once features become minimally legitimate, or even before: providers collecting regular payments from living clients feeding their avatar personal data, or setting very high prices to activate the avatars once clients are near the brink of death could make for a very profitable approach, especially if one company breaks out early as the sector leader.

Customization

The incredible wealth of data, as well as the very nature of transhumanism, promises that transhuman products and services will be highly customized to the individual client. Although not unique from each other, all of the sectors reviewed above have a natural incentive to sell customization as a unique selling point.

Though cryonic preservation follows a standard procedure, the proceeding medical treatment for death upon a client will be extremely personal, likely using gene editing as a means to prevent or reverse their cause of death in the first place, which would need to be designed specifically for an individual's genome and immune system in order to work. Furthermore with gene editing, individuals will be able to choose what it is that only they themselves consider a desirable trait for themselves and for their children. In the mind uploading sector, customization of the technology to the individual is the very nature of the product: an avatar that can respond authentically in a person's voice and character.

Note that customizable does not mean accessible to everyone. Some transhumanist applications, those that are safe and credible, may be prohibitively expensive for most people which in turn threatens to marginalize middle- and lower-class consumers, possibly preventing from having a voice or a role in shaping the way those applications materialize.

Spiritual Ambiguity

The transhuman industry boraches upon the subject of the continuity of the self: about the "distance from the body" when discussing transhumanist technological impact on an individual's cognition or soulfulness, as well as about a "distance from the environment" when discussing an individual's ability to adapt to the society in which they find themselves. A greater metaphysical distance from the body or the environment may have adverse effects for the acceptability of that product.

There is a large disassociation between the body and the mind when discussing cryonics: there is still the unanswered question of what happens to the brain's existence without the body, and whether the soul exists after a client has experienced body and perhaps to some degree brain death. Environmentally and socially as well, there is potentially a large disconnect between the client and the time and place in which they regain their vitality.

There is objectively less dissociation between the brain and the body in the gene editing sector. Treatments occur on the client themselves, and focused at the genetic level where it is not commonly thought the soul lurks. The question of spirituality might arise when talking about germline editing, in that a genetically modified child may be born inside the wrong body, or mind. This won't ever been known scientifically, but the thoughts of those that were genetically modified before they were born will be available in the not-so-distant future, which might perhaps shed some light on the matter. There is also less disconnect between the client and the society and environment in which the transformation takes place: the modifications are made either to the living or the soon-to-be living, which makes it so that they are closely adapted to the time in which they grow up.

The mind uploading sector resembles the trends in the cyronics sector. The scientific deconstruction of a person's entire entity into pulses and circuits is discomforting for some: if and when one's mind is uploaded, it is unsure if the soul can and will be also uploaded. Moreover, though the company sells the client on complete personalization of their posthumous avatar or simulated world, there is yet no certainty that that client maintains any control over its environment once the service is activated. The large disconnect from the body and environment may hamper the mind uploading sector's profitability.

Conclusion

The transhumanist industry promises longevity and immortality, which is a very powerful unique selling point: it appeals to the oldest and most basic instinct humans have to survive. And while products and services are futuristically far away enough to be theoretically feasible, they are presently far enough away to be practically unfeasible, and potentially made exploitative when money is involved. This may ironically be a recipe for exploitation and death, in an industry that promises eternal happiness and life.

Marketers have a very important role in determining public acceptance of a product, and may naturally want to hitch their wagon to the sector with the most potential. In this vein, the gene editing market is predicted to have the highest growth potential. Though the CAGR is lower than that of the digital transformation market in which the nexus of mind uploading technology lies, the metaphysical rupture of the self is much less in the gene editing sector than in the other two reviewed sectors. And despite preventative treatments in gene editing causing potential existential pain to those living with conditions that they eradicate, persistent damage to the individual and to humanity, and evolutionary dominance of the wealthy, the fact that germline testing and gene therapy already exists and is widely accepted deflates these challenges. The acceptance is also perhaps fostered by the supposition that genetically modified people are sympathetic characters in science fiction. Moreover, the possible number of customizable features may be extremely advantageous in boosting profits.

Marketers working on behalf of gene editing companies might want to systematically phase out associations with eugenics, just as it was phased out as the center of early transhumanist philosophy through the arrival of other suggested applications. Furthermore, marketers might want to promote enhancive treatments to individuals with the most buying power as a long-term revenue strategy. Given the prevalence of other enhancive treatments in society, such as cosmetic surgery and steroid use for muscle growth, this should not be so hard.

But what will be hard is navigating the ethical quandaries in regards to what heavy marketing of this sector may do to society: potentially widening the wealth gap to a point that status is genetically hardwired; allowing private, military, or government interests to formulate their own ideal employee, soldier, or citizen; advertising a product that is not fully ready and putting users at risk.

History shows that technological progress moves much faster than regulation. Therefore the marketer may think that it is justifiable to promote something that is destined to be

consumed anyway, despite potential long-term societal consequences, for short-term individual gain. However, the fact that the actual and tangential technology is not fully developed in these sectors may offer a different, more ethically sound strategy for marketers: rather than try to sell an unready product, marketers could sell the research and development of the product. This is still indirectly promoting the product while also promoting safety, regulation, and public debate. The lengthiness of the research process as well as that to sow corporate, bureaucratic, and public consensus will not only ensure that products stay in the public sphere, but also so that products are fully viable when released, and that the consequences on humanity are wholly considered and mitigated.

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