

The Compatibility of Religious and Transhumanist Views of Metaphysics, Suffering, Virtue and Transcendence in an Enhanced Future

James J. Hughes Ph.D.

Executive Director, Institute for Ethics and Emerging Technologies

<http://ieet.org>

Editor, Journal of Evolution and Technology

Lecturer, Public Policy Studies, Trinity College

Williams 229B, Trinity College

300 Summit St., Hartford CT 06106

860-297-2376

director@ieet.org

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Abstract

Transhumanism – the proposition that human beings should use technology to transcend the limitations of the body and brain – is a product of the Enlightenment humanist tradition. As a consequence most avowed transhumanists are secular, and many religious are skeptical or hostile towards the transhumanist project. However there are also many religious transhumanists who find the project of human enhancement at least consistent with, and sometimes a fulfillment of, their metaphysics, soteriologies and eschatologies. Transhumanism appears to be especially compatible with religious traditions that emphasize human agency and evolution to a transcendent state, such as Buddhism, or that have incorporated Enlightenment values, such as liberal Christianity. But elements of the transhumanist worldview and enhancement technologies are compatible with one element or another of most world faiths, even the most fundamentalist. We can thus expect that human enhancement technologies will be adopted creatively into the theologies of groups within all the world's faiths, producing many flavors of "trans-spirituality."

Introduction

There are at least two ways to define a belief system, doctrinally and empirically. Doctrinally one might say that a Christian is someone who professes the catechism and creed of their church, or who has been saved through a personal relationship with Christ. A doctrinal approach is complicated by the fact that there are no core doctrines that have been professed by all Christian sects, even the divinity of Christ. Empirically the matter is even messier. Most Christians cannot explicate their denominational distinctives, profess many folk beliefs which are not doctrinal as if they were, and have a wide variety of interpretation of what constitutes being a Christian. As the pollster George Barna frequently laments, most American Christians do not understand core doctrines such as that salvation does not come from good works (Barna, 2003, 2007).

Similarly transhumanism – the proposition that human beings should use technology to transcend the limitations of the body and brain – is being defined doctrinally by a number of different contemporary groups, and has been appropriated in an even more diverse way by millions of people around the world. Drawing on the Transhumanist Declaration (Appendix One), the World Transhumanist Association's Frequently Asked Questions document (WTA FAQ), and other creedal documents, Wikipedia currently defines transhumanism as:

... an international intellectual and cultural movement supporting the use of new sciences and technologies to enhance human mental and physical abilities and aptitudes, and ameliorate what it regards as undesirable and unnecessary aspects of the human condition, such as stupidity, suffering, disease, ageing and involuntary death. Transhumanist thinkers study the possibilities and consequences of developing and using human enhancement techniques and other emerging

technologies for these purposes. Possible dangers, as well as benefits, of powerful new technologies that might radically change the conditions of human life are also of concern to the transhumanist movement. (Wikipedia, 2007)

Bostrom's (2002) attempt to deductively derive the core transhumanist values is another effort to identify a core transhumanist doctrine and its corollaries:

Core Value: Having the opportunity to explore the transhuman and posthuman realms

Basic Conditions

- Global security
- Technological progress
- Wide access

Derivative Values

- Nothing wrong about “tampering with nature”; the idea of *hubris* rejected
- Individual choice in use of enhancement technologies; morphological freedom
- Peace, international cooperation, anti-proliferation of WMDs
- Improving understanding (encouraging research and public debate; critical thinking; open-mindedness, scientific inquiry; open discussion of the future)
- Getting smarter (individually; collectively; and develop machine intelligence)
- Philosophical fallibilism; willingness to re-examine assumptions as we go along
- Pragmatism; engineering- and entrepreneur-spirit; science
- Diversity (species, races, religious creeds, sexual orientations, life styles, etc.)
- Caring about the well-being of all sentience
- Saving lives (life-extension, anti-aging research, and cryonics)

Note that while the Declaration and WTA FAQ mention that transhumanists share many of the values of classical humanism, neither religious belief nor supernaturalism are precluded in the Transhumanist Declaration, the definition quoted above, nor in Bostrom's derivation of transhumanist values.

In 2004 and 2005 the World Transhumanist Association surveyed its membership asking questions about agreement with a variety of statements, and about their professed religious beliefs (WTA, 2006). More than 1100 members responded to these surveys, roughly reflecting the global membership of 45% US residents, and 55% from around the world. One goal of the study was to identify ten statements that could be used as a self-diagnostic to determine whether one was a transhumanist or not. The top ten most consensual statements are in Table 1.1 below.

Table 1.1. Top Ten Attitudes on which Transhumanists Agree (2005)

	Yes	Human-Enhancement	Humanism	Tech-Optimism	Personhood	Repro Rights
Do you believe that people have a right to use technology to extend their mental and physical (including reproductive) capacities and to improve their control over their own lives?	95%	X		X		
Do you think that by being generally open and embracing of new technology we have a better chance of turning it to our advantage than if we try to ban or prohibit it?	94%			X		
Do you expect human progress to result from human accomplishment rather than divine intervention, grace, or redemption?	93%		X			
Do you think it would be a good thing if people could become many times more intelligent than they currently are?	92%	X				
Is your concept of "the meaning of life" derived from human responsibility and opportunity rather than divine revelation?	86%		X			
Do you believe women should have the right to terminate their pregnancies?	83%				X	X
Does your ethical code advocate the well-being of all sentient beings, whether in artificial intellects, humans, posthumans, or non-human animals?	81%				X	
Do you think it would be a good thing if people could live for hundreds of years or longer?	80%	X				
Would you consider having your mind uploaded to computers if it was the only way you could continue as a conscious person?	78%	X				
Should parents be able to have children through cloning once the technology is safe?	76%					X

If we use agreement with half of these statements as a self-diagnostic for whether someone is probably a transhumanist, this would include 96% of all the transhumanists in the survey. The ten statements shown in Table 1.1 above can then be parsed into five core value commitments:

- **The Desirability of Human-Enhancement** - attitudes about life extension, intelligence augmentation, cryonics and uploading
- **Humanism** - attitudes about human self-reliance and whether there are divine limits on human reason
- **Technological -Optimism** - attitudes about embracing or banning new technologies, such as nanotechnology, genetic engineering and human enhancement technologies
- **Personhood Ethics** - attitudes about valuing the well-being of all sentient, intelligent beings, including rights for great apes and robots, and conversely not endorsing rights of lower animals, feti or the brain dead
- **Reproductive rights** – liberal attitudes about abortion, human cloning and the genetic enhancement of children

There have been vigorous discussions within the WTA about whether all these value commitments are equally important, in particular in regards humanism. Since transhumanists see themselves as a part of the Enlightenment humanist tradition, and since most are in fact atheist, many feel that one cannot be a theist transhumanist. Conversely, since some self-described transhumanists agree with all of the propositions above except the two humanist propositions, or agree with *all* these propositions *including* the humanist propositions and yet subscribe to a religion or spirituality, doesn't that argue for the possibility of a religious transhumanism?

Empirically, many transhumanists do not feel transhumanism precludes spirituality. The WTA membership survey found that one quarter of the respondents were religious in some sense, identifying with all the major world religious traditions from Buddhism and Hinduism to Christianity, Judaism and Islam, as well to terms such as “spiritual” and “religious humanist.”

Table 1.2. Which of these best describes your religious or spiritual views?

62%	Secular, atheist
30%	Atheist
16%	Agnostic
9%	Secular humanist
7%	Other non-theistic philosophy
24%	Religious or spiritual
6%	Spiritual
4%	Protestant
2%	Buddhist
2%	Religious humanist
2%	Pagan or animist
2%	Catholic
2%	Unitarian-Universalist
2%	Other religion
1%	Hindu
1%	Jewish
1%	Muslim
14%	Other/DK
11%	None of the above
4%	Don't know

Bainbridge's (2005) pilot survey research on 430 respondents, including one hundred or so transhumanists, asking about approval of a number of transhumanist interventions, found that the religious supported transhumanist ideas less often than the secular, but that the differences were not dramatic. While a third of the agnostics and atheists supported the idea of mind-scanning and uploading, 10-20% of the firm believers in God also supported the idea (Bainbridge, 2005). Clearly some religious can embrace transhumanist projects, there are already people who consider themselves religious and

transhumanist, and there are beginning signs of religious-transhumanist syncretism both within and outside of the major faiths.

Even if *doctrinally* some transhumanist tenets are incompatible with core tenets of some of these faith traditions, pursuing a future world community that makes safe human enhancement universally accessible requires a broad, diverse coalition including both secular transhumanists and people of faith sympathetic with transhumanism. As a consequence the World Transhumanist Association sponsored a conference on transhumanism and religion at the University of Toronto in the summer of 2004, which resulted in a special issue of the *Journal of Evolution and Technology*. That conference spawned the Trans-Spirit project and email list, an effort to discuss emerging neurotheological research and possible neurotechnological adjuncts to spiritual ends; this is also the agenda of the Institute for Ethics and Emerging Technologies' new Cyborg Buddha Project (IEET, 2007). In 2004 Unitarian-Universalists formed the Transhumanist UU Network (Hughes, 2005) and in 2006 the Mormon Transhumanist Association incorporated in Utah (MTA, 2007).

In this essay I build on these efforts to explore the compatibility of the transhumanist project with the metaphysics, soteriologies and eschatologies of the major world faiths (Hopkins, 2005). I argue that elements of transhumanism are compatible with interpretations of all the world's faiths, and that these compatibilities are being and will be built upon to create new, syncretic "trans-spiritualities" in which enhancement technologies are selectively incorporated by groups in all the religious traditions. The religious landscape of the future will range from the current prevailing bioconservative resistance to an enthusiastic embrace of transhuman possibilities.

Metaphysics of the Body and Spirit

One of the chief obstacles to reconciliation of transhumanism with most religious systems is the metaphysics of the spirit-body relationship. Transhumanists are nearly unanimous in believing that there is no supernatural spirit, that the mind is a product of the brain, and that machines with self-aware intelligence are possible. Transhumanists also overwhelmingly embrace the idea of mind uploading, and endorse the moral standing of all sentient life "whether in artificial intellects, humans, posthumans, or non-human animals." Transhumanist thinking on "non-anthropocentric personhood theory" draws on the intrinsic logic of liberal democratic thought, which insists that all suffering and self-aware beings have equivalent moral standing regardless of irrelevant biological differences such as gender, race or species. This theory is crystallized in the contemporary liberal bioethics of "personhood," informing debates around abortion, brain death and the status of non-human creatures. Conversely, the chief critics of personhood ethics are religionists who argue that value or moral standing comes from qualities particular to human beings, such as the possession of a soul, and that these qualities could not be created in, or transferred to, machines or animals.

The belief that humans are uniquely ensouled and that the soul cannot transfer to other creatures is specific to the Abrahamic faiths, and is a hurdle for transhumanists within these faith traditions. However, theologian Ted Peters has reviewed the many Christian soul theories in terms of their relative compatibility with transhumanism, from purely supernatural "substance dualism" to "theological materialism" (Peters, 2005), and concludes that the common folk Christian belief that humans are endowed with unique, eternal, supernatural souls is unscriptural and noncreedal.

Even though substance dualism has garnered some theological credibility in the past, the idea that the soul is a spiritual substance is widely rejected in today's Christian circles as unscriptural and incoherent. Recognizing this makes confronting trans-humanism and cybernetic immortality a bit more difficult, because the theological perspective simply does not match the emerging scientific and technological perspective. (Peters, 2005: 386)

Peters points out that in Genesis God forms man from breath and dirt, implying that ensoulment is a natural process guided by a supernatural hand. Similarly Saint Paul says that the soul "perishes," while the Resurrection will be of the body, not the soul. Some scholars argue that the concept of an eternal soul was incorporated into Christianity and Islam from Greek ideas of *anima* and eternal Platonic types. Jewish and Islamic eschatology also includes bodily resurrection, with Islam sharing belief in a soul, while Judaism does not have a concept of a supernatural soul.

Christians do not, and perhaps cannot consistently, identify the soul with just the memories, personality and rational self-awareness of the brain, the personhood that transhumanists acknowledge and want to perpetuate. The catechism of the Catholic Church for instance defines the soul as "the innermost aspect of man, that which is of greatest value in him, that by which he is most especially in God's image: 'soul' signifies the spiritual principle in man." But Peters argues that Christians can maintain a broader spiritual understanding of the soul, emphasizing the relationship of the person to the divine, and still embrace a metaphysics more consistent with the evidence of science. Peters labels the more doctrinally-grounded Christian soul theories "emergent dualism," "non-reductive physicalism," and "theological materialism." Emergent dualists see the soul as a supernatural thing that emerges from the brain. Non-reductive physicalists see the soul as a property of the mind, which cannot be reduced to the functioning of neurons, hormones and genes, but which is not supernatural. Christian theological materialists see the soul as synonymous with the workings of the body and brain, and the death of the body as the end of the soul. For these soul theories the soul is more of a relational concept (Davis, 2002), a dynamic expression of the relation of the individual with the divine.

Peters argues that each of these more plausible interpretations of a scripturally-grounded and creedal concept of the soul include more than just reasoning, and rejects what he perceives as the transhumanist assumption that reasoning is all that is important about the preservation of personal identity. Other Christian critics of machine intelligence argue that the non-cognitive aspects of God reflected in Man in *Imago Dei* can never be fully replicated in a machine (Tongen, 2003). Fortunately, this assumption about the narrowness of transhumanist conceptions of the person is wrong, or it is true only in the

sense that while there are some transhumanists who are only concerned with preserving and enhancing rationality and intelligence, transhumanist philosophers – such as Nick Bostrom, Ray Kurzweil, Mark Walker and myself – have given considerable attention to the importance of embodiment, desires, beauty, awe, personal identity and other features of a richer model of the person. In "Transhumanist Values" for instance Bostrom observes "Preservation of personal identity, especially if this notion is given a narrow construal, is not everything." Insofar as Christians adopt one of the three interpretations of ensoulment which Peters argues for, these would also all be potentially consistent with a non-caricatured transhumanist project.

In other words, even if a Christian believes the soul to be a supernatural substance emerging from brains, one could also believe such a soul might emerge from a similar mind instantiated in a different media, such as an enhanced animal or a machine. Insofar as the soul is about the relationship of self-aware minds to the divine then Christians would be interested in the capacity of non-human minds for shame, awe and a personal connection to the divine.

The theologian Anne Foerst (1998, 2004) argues that a relational, rather than supernatural, understanding of the soul is very close to the transhumanist/bioethical idea of personhood, and that machine minds would then be moral subjects for Christians (2000). Even our non-self-aware humanoid robots today require relational respect:

Personhood simply means playing a role, if only a passive one, in that mutual narrative process. Like babies, or Alzheimer's patients, humanoid robots don't tell their own stories, but they play a role in our lives so we include them in our narrative structures. This suggests that perhaps we ought to think about treating robots right... Thinking about humanoid robots can possibly help us learn to tell inclusive stories, narratives that are unprejudiced. (Foerst quoted in Glenn, 2005)

In fact, even the most conservative Abrahamists posit the existence of non-humans with moral standing: angels. Conversely religious cosmologies also usually include evil supernatural beings, and transhumanism is sometimes being interpreted as portending the creation of these mythical demons. Some on the Christian Right, for instance, have proposed that transhumanist experimentation with robots, chimerae and cyborgs are intended to create demonic *nephilim* or "human-angel hybrids" (Palmgren, 2006) prophecied to "immanetize the Eschaton" (Collins, 2006). Again, the theology of why transhumanist projects would necessarily create beings without souls, or whose souls were evil, is a little obscure. Presumably Christian transhumanists will argue either that posthuman beings have the same souls as humans, or even more sublime souls, and presumably then also greater spiritual obligations as angelic superheroes.

In addition to their mistaken understandings of Christian metaphysics of the soul many Christians, and theists of other faiths, reject the transhumanist project on the grounds that it is a form of Promethean *hubris*, an insult to God and an attempt to usurp his powers and prerogatives. Rev. Peters has again argued that there is no scriptural basis for an injunction against "playing God," and that like Prometheus, this injunction is inherited from the Greco-Roman tradition. Unlike the Olympians, the God of Abraham is not in a zero-sum balance of power with humanity, where God loses when we become greater.

The God of Abraham enjoins human beings to be "created co-creators" (1997). Humanity was endowed with reason with the expectation that we would exercise it in expanding our stewardship and cultivation of the gifts of Creation, including our own biological natures and our capacities for health, freedom and virtue. Although co-creator theology and theology of freedom (Polkinghorne, 2000) is still rare in the pulpit, mosque and synagogue it creates a bridge for Christian, Jewish and Muslim transhumanists.

Outside of the Abrahamic traditions we see even more openness to the transhumanist project and metaphysics. Shinto and animist traditions, which see spirit in even inanimate objects, have had little problem with the idea of human or animal enhancement, and should have less problem with the idea of spiritual machines. Traditional Hindu (Singh, 2006) and Buddhist theories of ensoulment (Hughes, 2007) certainly assume that a supernatural spirit, separate from the brain, must be united with a biological body, with both breath and a brain. But both traditions also believe consciousness can evolve and migrate from animal to human to demi-god form, with very long-lived bodies, some of whom are human-animal hybrids, have multiple arms and legs, multi-hued skin, and superpowers; within the Hindu-Buddhist cosmology the prospect of the posthuman should not come as too much of a shock.

Nor does human evolution threaten the gods in the Hindu or Buddhist traditions; while humans may be occasionally punished for hubris against the gods in stories in both traditions, the soteriological goal for Hindus is to become one with the gods, and for Buddhists to evolve to surpass the gods altogether. Buddhists and Hindus have thus, so far, been more comfortable with transhumanist ideas of biological enhancement, machine intelligence and uploading. For instance, the Dalai Lama has famously opined that human consciousness could be instantiated in a machine (Hayward and Varela, 1992), and is actively collaborating with the neuroscientific investigation of the brain processes involved in meditation.

A characteristic Asian metaphysics may contribute today to the greater openness of Asian societies, from India to Japan, to the enhancement project. Opinion polls show much higher acceptance of all biotechnologies in Asia than in the Christian countries, with no backlash against their enhancement potentials (Miller, 2006). In a 1993 survey, for instance, more than 50% of the respondents in India and Thailand supported the use of gene therapy for the purposes of physical, intellectual or moral enhancement (Macer, 1994b).

Metaphysics at the Beginning and End of Life

Even if machines or enhanced creatures are recognized by faith traditions as having souls, there are many culturally-specific beliefs about the damage that can be done to the spirit with manipulation of the body and brain. Few faiths have argued for strict absolute dualism which would argue that nothing done in the body can affect spiritual health. Indeed, in most faiths, the health of the body is very important for the health of the spirit,

either because physical illness reflects spiritual illness, as in Christian Science and some animist beliefs, or because pollution of or modification of the body interferes with spiritual progress and the relationship with the divine, especially as the soul enters and leaves the body.

For instance many faiths, from Orthodox Judaism to Tibetan Buddhism, believe that the spirit is present until heart death, and lingers connected to the corpse for some time after heart death. These beliefs have made them resistant to personhood-based brain death, organ transplantation from cadavers, cryonic suspension, or the possibility of pre-mortem uploading of consciousness, all of which would apparently interfere with the migration of the soul. Again, the less supernatural and more materialist conceptions of ensoulment described by Peters, and thus of the meaning of death rituals such as sitting *shiva* or reading the *bardo* to the corpse, would not pose an obstacle to biomedical interventions at the end of life, and could even incorporate them. I have argued in "Buddhist Bioethics" (2007) that Buddhist metaphysics at least is not consistent with the idea of a disembodied supernatural spirit separate from the brain, and that therefore Buddhist bioethics is closer to personhood theory than the folk beliefs that have accreted to it.

Belief that ensoulment occurs at conception, in many traditions, has caused religious objection to many forms of reproductive technology and embryological research, from contraception and abortion, to fetal therapy and cloning. Transhumanists overwhelmingly support reproductive rights on both the grounds that fetuses are not self-aware persons, and because we strongly support a right to bodily autonomy. But an anti-abortion transhumanist is also conceivable. She might hold, for instance, that although the embryo is not a moral person, and that enhancement technologies should be widely used, prudence demands that we treat embryos with special regard to prevent slippery slopes to less respect for all sentient life. In fact, the advent of artificial wombs and fetal gene therapy is being eagerly anticipated by many opponents of abortion since the former would provide the means for "fetal rescue" as an alternative to abortion, and the latter provides a way to reduce the need for abortions of disabled fetuses (Bailey, 2003).

Religious pronatalism thus provides a limited bridge to acceptance of reproductive technologies that contribute to reproduction and a child's health, although not contraception and abortion. Insofar as religious traditions such as Judaism believe human beings are specifically enjoined to have children, that having children is a *mitzvah*, this has led to another point of convergence of transhumanism and religion. Halachic opinions have tended to endorse the use of reproductive cloning and other reproductive technologies by married couples when they enable child-bearing (Broyde, 2003; Eisenberg, 2007). Israel has relatively liberal laws on reproductive technology and it is widely used by the ultraorthodox (Berck, 2006).

Objections to reproductive technology, on the other hand, often stem more from a belief in a divinely mandated way that human beings are to be conceived and related to rather than from a specific argument that the soul is somehow damaged or absent in a child produced through reproductive technology. The Catholic "theology of the body" argues that conception must only occur through a physical act of intercourse between a married

man and woman, leading the Vatican to oppose contraception, in-vitro fertilization and other reproductive interventions (Hart, 2005). The interventions are opposed because they are contrary to the divine plan rather than because the children's souls are damaged. Intriguingly the Vatican has observed that this does not preclude inheritable somatic genetic modifications of sperm or ova so long as the child is conceived through intercourse (ITC, 2004).

The language of "human dignity" is thus often used in opposition to reproductive manipulation as a more comprehensive and ecumenical substitute for "spirit" or "soul," as in the *Manifesto on Biotechnology and Human Dignity* (CBC, 2003) endorsed in 2003 by most of the leaders of the US religious Right. The Manifesto argues against abortion, cloning, reproductive technologies and human enhancement on the grounds that they threaten human dignity and "human nature." "The uniqueness of human nature is at stake. Human dignity is indivisible...every human being is possessed of an equal dignity...at every stage of life..." Like most liberal bioethicists and all transhumanists I see this use of "human dignity" to be as, at best, vacuous and, at worst, an argument that humans lose dignity from efforts to endow them with greater health, longevity, intelligence, happiness or liberty (Macklin, 2003). If respect for human dignity is to have any meaning then genetic and reproductive interventions which confer greater life and ability for a child must be a form of respect for their dignity (Bostrom, 2005).

The argument from human dignity seems most odd in religious objections to longevity. If human life is a gift from the divine, as theists argue, or a rare and precious gift of an impersonal universe as Buddhists believe, and if taking life-sustaining medicine is not only permitted but a spiritual obligation as a sign of respect for the gift of life, then why would it be sinful or karmically unskillful to preserve one's own life and the life of others? Often, the religious objectors argue from the position that human aspirations for immortality through technology are hubristic, since immortality can only be achieved through spiritual means, and immortal longings distract from appreciation of spiritual obligations and temporal values. This is a largely specious argument since most transhumanists only use the term "immortality," if at all, as a synonym for radical longevity. While believing one is immortal may imply one's soul may never fulfill its destiny, believing one may live a finite but much longer life poses no such problem. In fact, in Buddhist and Hindu cosmologies human beings may be reborn as gods to live aeons. Nor is it clear why a transhumanist Christian's attempt to live until the End of Time and the resurrection of the dead would be held against them at the Judgment.

Body Loathing, Body Worship and the Middle Way

Some writers see transhumanism as a synonymous with "body loathing" (Dery, 1996) and some Christian writers have tagged transhumanism as a form of "neo-Gnosticism," a recurrent heresy accused of believing that the body is an evil trap for the soul (Pauls, 2005; Hook, 2004). This is a little ironic, since transhumanists are also accused of worshipping youth and the body, insofar as they attempt to perpetuate longevity.

Certainly most transhumanists don't see the body as evil, and do not believe in a spirit, but to the extent that transhumanists do believe the mind can migrate out of the body to superior instantiations there is some correspondence of attitudes. More accurately, transhumanists are both body-worshipping and body-loathing to a greater or lesser extent, depending on the transhumanist. As Ronald Cole-Turner observes:

We can see an uncanny likeness between two rival interpretations of resurrection (bodily and spiritual) and two views of the transhumanist vision (longevity and uploading). Traditional Christian theologians have argued among themselves over this question: how different is the resurrected (or "spiritual" or "glorified") body different from the bodies we now have? Some have argued that the present body is raised but relatively unchanged, simply made to last forever. Others see resurrection as radical transformation, not a resuscitation and not just a reinstatement of the pre-fallen body of Adam and Eve, but a transfiguration beyond imagination. This parallels to some extent the difference between transhumanists who look for a modification of the human body to defy aging (essentially a modified biological substrate) and those like Kurzweil who look for endless life in a different, non-biological substrate. (Cole-Turner, 2007)

Some transhumanists do indeed express profound contempt for the "meat puppet" and its limitations, and look forward to the day when consciousness can translate into an immaterial informational existence. Some contemporary neo-Gnostics have gravitated toward transhumanist ideas (see for instance Erik Davis' *Techgnosis*, Michael Grosso's *The Millennium Myth*, and the transtopia.org site). But few of even these self-described neo-Gnostic transhumanists truly see the body as evil and are attracted by other correspondences they perceive between transhumanism and the Gnostic traditions. For instance the occult Kheper website summarizes the correspondences and differences between Abrahamist faiths, the neo-Hindu Aurobindo sect, "New Age," and transhumanism in this table:

The Spiritual and Posthuman Transformation

examples	Zoroastrian- Judeo- Christian- Islamic messianism Saved / believers	Sri Aurobindo & Mirra Gnostic Beings	New Age Star Children, Indigo Children, etc	Transhumanism Posthuman
New Race / Species	No - same as current human worshippers	Yes	varies	Yes
c o m e s	develops from current humanity	No (see above)	varies	varies (either enhanced human, AI, or both)
a b o u t	change through Direct Divine action	Yes - exoteric Deity	No	No
t h r u	through natural or cosmic evolution	No	Yes - evolution of nature to Supermind	Yes - accelerating evolution
	through individual effort	No, just believe and you're saved	Yes - Integral Yoga	Yes - using advanced tech
	through advanced technology	No	No	Yes - nanotech, genetic engineering etc
	through changing the deep structure of the cells	No	mind of the cells	transmutation of DNA medical nano
Vastly superior to current humanity	n/a	Yes	somewhat	Yes
i n	immortal, no illness	Yes	varies	Yes
	occult powers	No	varies	No
t h a t	Superintelligence	No	No	Yes - singularity
	Society superior	n/a	Yes - Gnostic Society	No? (varies)
	Spiritually superior	No	Yes	No? (varies)
	faculties not found in current humanity	No	Yes - <u>Supramental</u>	Yes - singularity
Takes over from current humanity	No	No	varies	Yes
Earth completely transformed	Yes - Kingdom of God	Yes - supramental transformation	varies, e.g. Photon Beam	Yes - via advanced tech
t h r u	through activity of the new species	No	Yes	Yes
	Divinisation of Matter	varies	Yes	No

<http://www.kheper.net/integral/transformation.html>

While there may be Gnostic occultists attracted to transhumanism, and some transhumanists with body loathing, few transhumanists engage in any mortification of the flesh other than perhaps a calorie restricted diet in pursuit of longevity, which is pretty tame compared to self-flagellation in Catholicism, self-castration in early Greek and Christian sects, snake handling by Pentecostals, or body piercing by Shivaites.

Conversely at least some transhumanists may also be seen as body-worshippers, and this strain would correspond with religious traditions that exult the body and pursue longevity as a spiritual end. The attempt to achieve immortality and superhuman abilities through diet, medicinal herbs, exercises, meditation and magic is an ancient cult within Taoism for instance (Luk, 1999). In the Indian yogic traditions body mastery has been integrated with meditative traditions. Yogic and Taoist transhumanists, particularly in the more free-wheeling New Age milieu, could incorporate bio- and neuro-technologies into traditional yogic systems.

Rather than neo-Gnostic body loathing or Taoist-yogic body worship I think the dominant transhumanist attitude to the body is simply pragmatism: we need to take excellent care of the body until we have a better alternative. Kurzweil sums up the perspective in the title of his 2005 book *Fantastic Voyage: Live Long Enough to Live Forever*. This seems to me consistent with the first "middle way" sermon of the Buddha, in which he warned against both self-mortification and indulgence. Buddhist monks meditate on the inevitability of sickness, aging and death in order to achieve a serene acceptance of the body's failings, and yet they were required to keep medicine on hand to maintain the health of the body to the extent possible.

I also see the attitude summed up in Reinhold Neibuhr's serenity prayer:

God, give us grace to accept with serenity
the things that cannot be changed,
Courage to change the things
which should be changed,
and the Wisdom to distinguish
the one from the other.

If some secular transhumanists have too little serenity about the things which cannot be changed in the human condition, or wisdom to understand what can be changed, the chief spiritual failing of the religious bioconservatives seems to be too little courage to change the things which should be changed.

In summary, a variety of metaphysics appear to be compatible with one form of transhumanism or the other, from various Abrahamic views of the soul to Buddho-Hindu ideas of reincarnation to animist ideas. These would all permit various kinds of religious transhumanist syncretism in the fullness of time.

Theodicy

Another area in which secular transhumanist thought and religion often conflicts is theodicy: why is there evil and suffering and can we do anything about it? Secular transhumanists don't believe in evil, and generally believe that most forms of suffering, such as mental and physical illness, unwanted death, cruelty and poverty can be overcome with human technological mastery and the advance of liberal democracy. However, as with metaphysics, transhumanism is potentially compatible with many theodicies.

One theodical view, for instance, is that everyone gets what they deserve. This could characterize Hindu-Buddhist ideas of karma. But the idea that health, wealth and good fortune are the result of prior action or predestination do not argue that one should not attempt to secure them anyway, only that one should attribute the causal chain of their acquisition to both one's former actions and current efforts. This view is therefore as compatible with transhumanist aspirations as they are with any aspirations.

Another theodicy, both secular and religious, argues that suffering has a spiritual purpose and that efforts to ameliorate suffering reduce our opportunities for character-building and spiritual growth (Fukuyama, 2002; PCB, 2003). But this criticism is specious, since no proximate transhumanist project of transcendence would leave posthumans without any challenges or limitations. If anything the challenge of living for millennia, becoming super-intelligent or stopping the heat death of the universe are much greater, if more distant, than the character building tests of moderating one's anger and appetites. Is it really the case, as critics of cognitive enhancement assert, that all youth will lose the capacity to work hard if their learning disabilities are chemically treated? People who overcome adversity often tell themselves the reassuring story that their disease, rape or poverty taught them valuable lessons, but few argue that people should be infected, raped or impoverished to teach them those lessons. There are lessons to be learned in every station of life and holding transhumanist aspirations no more robs of us valuable learning opportunities than wearing shoes and clothes does.

In Milton's *Paradise Lost* Satan notes "The mind is its own place, and in itself can make a Heav'n of Hell, a Hell of Heav'n," reflecting a common theodicy from ancient mysticism to modern New Age and cognitive behavioral therapy (Haidt, 2006): suffering and sin are a fault of the mind, that there is actually no evil or suffering in the world if we correctly understood Reality or see the divine in all things. This theodicy is also consistent with materialist transhumanism, which also sees evil and suffering as simply a product of the human mind. The "abolitionist" school of transhumanist thought, for instance, argues that the human mind could be re-engineered to be happy in all situations, without harming motivation or judgment, so that, like the bodhisattva of Mahayana Buddhism, one could simultaneously see the world as perfect-in-itself or beyond good and evil, and still be motivated to enjoy life and work on behalf of others. The abolitionist project is by no means held by all transhumanists, many of whom worry that such perceptual and mood regulation might lead to a Panglossian conviction that there is nothing about the world

that needs correction. The abolitionists counter that, empirically, the happiest people are also the most engaged in life.

As I discuss further later, some materialist transhumanists propose the possibility that this universe may have been created by a superintelligent being, perhaps for some purpose or perhaps simply as an amusement (Kurzweil, 2007; Bostrom, 2003). This thesis would be consistent with the theodical position that evil results from humans having been given free will in a created universe by a hands-off God (Polkinghorne, 2000), or that no human explanation of evil and suffering could be successful in understanding the mind and purposes of God (Kant, 1791), or even with "dystheism" or "maltheism," the view that God is not benevolent, and may even be malicious. With Kurzweil and Bostrom then, a religious transhumanist could argue that the best way for humanity to come to a better understanding of the purpose of Creator is to strive after superintelligence ourselves, and decide freely for ourselves whether we agree with that plan, if benevolent, or choose to defy the neglectful or hostile Deity (Blumenthal, 1993).¹

This leads to consideration of yet another theodicy, Manicheanism, in which the universe is the site of the titanic struggle of roughly equal forces of good and evil. For Manicheans there is no necessary reason why the transhumanist development of human capacities could not contribute to the struggle for good. As with arms races in temporal reality, if the forces of good refuse to avail themselves of all the means at their disposal the forces of evil will be guaranteed to use those powers to gain advantage. A Manichean bioconservative may believe that all enhancement technologies are poisoned pills which will doom the user, and that the only armaments necessary in the battle are spiritual. But many contemporary Manichean evangelical Christians – those who inveigh against the wiles of Satan as if he was God's co-equal – have no problem using television, medicine, computers and so on in their battle for the Lord. So presumably some will also soon see the spiritual necessity for Christians to be as smart, wired and long-lived as the agents of Beelzebub.

¹ An anonymous transhumanist's (Anonymous, 2007) response to a friend's funeral beautifully summarizes transcendentalist transhumanism's theodical position towards suffering and death:

After the funeral I went to this week, and the pain I listened to in people's speech, and their tears and singing, my urge is overwhelming. If there was a god I'd put my fist to his face. How dare he? He doesn't deserve these songs in his name, and he does nothing in return that the people don't end up just doing for themselves once the funeral is over. Just as we do for ourselves now in our pain so shall we do for ourselves when the promise of your return is as empty as the churches will slowly become. And we will create our own way to raise ourselves up from the dead. On the day when our hearts may stop beating but the thoughts that make us whole continue on powered by a tech that is stronger than flesh.

If I had been that god my presence would have been clear. The sound of my voice would be permanent and resonate through the ages not from a book or from a mad man on a stage. You would hear it from beginning until the end, and with your own ears, and the message would be clearer than any other speech in the world. This god created a baby called man and left him in the room with a ticking bomb and a few scribbled instructions on what to do with it and called it a matter of free will to come out of this mess alive.

The transhumanist philosopher Mark Walker is probably the leading writer on reconciling transhumanism with Christian theology. In his essay “Becoming Gods: A neo-Irenaean Theodicy” (Walker, 2002c) he argued that the theodical position of a Polkinghorne (2000) or Hick (1977, 1981) – that God gave us free will in order to give us the opportunity to struggle for self-improvement – can be applied to a transhumanist theodicy:

it is not the mere possession of free will that guarantees the production of evil, rather it is free will in conjunction with our finite nature that leads to the production of moral evil. Thus, it is our duty to attempt to move beyond our merely finite selves, to become gods. When, and only when, we have discharged this duty will evil be expunged, only then will the problem of evil be fully answered. (Walker, 2002c)

Walker notes that since we are considered God's children rather than God's pets that the expectation should be that we are being nurtured and encouraged to become adults and not to remain in perpetual pet-itude.

If God is an ideal parent His mission must be to allow us to develop to become type identical with Him. (Walker, 2002c)

Walker goes on to argue that the transhumanist project, applied to the moral improvement of humanity as well as to the usual goals of longevity, super-intelligence, post-biology and emotional regulation, would be the fulfillment of such a Christian theodicy. Peters makes a similar point about humanity being in *Imago Dei*, the image of God; doesn't this imply that we are enjoined to also be god-like in all our attributes, instead of only our spiritual virtues? Philippians 3:21 says He “will transform the body of our humble state into conformity with the body of His glory.” Couldn't transhumanist technologies be part of the working out of the divine plan that we become godlike as well?

While some Christians insist that humanity was created as we are today, and that no evolution has taken place or should take place so that we remain in *Imago Dei* as intended, many other Christians have no problem imagining that Creation was simply a *prima causa* of the Big Bang, or a sparking of life on Earth. Christians who accept that humanity has evolved since Creation should also have no problem believing that we can remain in *Imago Dei* as posthumans. For instance Robert Schneider notes in "Evolution and the Image of God":

If this is the biblical understanding of what it means to be created in "the image of God," then does it require a separate creation for human beings, that is, for *H. sapiens*, to be made in this image? ... "That God created human beings (Gen. 1:27; Ps. 100:3) does not imply instantaneous action. God's creation of humanity encompasses past primate history, the present, and whatever is to come. The sweep of human evolution illustrates how God's work of creation is a continuing relationship of dependence between the world and God, a continuing act of God's will, an eternal covenant relationship" ... Genesis itself implies that humanity and all the other living beings are made of the same stuff and given the same breath of life (Gen. 2:7, 9, 19, cf. Eccl. 3:19-21; Miller 1993), and modern science has shown that we share the same DNA and other molecules with virtually all living things... It does not denigrate either God or humanity to hold that God's creative evolutionary processes brought humanity to a point where it would be capable of expressing those qualities that both Scripture and theology have associated with the "image of God." (Schneider, 2007).

In summary, in theodicies as in metaphysics, there is no inconsistency between most religious views and transhumanist aspirations. In the next section I will consider some of the soteriological positions on virtue and transcendence that are similarly consistent with a transhumanist project of radical human enhancement.

Virtue, Happiness and Soteriology

Patrick Hopkins (2005) argues that both religion and transhumanism are soteriological efforts to transcend animality. Most transhumanists are libertarian in respect to life goals. While they may personally aspire to enlightenment, salvation, moksha or a life of virtue, they have little evangelical or authoritarian impulse to guide others away from vice or self-indulgence. But there is an implicit conception of the good personality in transhumanist thought, from the evolving Extropian Principles, which urged transhumanists to be more rational and dynamically optimistic, to the writings of Bostrom, Walker and myself which have dealt with issues of eudemonia and the benevolent obligation to restrict others from self-harm. A positive moral and political agenda for transhumanism is riskier than strict liberal neutrality about life ends, since bioconservatives already suspect transhumanists of totalitarian ambitions. But given the types of moral and psychological harms people could cause themselves and society with future neurotechnologies a pro-active theory of the good posthuman personality is inescapable.

The idea of linking transhumanism with moral improvement and soteriology has developed rapidly in the last couple of years in reaction to the growing body of evolutionary psychology and behavioral genetic explanations for religion (Boyer, 2001, 2003, 2004), and the emerging fields of positive psychology, neurophilosophy and neurotheology (Seligman, 2004; Alper, 2006; Hamer, 2004; Newberg, 2002). If our impulses for virtue, vice and religiosity are in some part determined by genetic, hormonal or neurological predispositions why then shouldn't we redesign ourselves to have better impulses, superior moral reasoning and more frequent experiences of meditative or prayerful transcendence.

In Walker's essay "Genetic Virtue" (2003d) he argues that there is a growing body of evidence to support genetic predispositions for friendliness, which has been generally considered a virtue. The literature he cites is based on the "five factor" personality model, which shows that everyone's personality can be described as a mix of five basic characteristics, all of which are substantially set at birth and stable across one's life: Openness to Experience, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. Kerry Jang at the University of British Columbia has found that the agreeableness or sociability trait is especially strongly influenced by genes (Jang, 1998). People who score high on sociability are more compassionate, trusting and helpful while people low in sociability are uncooperative, unsympathetic and easily irritated. Genetic

enhancement to make people more compassionate, trusting and helpful, Walker argues, will therefore be both ethical and commendable.

One drug that has been shown to increase our capacity for trust and cooperation is the hormone oxytocin. Oxytocin is released during breast feeding, orgasm and the infatuation period of romance, contributing to bonding. In experiments in Switzerland Ernst Fehr and colleagues have found that subjects covertly dosed with oxytocin were more cooperative and trusting in laboratory experiments (Kosfeld, 2005).

Similarly applying psychopharmaceutical, genetic or cybernetic control to our vices would also be commendable. Substantial research suggests that our predispositions for addictions, anger, self-absorption, gluttony and sexual promiscuity have a neurochemical basis which can be treated with drugs and potentially gene therapies (Medina, 2000).

Most religious critics of transhumanism assume however that no such biomedical enhancement of human virtue is possible. For instance Christopher Hook wrote in *Christianity Today* that:

Transhumanist philosophy claims that technology can correct the fundamental problems of humankind. As Christians, we know that our elemental problems arise from the corruption of the human heart (Mark 7:21-23). Sin is real, observable, and unexplained by empirical tools. All technological innovations will not only fail to produce true happiness but also will be corrupted intrinsically by sin. (Hook, 2004)

Nonetheless, the recent controversy over the proposal by Baptist theologian Albert Mohler that Christian parents would be obliged to fix their gay embryos' sexual orientation *in utero* shows that the idea of genetic or cybernetic moral enhancement will be compelling for even those religious who are otherwise bioconservative:

Research into the sexual orientation of sheep and other animals, as well as human studies, points to some level of biological causation for sexual orientation in at least some individuals. Given the consequences of the Fall and the effects of human sin, we should not be surprised that such a causation or link is found. After all, the human genetic structure, along with every other aspect of creation, shows the pernicious effects of the Fall and of God's judgment....If a biological basis is found, and if a prenatal test is then developed, and if a successful treatment to reverse the sexual orientation to heterosexual is ever developed, we would support its use as we should unapologetically support the use of any appropriate means to avoid sexual temptation and the inevitable effects of sin. (Mohler, 2007)

If sinful genetic predispositions are the mark of the Fall of Man in the genome, why stop with the correction of just the impulse to same sex relationships and not include predispositions to greed, anger, lust, gluttony, sloth and pride? Since Adam's loss of longevity was his gravest punishment in the Fall, wouldn't correcting genes for aging be a means to redress genetic sin?

General cognitive enhancement of intelligence will lead to improvement in some virtues, such as more sophisticated moral reasoning (Colby, 1983) and our ability to predict the consequences of our behavior for others. But enhancing our capacities for empathy, compassion and cooperation will require different interventions. "Emotional

intelligence,” our understanding of our own and other’s feelings, is not correlated with IQ tests (Gardner, 1993). Autistics can display high levels of intellectual ability, while being completely incapable of understanding or empathizing with the emotions of others, and we are coming to understand that damage to specific "mirror neurons" are the cause of autists' disabled empathy (Oberman, 2005). Similarly our ability to perform moral decision-making, our capacity to experience outrage at lying and injustice, and our feelings of love and shame, appear to depend on specific brain structures (Allman et al., 2001). Developing drugs, gene therapies or devices which enhance the functions of these structures would have profound effects on our moral sense, potentially making us more ethical and compassionate people.

The growing field of positive psychology has developed a meta-cultural model of the six basic, pancultural virtues, and is working on the balance of congenital and environmental factors that determine your virtue orientation on each one. In turn one's level of each virtue, like several of the congenitally set personality traits and one's basic happiness set point, all influence one's level of happiness. People who are congenitally set to be friendly, trusting, energetic and not neurotic are happier than they would otherwise be given their happiness set point. Happily, virtue – energy, diligence, friendliness and so on - leads to happiness (Seligman, 2004). As yet, the positive psychologists have focused on behavioral and cognitive interventions to modify individual virtues, but their work also provides a model for a complementary neurotechnological approach.

If enhancement technologies could suppress our vices and enhance our virtues, is there any reason to believe they would interfere with salvation, grace or enlightenment, the other component in most soteriology? In his 2005 essay "Trans-Spirit: Religion, Spirituality and Transhumanism" Zen priest Mike LaTorra argues that the emerging investigations of neurotheology (Alper, 2006; Newberg, 2002) – the genetic and neuro-physiological bases of meditation, rapture, awe, sudden insight and contentment – should be the basis for new neurotechnologies to enhance these capacities. David Pearce and the "abolitionist" school of transhumanism are researching neurotechnologies that provide a consistently high level of contentment, and other desirable altered states of consciousness. The Council on Spiritual Experiences (Forte, 1997), and a growing network of "entheological" researchers (Hoffman, 2000; Smith, 2000; McGraw, 2004; Economist, 2004), are documenting the effects of "entheogens," traditional psychedelics and novel psychopharmaceuticals that appear to induce spiritual experiences. In Michael Persinger's (2001) research on transcranial magnetic stimulation to temporarily suppress activity in specific parts of the brain he has been able to generate the feeling that a spiritual being was in the room with the subject, and brain lesions have been linked to out of body experiences and "religious reverie."

There is a frequent religious objection to the notion of "push-button Zen" that I think is cogent, and it goes to the transhumanist rejection of the myth of authenticity. Kass et al.'s *Beyond Therapy*, Fukuyama's *Our Posthuman Future* and Sandel's *The Case Against Perfection* all argue that enhancement technologies will rob us of a sense of accomplishment, an argument that often bleeds over into the idea of learning through suffering. While I do not think this complaint is an argument for sickness, aging and

death, or poverty and injustice for that matter, I do think some people will feel differently about their spiritual health if they overcome their licentiousness or drug addiction with a pill rather than through arduous self-examination. The person who has spent twenty years meditating to achieve a satori experience of oneness with the universe will feel differently, and get different benefits, than the person who is able to induce such an experience with a brainjack. Spending years in community with fellow seekers, talking about your life, your struggles, and sitting on a cushion to master the drunken monkey of mind is not reducible to transient, inducible experience.

Perhaps some of us will still choose to forego engineered virtue and push-button enlightenment, and persist with the spiritual slog, just as people still like to ride horses even though they have cars, or climb mountains when they could take a helicopter. Nonetheless many mountain climbers appreciate having the latest camping gear, GPS locators, climbing boots and a cell phone to call in a helicopter just in case they need one. Similarly, when we have neurotechnologically enabled virtue, grace and transcendence I believe it will be up to each seeker to decide their own combination of technological and pre-technological methods.

Perhaps the ability to use neurotech to occasionally taste contentment and transcendence will provide a little motivation for those who prefer mostly non-technological methods. Those who don't feel the need to slog slowly up the mountain, generosity, patience, self-control, energy and even enlightenment will be easily available.

Escathology

Reflecting on the likely capacities of emergent superintelligence in this century and in the far future has led a number of secular transhumanist thinkers to develop eschatologies. These eschatologies are structurally and psycho-culturally isomorphic with religious eschatologies, reflecting the recurrent logic of questions of origins, interruptions and endings. As the religious come to see these similarities they will understand them as a scientific secular validation of their prophecies and visions, with superintelligent humans and machines, and the rest of the transhumanist project, cast as prophesied parts of the eschatological narrative.

The Singularity as Techno-Millennialism

Joel Garreau's (2005) psycho-history of accelerating change, *Radical Evolution: The Promise and Peril of Enhancing Our Minds, Our Bodies-and What It Means to Be Human*, is structured in three parts: Heaven, Hell and Prevail. In the Heaven scenario he focuses on the predictions of a coming Singularity of transhumanist inventor Ray Kurzweil, summarized in Kurzweil's 2005 book, *The Singularity is Near*. The idea of a techno-millennial "Singularity" is usually associated with a 1993 paper by mathematician and science fiction author Vernor Vinge. Vinge projected the millennial/apocalyptic

consequences of the emergence of self-willed artificial intelligence, which he projected would emerge within the next couple of decades. In physics "singularities" are black holes, within which we can't predict how physical laws will work. In the same way, Vinge said, greater-than-human machine intelligence, multiplying exponentially, would make everything about our world unpredictable.

Since 1993 a "Singularitarian" subculture has emerged within the transhumanist movement predicated on anticipation of the dramatic abruption of history by technological acceleration. Most Singularitarians, like Vinge and Kurzweil, have focused on the emergence of super-human machine intelligence. But the even more fundamental concept is of exponential technological progress, with the multiplier quickly leading to point of either catastrophe or a transition to a new phase of history.

The most famous accelerating trend is "Moore's Law," articulated by Intel co-founder Gordon Moore in 1965, which is the observation that the number of transistors that can be fit on a computer chip has doubled about every eighteen months since their invention. Kurzweil goes to great lengths in *The Singularity is Near* to document that these trends of accelerating change also occur in genetics, mechanical miniaturization, and telecommunications, not just transistors. Kurzweil projects that the "law of accelerating returns" from technological change is "so rapid and profound it represents a rupture in the fabric of human history." For instance Kurzweil predicts that we will soon be able to distribute trillions of nanorobots in our brains, and thereby extend our minds, and eventually upload our minds into machines. Since lucky humans will at that point merge with or become superintelligence, some refer to the Singularity as the "Techno-Rapture" or "the Rapture of the Nerds" pointing out the similarity of narrative to the Christian Rapture; those foresighted enough to be early adopters of life extension and cybernetics will live long enough to be uploaded and "vastened" after the Singularity. The rest of humanity may however be "left behind."

This secular "left behind" narrative is very explicit in the Singularitarian writings of computer scientist Hans Moravec (1988, 1998). For Moravec the human race will be superceded by our robot children, among whom some of us may be able to expand to the stars. In *Robot: Mere Machine to Transcendent Mind*, Moravec says "Our artificial progeny will grow away from and beyond us, both in physical distance and structure, and similarity of thought and motive. In time their activities may become incompatible with the old Earth's continued existence...An entity that fails to keep up with its neighbors is likely to be eaten, its space, materials, energy, and useful thoughts reorganized to serve another's goals. Such a fate may be routine for humans who dally too long on slow Earth before going Ex." (Moravec, 1988) Here we have the Tribulations and damnation, in addition to the millennial utopian outcome. Rather than consigning the late adopters to eternal damnation, however, as in the Christian Rapture narrative, Moravec argues for the far gentler institution of a universal welfare state to provide comfortably, even splendidly, for the ur-humans, revealing less a vengeful damnation of the unbelievers and more of a Universalist embrace of salvation, heaven on earth for the stubborn humans while the posthumans become gods.

While Kurzweil acknowledges hypothetical apocalyptic potentials inherent in these technologies, such as the "Terminator" scenario of malevolent AI and robots intent on wiping out humanity, he is nonetheless recognizably millennialist about the utopian promise of the Singularity. Hence Garreau's label that Kurzweil's is a "Heaven" scenario of the human future. Kurzweil acknowledges his continuity with millennialists by, for instance, specifying the date 2029 as the specific year in which he expects the Singularity, and including a picture in *The Singularity is Near* of himself holding a sign with that slogan, referencing the classic cartoon image of the EndTimes street prophet.

For most Singularitarians, as with most millennialists before them, the processes that lead to the millennium are seen as autonomous of human agency (Baumgartner, 1999), and little attention is given to ways that war, regulation, energy crises or human incompetence might slow or stop the trajectory. Kurzweil is quite explicit on this point, referencing the continuous curves of technological acceleration that appear to have been unperturbed by wars and recessions in the 20th century. In this sense Singularitarians are more similar to the most familiar Christian millennialism, the "pre-millennialists" who also see the EndTimes coming on God's pre-ordained timing, not hastened or slowed by human agency. Singularitarians share the premillennialist fatalist optimism that the *deus ex machina* does not depend on human collective action. Many Singularitarians are apolitical or libertarian; believing that public policy can contribute little to hastening or improving the Millennium, although Luddite regulations may slow it down.

On the other hand, Singularitarianism is also similar to Christian "post-millennialism," which believes that human agency is required to establish the Kingdom on Earth, to "immanetize the Eschaton" and bring about the EndTimes. For Singularitarians the millennial event comes at the apogee of accelerating progress, rather than after intense Tribulations, similar to the "post-millennialist" eschatologies. Some Singularitarians are focused on the fact that continued human economic and social progress is required to create artificial intelligence, and are dismayed at the slow progress of cybernetic science and the prospects for setbacks to technological civilization. Others are more focused on the possibility of a Manichean conflict between good AI and bad AI, and the importance of human agents in ensuring the success of the former.

An example of such concerns is found in the Singularity Institute for Artificial Intelligence (SIAI). SIAI is perhaps the leading exponent of Singularitarianism, centered on the writings and ideas of the autodidact cyber-philosopher Eliezer Yudkowsky. Yudkowsky and the SIAI hold that the first machine mind to emerge will likely take over the entire world, and therefore it is extremely important that it be "friendly" to humanity. If it emerges spontaneously, without pro-human friendliness having been woven into its fabric from the beginning, it will probably either ignore humanity or see us as a competitor for resources, and we could be wiped out. Drawing on films about a future dominated by hostile AIs, some call this the "Terminator scenario." Therefore for the SIAI it is extremely important that the very few programmers who take seriously the need for friendliness, principally Mr. Yudkowsky and his followers, be the first to produce a machine mind. The SIAI has attracted some support from Silicon Valley philanthropists who share their desire to promote friendliness engineering among AI designers. Like an

order of secret warrior-monks performing vital rituals necessary to ensure the incarnation of a divine avatar in order to defend humanity from the forces of evil, the SIAI sees itself as all that stands between humanity and destruction. If the first emergent AI is friendly it will be transcendently benevolent, and only it will have the capacity to solve human problems, from war and hunger to eternal life. The SIAI worldview is a form of messianism, albeit a more loosely organized, nerdily diffident and nonviolent messianism than its religious cousins.

The SIAI researchers have nothing but contempt for any suggestion of a parallel between their own eschatological beliefs and those of religious believers, and they make a cogent point in response; for medieval apocalypics there was no danger of fire actually falling from the sky, while today we have nuclear weapons. Fear of an noon-negligible empirical threat, and expectation of a scientifically plausible utopia, is *empirically* entirely different from fear of fictional supernatural threats and expectations of supernatural salvation. The point is important, but it does not change the *psycho-cultural* similarities between scientific seculars and religious with similar millennialist expectations; neither see any reason to plow their fields much less stop climate change. If only the *deus ex machina* can solve human problems, then all energies must be turned to ensuring its appearance on the stage. Any expectation that we might control or regulate the *deus ex machina* are absurd.

Other Singularitarians are more explicitly millennial in their thinking. John Smart, founder and director of the California-based Acceleration Studies Foundation, often notes the similarity between his own "Global Brain" scenario and the eschatological writings of the Jesuit mystic Teilhard de Chardin (1959). In the Global Brain scenario propounded by Smart (2005), Stock (1993) and Bloom (2000), collective intelligence will emerge as all human beings are be linked to one another and to machine intelligence in the emerging global telecommunications web. Again, this scenario is more similar to the "post-millennialist" form of Christianity since the Global Brain will include all or most of humanity, and come as a culmination of social progress. Smart and a growing group of more mystically inclined Singularitarians believe this scenario is similar to Chardin's idea that humanity would evolve into the global "noosphere," or info-sphere, leading to a postmillennial "Omega Point" of union with God.

Possible Posthuman Telos in a Natural Universe

The most common transhumanist cosmology is that the universe is impersonal and purposeless. The emergence of intelligence is a chance occurrence, with no inevitability or pre-ordained end. Given our existence and the immensity of time and the universe, however, intelligence must have emerged in many places and is presumably out there now. All intelligence presumably has the capacity to evolve into superintelligence, go star-faring and engage in galactic engineering of some kind. We should be able to perceive the ubiquity of superintelligence in galactic anomalies.

Thus the Fermi Paradox – the puzzling lack of visible evidence of superintelligence in the universe – provides transhumanists with both a mystery and a moral warning. The mystery is that the *telos* of evolved extraterrestrial superintelligence may be so ineffable that our expectation that they would be building giant neon signs out of stars, or blasting out radio messages of mathematical formulae in order announce themselves to us may be akin to our intestinal bacteria despairing that we advanced multicellular organisms have not sent an intracellular chemical semaphore to announce our presence to our intestines. We might be swimming in evidence of superintelligent beings who have no interest in communicating with us and not even know it.

The moral warning of the Fermi Paradox is that there are many pitfalls on the path from the chance emergence of life to superintelligence, many "filters" (Hanson, 1998) the passage through which most species never survive. Some astro-biologists suggest that the universe is full of bacteria, but that complex creatures and intelligent species rarely evolve (Ward and Brownlee, 2000). Intelligence may be a rare and not terribly successful evolutionary path. Intelligence may lead inevitably to the creation and use of self-negating technologies and weapons. Superintelligence may tend toward static self-absorption and decline, transforming themselves into inert ecosystems calmly contemplating eternity on their home planets.

We are thus enjoined to take seriously that our posthuman future faces such enormous odds (Rees, 2004) and thoroughly consider all the "existential risks" (Bostrom, 2002) that intelligent species have had to face, and that we ourselves face. Those risks include natural phenomena such as asteroid impacts, supervolcanoes, plagues, and gamma ray bursts (Cirkovic, 2003), as well the capricious randomness of evolution, which could run even an intelligent species back into cul-de-sacs and devolution.

In Bostrom's canonical existential risks paper (2002) he outlines four types of risks:

Bangs – Earth-originating intelligent life goes extinct in relatively sudden disaster resulting from either an accident or a deliberate act of destruction.

Crunches – The potential of humankind to develop into posthumanity is permanently thwarted although human life continues in some form.

Shrieks – Some form of posthumanity is attained but it is an extremely narrow band of what is possible and desirable.

Whimpers – A posthuman civilization arises but evolves in a direction that leads gradually but irrevocably to either the complete disappearance of the things we value or to a state where those things are realized to only a minuscule degree of what could have been achieved.

A "crunch," the permanent unattainability of posthumanity, is posed by various natural or man-made catastrophes that could permanently end human technological progress, sending us back into a pre-technological state. Bostrom describes several "shriek" risk scenarios involving totalitarian superintelligences, with some narrow, unattractive flaw that eliminates all other evolutionary possibilities. The Terminator scenario is one such "shriek" assuming that the Terminator civilization becomes static and does not go on to

develop the dynamic capacities of human intelligence. Another possibility is that a hegemonic superintelligence has a very narrow goal set – to make all living things as efficient as possible for instance – leading it to engineer all the diversity and autonomy out of all inferior beings in order to serve its ends. In the novel *Accelerando* by Charles Stross (2005), for instance, post-Singularity superintelligences tend to evolve out of computerized trading systems, and devolve into static communicators of buy and sell orders.

The risk that intelligence might willy-nilly end in an evolutionary cul-de-sac, without the imposition of totalitarianism but simply through the results of aggregate free choices, is the final "whimper" risk. This is the island of the lotus eaters, or the Eloi and Morlocks of Wells' *The Time Machine*, or any number of other static u/dystopian far futures.

In order to avoid these risks we need not only foresight and posthuman technological mastery over nature, argues Bostrom (2002, 2005b), but also the capacity for collective action through posthuman, hegemonic global governance (a "singleton"). Given the risks of too tight or too loose governance, the global governance system must permit individual and subcultural diversity for the continual evolution of the creative, diverse and dynamic intelligence.

If we can anticipate and navigate these risks we – we as in all intelligences in the universe, and we human beings, and perhaps we personally – may be able to evolve to superintelligence and to spread out to manipulate and become one with everything within this universe or even multiverse. No matter how powerful and sublime it becomes, however, intelligence will still be constrained by the impersonal laws of the multiverse. Superintelligence – singular or plural, sublime or autistic – will either face its end with the heat death of this universe, or achieve some kind of immortality by writing itself into the structure of the universe before the heat death (Kurzweil, 2007) or by building a new and more congenial universe to migrate to as proposed by physicist Michio Kaku (Kaku, 2005; Holt, 2004).

Transhumanist Affinities in Buddhist Eschatology

Buddhist cosmology and eschatology is similar in some respects to Singularitarianism and the standard transhumanist cosmology described above. Buddhism rejects the idea of a created or designed universe, and all beings are subject to the natural laws of cause and effect, impermanence and insubstantiality. After the emergence of this universe, and the first emergence of intelligent beings in the heavens, earth realms and hells, all sentient beings develop *dukkha* or suffering. In the effort to escape from the cycle of sickness, aging and death, and transcend *dukkha*, a few rare people begin to discover the path of enlightenment that leads to freedom from causality, Buddhahood. Rebirth into the human realm is especially propitious for working on the path to enlightenment, since the suffering of the hells and hungry ghost realms, and the pleasures of the heavens, are so distracting. Even the way to enlightenment has many pitfalls however, including

millennia-long absorption into meditative dead-ends and spiritual cul-de-sacs. Having navigated all these challenges the Buddha is in a unique position to point them out.

Each Buddha then establishes a lineage of instruction which gradually loses its soteriological potency until no one can achieve enlightenment through it. Then another Buddha appears and the cycle starts again. We are currently thought to be in the period between the last Buddha, Gautama Shakyamuni, and the coming Buddha, Maitreya.

The Buddhist text *The Lion Roar of the Wheel-Turning Monarch* describes the events that lead to the coming of Maitreya, the next Buddha, a mythos that has been an inspiration for Buddhist millenarian rebellion from Burma to China (Hughes, 1993). First humanity is nearly destroyed by a seven-day war, engulfing the whole world and destroying civilization. The war is followed by a seven-month plague, spread by non-human beings, and an eight-year drought and famine, all resonant with other apocalyptic narratives and projections of the potential consequences of the use of nuclear and biological weapons. The survivors unite and establish a peaceful, united world.

Humans will evolve into a new species. After many generations these new humans will live 80,000 years. Age of first marriage will be 500 years. The climate will always be good and mild. The earth will be thickly populated, and the scripture comments that we might think such a world to be like the hell of the "Waveless Deep", crushed by these billions of humans like being at the bottom of the ocean. But rather than an overpopulated, urban sprawl of polluted mega-cities, in this future humanity will pervade the world "as a jungle is by reeds and rushes," and the countryside will be like "an adorned garden."

The people will be tranquil, safe, and free from danger. They will be happy and joyful, enjoying festivals. They will have plenty to eat and drink... In squares at the gates of the city, there will be shining wishing trees: one blue, one yellow, one red, and one white. Divine adornments and ornaments as well as all sorts of wealth and possessions will be hanging on the trees.

The world is ruled by a righteous, nonviolent king, Sankha. The next Buddha, Maitreya, is born into this utopia. Like previous Buddhas he will have 32 distinctive physical characteristics, such as a long tongue, webbed fingers and toes, spoked wheels on his hands and feet, a spiral lump on his head, his penis hidden in a sheath, arms longer than his knees, unblinking eyes, and 40 even, white teeth. He will be considered beautiful by all.

When Maitreya reaches the age of 8,000 he leaves the householder life to become a monk, but this time accompanied by hundreds of thousands of male and female followers in his flying palace. After a short, intense period of meditation he achieves full enlightenment and becomes the next Buddha. He then travels the world spreading enlightenment. "Seeing people who are ready to be Awakened, he will go 100,000 leagues in a moment to cause them to be Awakened." On his return to the capital his ministry brings about the final, peaceful "withering of the state."

The Maitreyan millennial period will also then come to an end, leading to many more historical cycles before the destruction of the universe, which is not described in the official canon. The fifth century Sri Lankan monk Buddhaghosa systematized Theravadan Buddhist apocrypha and monastic commentaries on the canon in his work *Visuddhimagga* (The Path of Purity), including a story of the end of the universe. In Buddhaghosa's account as this universe comes to an end humanity is warned by heavenly beings "who have seen the end of the universe and the new one being born." We are told to prepare for the end by meditating ourselves into immaterial states that can survive the destruction of all matter. After the emergence of the new universe, all the immaterial spirits that have survived may re-enter the cycle of samsara as gods, humans, animals and ghosts, continuing their cycles of rebirth until they achieve enlightenment.

A universal human desire to transcend the limitations of human life. The risk of absorption into psychic dead-ends on the road to superintelligence. Radical longevity. A utopian world with eco-friendly wish-fulfilling technology. Flying palaces and teleportation. A superintelligent posthuman avatar of salvation spreading mind vastening. Uploading into hyperspace to escape the death of the universe aided by benevolent aliens. While secular transhumanists are uninterested in prophecy, those who believe in or are inspired by these ancient myths and stories may find their parallels and correspondences to the transhumanist worldview exciting, validating a creative trans-spiritual eschatology.

Posthuman Teleology in a Created Universe

Another, more theistic, correspondence between Buddhism and transhumanism can be found in the mythos of the supernatural bodhisattva of Mahayana Buddhism. Bodhisattvas are enlightened beings who decide to remain in samsara after their enlightenment in order to save all beings from suffering. Their salvific mission is focused on human beings since the gods are too besotted with pleasure and power to engage with spiritual growth, and the animals, ghosts and hell-dwellers are too stupid, hungry and miserable. A human rebirth is therefore a rare precious opportunity between much longer periods of spiritual stasis in the other realms.

The supernatural bodhisattva has the power however to make "Buddha lands" which provide a utopian existence with peace, plenty and long lives, but in which these are provided to support and encourage spiritual growth instead of frivolous entertainment and indulgence. The Buddha land is not a terminal paradise, but a kind of Extropian utopia providing the material preconditions for maximum spiritual dynamism until you transcend it and move to the next level of reality. The Pure Land sects of Chinese and Japanese Buddhism are based on worship of Amitabha, the bodhisattva who presides over the Western Paradise. Amitabha ensures that those who call his name are reborn in his realm in which they are assured to achieve enlightenment.

As discussed in relation to theories of theodicy, the idea of superpowerful superintelligences opens the possibility that this universe could be created, perhaps even

with benevolent teleological goals for humanity. One very influential transhumanist text that argued for a version of a created universe teleology was the physicist Frank Tipler in his 1995 book *The Physics of Immortality: Modern Cosmology, God and the Resurrection of the Dead*. Tipler attempted to reconcile the then dominant scientific cosmological theory of an eventual Big Crunch, with transhumanism and the Christian belief in the resurrection of the dead. He argued that when the universe began to crush back down in on itself, that it would form an enormous black hole, the "Omega Point." On the edge of a black hole the laws of time and space twist so that we would theoretically experience an eternity in our fall further down into final annihilation, with a theoretically infinite amount of matter and energy with which work. Tipler further argued that by the time the universe reached this end they would have gathered and recorded information about all the creatures that had ever existed in this universe. With infinite computing resources they would then be able to create infinitely detailed recreations of all the beings to populate the endless stretches of the End Time black hole. Thus, there could be bodily resurrection for all dead at the End of Time.

The subsequent discovery that the universe is accelerating in its expansion without sufficient arresting gravitational mass, leading eventually to a heat death and not a crunch, has not changed Tipler's convictions; by his current calculations we can still arrest the expansion to heat death, and bring on the Big Crunch, if we can migrate our consciousness into dark matter/energy and destroy all baryonic matter in the universe (Tipler, 2005).

Somewhat more proximate, plausible, and far more disturbing, is Nick Bostrom's (2003) "simulation hypothesis." Bostrom calculates that if superintelligences emerge and spread with any frequency in the universe, with 50 billion years before the heat death of the universe, during which time the intelligences will be able to convert all matter and energy into information processing capacity, one of the things that will likely occur to them to do to do will be to play a god-like version of SimCity. Except that these future virtual worlds could be simulated down to the behavior of subatomic particles, back to the beginning of time, and out to reaches of visible light. Or at least the virtual creatures within them would never be quick enough to catch the gaps in the simulation, which could produce a star up for every astronomer and a quark for every atom smasher consistent with the illusion of a material universe.

Not only would such detailed simulations be possible, but uncounted numbers of such simulations could be run in parallel, testing every possible evolutionary trajectory for intelligence, exploring every possible war, art form, philosophy and scientific paradigm. Perhaps the superintelligences will compete in an inter-galactic tournament, with the winners being the simulations whose species succeed in destroying all their virtual baryonic matter and creating their own simulated eternal paradises. Perhaps it is pointless to speculate on the mind and aims of God, and simply to posit that a large number of such simulations are likely before the end of the universe. If so, it is not very likely that we are in an original, authentically material universe, and much more likely that we are in a simulation, merely dreams in the minds of gods.

Bostrom's simulation hypothesis was then further complicated by Stephen Wolfram's hypothesis that the material universe itself is a computation, whether simulated or not (Wolfram, 2002). In his book *A New Kind of Science*, Wolfram proposes that from the quantum level on up the universe builds itself through algorithmic computation. Although he does not propose that the universe was designed, or is intended to compute anything in particular, he does discuss the "scientific pantheistic" implications of his theory in the book, and his ideas have been seized upon by intelligent design theorists and other religionists to argue that the universe is intelligent in its very substance.

In his latest book Ray Kurzweil also finds himself entertaining the possibility of a created universe which may also be intelligent, partly from the observation that the cosmological constants for our universe are set in the very unlikely narrow range which permit intelligent life, and partly as a consequence of his musings on the possibility that superintelligence may upload itself into the quantum flux of all things (Kurzweil, 2007).

So materialist transhumanism can, through certain logical steps, come full circle to the idea that we live in a created universe, perhaps a natural universe infused with the quantum mind of God, perhaps because we are a simulation being run in the mind of gods, or a resurrection of ourselves at the End of Time. None of these materialist ideas of a created or intelligent universe necessarily argue that God is unitary, benevolent or even aware of our existence. As discussed above in theodicy, we may be intended to evolve towards a posthuman apotheosis, or we may choose to become gods ourselves in order to challenge the Creator(s) for dominion. But for those inclined toward a theistic trans-spirituality these cosmologies provide yet another bridge to trans-spirituality.

One such extant manifestation of the religious seeing transhumanist ideas about the Singularity and a posthuman apotheosis as a fulfillment of their religious prophecies is the Mormon Transhumanist Association (MTA). They note in a 2007 document:

Mormon teachings of the Millennium and immortality parallel Transhumanist ideas regarding the Singularity and transhumans in at least the following ways:

First, a period of dramatic and unexpected change is imminent. Although some ridicule and few have recognized its signs, the Millennium approaches, and we should prepare ourselves for the Day of Transfiguration and its attending changes. Likewise, although critics scoff and despite the intuitive linear view of change, the Singularity is nearer than we anticipate, and we should review and mitigate associated risks.

Second, minds and bodies may be changed diversely. In the twinkling of an eye, we and other animals may be transfigured or resurrected to bodies of varying types and degrees of glory. Similarly, information technology may enable genetics, nanotech and robotics to enhance the minds and bodies of humans and other animals.

Third, anatomical changes may extend lives indefinitely. From one transfiguration to another, exchanging blood for spirit, we may attain immortality. Analogously, as transhumans, we may extend or exchange our biological substrate with another to ensure persistence of our identity.

Fourth, our work may contribute to these changes. Transfiguration and resurrection may be ordinances for us to perform for each other. Comparatively, our science may provide technology that enables us to enhance ourselves and attain indefinite longevity.

Others see transhumanism as a fulfillment of the prophecy of a rise of demonic powers, apocalyptic trials and false prophets in the End Times:

A terrifying future thunders toward mankind, an impending fate embodied by monstrous, blasphemous combinations of human and animal genetic materials, of man/machine cyborgs, and of beings not only with increased capacities and extended life-spans, but also with re-engineered morality void of compassion. This future is so abhorrent as to almost defy the imagination. These new beings, and the transhumanists looking forward to their arrival, will not be benevolent. (Quayle, 2003)

In summary, posthumans and other aspects of the transhumanist project are likely to be woven into the eschatological beliefs of the world's faiths, sometimes as a fulfillment of the promise of a millennial future and sometimes as agents of evil.

Conclusions

Improving the human condition is not a criticism of a Creator's work left undone; it is rather using His free will, and His gifts of the intellect, in fulfillment of our destiny. (Rich, 2003)

While many religious today are skeptical of materialist, atheist transhumanists, and see transhumanism as contrary to the teachings of their faiths, there are already many transhumanists with religious faith who attest to the compatibility of religion and transhumanism. As transhuman possibilities increasingly develop, the compatibilities of metaphysics, theodicy, soteriology and eschatology between the transhumanist and religious worldviews will be built upon to create new "trans-spiritualities." In this future religious landscape there will be bioconservative and transhumanist wings within all the world's faiths, and probably new religious traditions inspired by the transhumanist project. We will create new religious rituals and meanings around biotechnological and cybernetic capabilities, just as we did around fire, the wheel, healing plants, and the book. Human creativity will manifest itself not only in technological mastery, but in the ongoing quest to imbue life and the universe with mytho-poetic meaning. I look forward to seeing the results.

Appendix One: The Transhumanist Declaration

<http://www.transhumanism.org/index.php/WTA/declaration/>

(1) Humanity will be radically changed by technology in the future. We foresee the feasibility of redesigning the human condition, including such parameters as the inevitability of aging, limitations on human and artificial intellects, unchosen psychology, suffering, and our confinement to the planet earth.

(2) Systematic research should be put into understanding these coming developments and their long-term consequences.

(3) Transhumanists think that by being generally open and embracing of new technology we have a better chance of turning it to our advantage than if we try to ban or prohibit it.

(4) Transhumanists advocate the moral right for those who so wish to use technology to extend their mental and physical (including reproductive) capacities and to improve their control over their own lives. We seek personal growth beyond our current biological limitations.

(5) In planning for the future, it is mandatory to take into account the prospect of dramatic progress in technological capabilities. It would be tragic if the potential benefits failed to materialize because of technophobia and unnecessary prohibitions. On the other hand, it would also be tragic if intelligent life went extinct because of some disaster or war involving advanced technologies.

(6) We need to create forums where people can rationally debate what needs to be done, and a social order where responsible decisions can be implemented.

(7) Transhumanism advocates the well-being of all sentience (whether in artificial intellects, humans, posthumans, or non-human animals) and encompasses many principles of modern humanism. Transhumanism does not support any particular party, politician or political platform.

The Declaration was modified and re-adopted by vote of the WTA membership on March 4, 2002, and December 1, 2002.

Bibliography

- Addy, Peter. 2004. "Ecstasy and the Transhuman Metaphysic," *Transhumanity*, <http://www.transhumanism.org/index.php/th/more/428/>
- Allman, J., A. Hakeem, J.M. Erwin, E. Nimchinsky, P. Hof. 2001. "Anterior cingulate cortex: The evolution of an interface between emotion and cognition," *Annals of the New York Academy of Sciences*, 935: 107-17.
- Alper, Matthew. 2006. *The "God" Part of the Brain: A Scientific Interpretation of Human Spirituality and God*. Sourcebooks.
- Anonymous. 2007. "messiah." April 4.
<http://blog.myspace.com/index.cfm?fuseaction=blog.view&friendID=60652678&blogID=249307056>
- Babinski, Edward T. "C.S. Lewis' 'Argument From Reason' vs. Christians Who Reject Mind-Body Dualism and Accept the Possibility of Artificial Intelligence, Even 'Born Again' Machines!"
http://www.edwardtbabinski.us/religion/cs_lewis_dualism.html
- Bailey, Ron. 2003. "Babies in a bottle," *Reason* August 20.
- Bainbridge, William Sims. 2005. "The Transhuman Heresy," *Journal of Evolution and Technology*, 14(2), Aug: 91-100.
- Barna, George. 2003. "Americans Describe Their Views About Life After Death," The Barna Group, Oct. 21.
<http://www.barna.org/FlexPage.aspx?Page=BarnaUpdate&BarnaUpdateID=150>
- _____. 2007. "The God Gap? The Faith of Republicans and Democrats," The Barna Group, March 5.
<http://www.barna.org/FlexPage.aspx?Page=BarnaUpdate&BarnaUpdateID=266>
- Baumgartner, Frederic J. 1999. *Longing for the End: A History of Millennialism in Western Civilization*. London: St. Martin's Press.
- Bauwens, Michel. 1997. "Deus ex Machina vs. Electric Gaia," *CMC Magazine*, April.
<http://www.december.com/cmc/mag/1997/apr/last.html>
- Berck, Judith. 2006. "When Science Aids Reproduction, Some Parents Wonder What It Takes to Be Jewish," *New York Times*, July 1.
- Bloom, Howard. 2000. *Global Brain: The Evolution of Mass Mind From the Big Bang To the 21st Century*. Wiley.
- Blumenthal, David R. 1993. *Facing the Abusing God: A Theology of Protest*. Louisville, KY: Westminster John Knox Press, 1993,
- Bostrom, Nick. 2002. "Transhumanist Values."
<http://www.nickbostrom.com/ethics/values.html>
- _____. 2003. "Are You Living in a Computer Simulation?" *Philosophical Quarterly*, Vol. 53, No. 211, pp. 243-255.
- _____. 2005a. "In Defence of Posthuman Dignity," *Bioethics*, Vol. 19, No. 3, pp. 202-214.
- _____. 2005b. "What is a Singleton," *Linguistic and Philosophical Investigations*, March 2007.
<http://www.nickbostrom.com/fut/singleton.html>

- _____. 2002. "Existential Risks: Analyzing Human Extinction Scenarios and Related Hazards," *Journal of Evolution and Technology*, Vol. 9, March.
<http://www.jetpress.org/volume9/risks.html>
- Boyer, Pascal. (2001). *Religion Explained: The Evolutionary Origins of Religious Thought*. New York: Basic Books.
- _____. (2003). "Religious thought and behavior as by-products of brain function." *Trends in Cognitive Sciences*. 7 (3), 119-124.
- _____. (2004). "Why is religion natural?" *Skeptical Inquirer*, 28 (2), 25-31.
- Brooke, John Hedley. 2005. "Visions of Perfectibility," *Journal of Evolution and Technology*, 14(2), Aug: 1-12.
- Broyde, Michael. 2003. "Cloning People and Jewish Law: A Preliminary Analysis," *Jewish Law*.
<http://www.jlaw.com/Articles/cloning.html>
- Campbell, Courtney S. 1997. *Cloning Human Beings: Religious Perspectives on Human Cloning*. National Bioethics Advisory Commission: Washington, DC.
<http://www.georgetown.edu/research/nrcbl/nbac/pubs/cloning2/cc4.pdf>
- Center for Bioethics and Culture. 2003. *The Sanctity of Life in a Brave New World: A Manifesto on Biotechnology and Human Dignity*.
<http://www.thecbc.org/redesigned/manifesto.php>
- de Chardin, Teilhard. 1959. *The Phenomenon of Man*. New York: Harper Torch Books.
- Cirkovic, Milan M. 2003. "On the Importance of SETI for Transhumanism," *Journal of Evolution and Technology*, Vol. 13, October.
<http://jetpress.org/volume13/cirkovic.html>
- Cohn, Norman. 1999. *The Pursuit of the Millennium: Revolutionary Millenarians and Mystical Anarchists of the Middle Ages*. (New York: Oxford U.P., 1961, 1970, 1999).
- Colby, Anne, Lawrence Kohlberg, John Gibbs, Marcus Lieberman, Kurt Fischer, Herbert D. Saltzstein. 1983. *A Longitudinal Study of Moral Judgment*. Monographs of the Society for Research in Child Development, Vol. 48, No. ½.
- Cole-Turner, Ronald. Ed. 1997. *Human Cloning: Religious Responses*. Louisville: Westminster John Knox Press.
- _____. 2006. "More than Human: Religion, Bioethics, and the Transhuman Prospect," prepared for "Continuity + Change: Perspectives on Science and Religion", June 3-7, 2006, in Philadelphia, PA, USA.
- Colson, Charles and Nigel M. Cameron. 2004. *Human Dignity in the Biotech Century: A Christian Vision for Public Policy*. Intervarsity Publisher.
- Collins, Philip D. 2006. "Luciferianism: The Religion of Apotheosis," Jan. 10.
<http://www.conspiracyarchive.com/Commentary/Luciferianism.htm>
- Coward, H. 2004. "Hindu Bioethics for the Twenty-First Century," *JAMA*, June 9; 291(22): 2759 - 2760.
- Crawford, S Cromwell. 2003. *Hindu bioethics for the twenty-first century*. State University of New York Press.
- d'Aquili, Eugene and Andrew Newberg. 2001. *Why God Won't Go Away: Brain Science and the Biology of Belief*. New York: Ballantine.

- Daly, Todd. 2005. "Life-Extension in Transhumanist and Christian perspectives: Consonance and Conflict," *Journal of Evolution and Technology*, 14(2), Aug: 57-75.
- Davis, Erik. 1998. *Techgnosis: Myth, Magic, Mysticism in the Age of Information*. New York, Three Rivers.
- Davis, John Jefferson. 2002. "Artificial Intelligence and the Christian Understanding of Personhood" in *The Frontiers of Science and Faith*. InterVarsity Press. Downers Grove, IL.
- Delashmutt, Michael W. 2006. "A Better Life through Information Technology? The Techno-theological Eschatology of Posthuman Speculative Science," *Zygon*, 41(2):267-299.
- Dery, Mark. 1996. *Escape Velocity. Cyberculture at the End of the Century*. New York, Grove.
- Economist. 2004. "A mystical union: A small band of pioneers is exploring the neurology of religious experience," March 4.
<http://www.wireheading.com/brainstim/spiritual-neurology.html>
- Eisenberg, Daniel. 2007. "The Ethics of Cloning," Jewish Virtual Library.
<http://www.jewishvirtuallibrary.org/jsourc/Judaism/clone.html>
- Foerst, A. 1998. "Cog, a Humanoid Robot, And the Question of the Image of God," *Zygon, Journal for Religion and Science*, 33: 91-111.
- _____. 2000. "Robot: Child of God," in *God for the 21st Century*. Russell Stannard ed. Templeton Foundation Press.
<http://www.kurzweilai.net/articles/art0180.html>
- _____. 2004. *God in the Machine : What Robots Teach Us About Humanity and God*. New York: Dutton.
- Forte, Robert, ed. 2000. *Entheogens and the Future of Religion, 2nd ed.* Council on Spiritual Practices
- Fukuyama, Francis. 2002. *Our Posthuman Future. Consequences of the Biotechnology Revolution*. Farrar, Straus and Giroux: New York.
- Gardner, Howard. 1993. *Multiple Intelligences*. Basic Books.
- Garreau, Joel. 2005. *Radical Evolution: The Promise and Peril of Enhancing Our Minds, Our Bodies -- and What It Means to Be Human*. Doubleday.
- Glenn, Joshua. 2005. "The Theological Robot," *Boston Globe*. Feb. 6.
http://www.boston.com/news/globe/ideas/articles/2005/02/06/the_theological_robot/
- Graham, Elaine. 2002. *Representations of the Post/Human*. Manchester: Manchester University Press.
- _____. March 2002. "Nietzsche Gets a Modem: Transhumanism and the Technological Sublime", *Literature and Theology*, 16.1: 65-80.
- Grosso, Michael. 1997. "Technology as a Psychic Phenomenon," *CMC Magazine*, April.
<http://www.december.com/cmc/mag/1997/apr/grosso.html>
- _____. 1997. *The Millennium Myth: Love and Death at the End of Time*. Quest.
- Haidt, Jonathan. 2006. *The Happiness Hypothesis: Finding Modern Truth in Ancient Wisdom*. Basic Books.
- Hamer, Dean. 2004. *The God Gene: How Faith Is Hardwired into Our Genes*. New York: Doubleday.

- Hanson, Robin. 1998. "The Great Filter - Are We Almost Past It?"
<http://hanson.gmu.edu/greatfilter.html>
- Hart, David B. 2005. "The Anti-Theology of the Body," *The New Atlantis*, Number 9, Summer: 65-73.
- Hick, John. 1977. *Evil and the God of Love*. New York: Harper & Row, 2nd ed.
- _____. 1981. "An Irenaean Theodicy", in *Encountering Evil*. Atlanta: John Knox Press, 39-52.
- Holt, Jim. 2004. "How Will the Universe End?" *Slate*. March 3.
<http://www.slate.com/id/2096491/entry/2096506/>
- Hook, Christopher. 2004. "The Techno Sapiens Are Coming," *Christianity Today*. Jan 1.
<http://www.ctlibrary.com/ct/2004/january/1.36.html>
- Hopkins, Patrick D. 2002. "Protecting God From Science And Technology: How Religious Criticisms of Genetic Engineering, Cloning and other Biotechnologies Backfire," *Zygon: A Journal of Religion and Science*, vol. 37, no. 2., pp. 373-342.
- _____. 2003. "Barbie Bodies, Bacon Bodies, Plato Bodies, Nietzsche Bodies: Differing Visions Of How Biotechnology Should Be Used To Transform Human Bodies," delivered at The Adaptable Human Body: Transhumanism and Bioethics in the 21st Century, Conference Presentation, Yale University, New Haven CT. (June 17-19).
- _____. 2005. "Transcending the Animal: How Transhumanism and Religion Are and Are Not Alike," *Journal of Evolution and Technology*, 14(2), Aug: 13-28.
<http://jetpress.org/volume14/hopkins.html>
- Hayward, Jeremy W, and Francisco Varela. 1992. *Gentle Bridges: Conversations with the Dalai Lama on the Sciences of the Mind*. Boston: Shambhala.
- Horgan, John. 2003. *Rational Mysticism: Dispatches from the Border Between Science and Spirituality*. Houghton Mifflin.
- Hughes, James J. 2007a. "The struggle for a smarter world," *Futures*. Forthcoming.
- _____. 2007b. "Christology and the Human Body," *Ethical Technology*, March 6.
<http://ieet.org/index.php/IEET/more/hughes20070305/>
- _____. 2007c. "Buddhist Bioethics," *Principles of Health Care Ethics, Second Edition*. Edited by R.E. Ashcroft, A. Dawson, H. Draper and J.R. McMillan. John Wiley.
<http://ieet.org/index.php/IEET/more/hughesbudbio/>
- _____. 2006. "The Illusiveness Of Immortality," *Death And Anti-Death, Volume 3: Fifty Years After Einstein, One Hundred Fifty Years After Kierkegaard*. Charles Tandy, Editor. Ingram.
<http://ieet.org/index.php/IEET/more/430/>
- _____. 2005. "Transhumanism and Unitarian Universalism: Beginning the Dialogue," A sermon given August 14, 2005 at the Unitarian Universalist Society East in Manchester Connecticut.
<http://changesurfer.com/Bud/UUTrans.html>
- _____. 2004. *Citizen Cyborg: Why Democratic Societies Must Respond to the Redesigned Human of the Future*. Cambridge, Massachusetts: Westview Press.
- _____. 1993. "Beginnings and Endings: The Buddhist Mythos of the Arising and Passing Away of the World" in *Buddhist Perceptions of Desirable Societies in the Future: Papers prepared for the United Nations*

University, eds. Sulak Sivaraksa et al. IRCD: Bangkok, Thailand. 1993.
<http://www.changesurfer.com/Bud/Begin.html>

Institute for Ethics and Emerging Technologies. 2007. "IEET launches the Cyborg Buddha Project," IEET. March 24.

<http://ieet.org/index.php/IEET/more/cybbuddha/>

International Theological Commission. 2004. *Human Persons Created in the Image of God*. La Civiltà Cattolica, IV, 254-286. Rome.

http://www.vatican.va/roman_curia/congregations/cfaith/cti_documents/rc_con_cfaith_doc_20040723_communion-stewardship_en.html

Jang, K.L, R.R. McCrae, A. Angleitner, R. Riemann, W.J. Livesley, 1998. "Heritability of facet-level traits in a cross-cultural twin sample: Support for a hierarchical model of personality," *Journal of Personality and Social Psychology*, 74: 1556-1565.

Kaku, Michio. 2005. "Could a hole in space save man from extinction?" *Daily Telegraph*. May 1.

<http://www.telegraph.co.uk/connected/main.jhtml?xml=/connected/2005/01/05/ecrspace05.xml&sSheet=/connected/2005/01/05/ixconnrite.html>

Kant, Immanuel. 1791. "On the Failure of all Attempted Philosophical Theodicies" in *Kant on History and Religion*. Michel Despland. 1973. McGill-Queens University Press.

Kosfeld M, Heinrichs M, Zak PJ, Fischbacher U, Fehr E. 2005. "Oxytocin increases trust in humans," *Nature*. 2005 Jun 2;435(7042):673-6.

Krueger, Oliver. 2005. "Gnosis in Cyberspace? Body, Mind and Progress in Posthumanism," *Journal of Evolution and Technology*, 14(2), Aug: 77-89.

Kurzweil, Ray. 2005. *The Singularity is Near*. Viking.

_____. 2007. Foreword. *The Intelligent Universe* by James Gardner. New Page Books.

<http://www.kurzweilai.net/meme/frame.html?main=/articles/art0691.html>

LaTorra, Michael. 2005. "Trans-Spirit: Religion, Spirituality and Transhumanism," *Journal of Evolution and Technology*, 14(2), Aug: 41-55.

<http://jetpress.org/volume14/latorra.html>

Ledford, James McLean. 2005. *Prepare for HyperEvolution with Christian Transhumanism*.

<http://www.hyper-evolution.com/>

Luk, Charles. 1999. *Taoist Yoga: Alchemy and Immortality*. Weiser Books.

Maahaadave. 2005. "Transhumanism and Gnosticism: The antithesis of Christianity?" *Transhumanity*.

<http://www.transhumanism.org/index.php/th/more/655/>

Macer, Darryl. 1994a. "UNESCO Bioethics Committee and International Regulation of Gene Therapy," *Gene Therapy Newsletter*, 4-5.

_____. 1994b. "Universal Bioethics and the Human Germ-Line," *Politics and the Life Sciences*, 13(2): 243-245.

Macklin, Ruth. 2003. "Dignity is a useless concept," *British Medical Journal*, 327 (7429): 1419.

McGraw, John J. 2004. *Brain & Belief: An Exploration of the Human Soul*. Aegis Press.

Medina, John. 2000. *The Genetic Inferno: Inside the Seven Deadly Sins*. Cambridge University Press.

- Miller, Geoffrey. 2006. "The Asian Future of Evolutionary Psychology," *Evolutionary Psychology* 4: 107-119.
- Mohler, Albert. 2007. "Is Your Baby Gay? What If You Could Know? What If You Could Do Something About It?" March 2.
http://www.albertmohler.com/blog_read.php?id=891
- Moravec, Hans. 1988. *Mind Children: The Future of Robot and Human Intelligence*. Harvard University Press.
- _____. 1998. *Robot: Mere Machine to Transcendent Mind*. Oxford University Press.
- Mormon Transhumanist Association. 2006. *Parallels and Complements between Mormonism and Transhumanism*.
<http://transfigurism.org/community/files/1170/download.aspx>
- Newberg, Andrew. 2002. *Why God Won't Go Away: Brain Science and the Biology of Belief*. Ballantine Books.
- Noble, David. 1998. *The Religion of Technology: The Divinity of Man and the Spirit of Invention*. New York: Alfred A. Knopf.
- Oberman, L.M., Hubbard, E.M., McCleery, J.P., Ramachandran, V.S., Pineda, J.A. 2005) "EEG evidence for mirror neuron dysfunction in autism," *Cognitive Brain Research*, 24, 190-198.
- Palmgren, Henrik. 2006. "Cyborg Superman, Transhumanism and the Nephilim," *Red Ice Creations*, 02(23).
<http://www.redicecreations.com/specialreports/2006/02feb/superman.html>
- Pauls, David. 2005. "Transhumanism: 2000 Years in the Making,"
http://www.thecbc.org/redesigned/research_display.php?id=189
- PCB. President's Council on Bioethics. 2003. *Beyond Therapy: Biotechnology and the Pursuit of Happiness*. Washington, DC: PCB.
<http://www.bioethics.gov/reports/beyondtherapy/index.html>.
- Persinger, Michael. 2001. "The Neuropsychiatry of Paranormal Experiences," *Journal of Neuropsychiatry and Clinical Neuroscience* 13:515-524.,
<http://neuro.psychiatryonline.org/cgi/content/full/13/4/515>
- Peters, Ted. 1997. *Playing God: Genetic Determinism and Human Freedom*. New York, NY: Routledge.
- Peterson, Christopher and Martin Seligman. 2004. *Character Strengths and Virtues: A Handbook and Classification*. Oxford University Press.
- Pierce, David. 1996. The Hedonistic Imperative.
<http://www.hedweb.com/>
- Polkinghorne, John. 2000. *Belief in God in an Age of Science*. Yale University Press.
- Quayle, Stephen. 2003. *Genetic Armageddon: Today's Technology - Tomorrow's Monsters*.
<http://www.stevequayle.com/books/Genetic.Arm.intro.html>
- Rees, Martin. 2004. *Our Final Century*. Arrow.
- Rich, Jack. 2003. "Playing God?," June 29.
http://tzaddik.us/lilpoh/archives/2003_06.html
- Schneider, Robert. 2007. "Evolution and the Image of God."
<http://community.berea.edu/scienceandfaith/essay06.asp>

- Seligman, Martin. 2004. *Authentic Happiness*. Free Press.
- Singh, T.D. 2006. "Vedantic Perspectives on Bioethical Questions," prepared for "Continuity + Change: Perspectives on Science and Religion, June 3 – 7, 2006, in Philadelphia, PA, USA.
<http://www.metanexus.net/conferences/pdf/conference2006/Singh.pdf>
- Smart, John. 2005. "Brief History of Intellectual Discussion of Accelerating Change"
http://www.accelerationwatch.com/history_brief.html.
- Smith, Huston. 2000. *Cleansing the Doors of Perception: The Religious Significance of Entheogenic Plants and Chemicals*. Tarcher/Putnam.
- Stock, Greg. 1993. *Meta-Man: The Merging of Humans and Machines into a Global Superorganism*. Simon and Schuster.
- Stross, Charlie. 2005. *Accelerando*. Ace.
- Tipler, Frank J. 1995. *The Physics of Immortality. Modern Cosmology, God and the Resurrection of the Dead*. New York, Anchor.
- _____. 2005. "The Physics of Immortality, Threats to Terran Society, & Self-Replicating Nanotechnology," delivered at the First Annual Terasem Workshop on Geoethical Nanotechnology, July 20.
http://www.terasemcentral.org/05_gnwkpm.html
- Tongen, Anthony. 2003. "Will Biological Computers Enable Artificially Intelligent Machines to Become Persons?" Center for Bioethics and Human Dignity, November 7.
http://www.cbhd.org/resources/biotech/tongen_2003-11-07.htm
- Vinge, Vernor. 1993. "Technological Singularity," presented at the VISION-21 Symposium sponsored by NASA Lewis Research Center and the Ohio Aerospace Institute, March 30-31.
<http://www-rohan.sdsu.edu/faculty/vinge/misc/singularity.html>
- Walker, Mark. 2001. "Human Versus Absolute Perfectionism".
<http://www.permanentend.org/absol.html>
- _____. 2002a. "Prolegomena to Any Future Philosophy," *The Journal of Evolution and Technology*.10.
<http://www.jetpress.org/volume10/prolegomena.html>.
- _____. 2002b. "What Is Transhumanism? Why Is A Transhumanist?" *Transhumanity*.
<http://transhumanism.com/index.php/weblog/more/26/>
- _____. 2002c. "Becoming Gods: A neo-Irenaeian Theodicy."
<http://www.permanentend.org/evil.html>
- _____. 2003d. "Genetic Virtue."
<http://www.permanentend.org/gvp.htm>
- Walker, Mark and Heidi Campbell. 2005. "Introduction to the Special Issue on Transhumanism and Religion," *Journal of Evolution and Technology*, 14(2), Aug: i-xiv.
- Ward, Peter and Donald Brownlee. 2000. *Rare Earth: Why Complex Life is Uncommon in the Universe*. Springer.
- Wikipedia. 2007. "Transhumanism."
<http://en.wikipedia.org/wiki/Transhumanism>