

ROMAN CATHOLIC AND TRANSHUMANIST ETHICAL RESPONSES
TO BODY AUGMENTATION TECHNOLOGIES

BY

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Abstract

Human body augmentation technologies are approaching levels of integration that challenge current standards of normal biological function and give rise to the possibility of human-machine hybrids that exceed current human sensory and memory abilities. This thesis examines two approaches towards ethical evaluation of such augmentations and attempts to show how precedent and beliefs can shape guidelines as to how far an individual may proceed in modifying the human body with advanced technologies such as artificial organs, limbs and nanotechnology. Selected Roman Catholic medical ethics is considered alongside Transhumanist philosophy in order to view how the body is interpreted in regards to augmentation surgeries and technology.

While both parties ask similar questions with regard to the good of the individual and the common good of society, both come to differing conclusions on how body augmentation technologies will affect humanity. The thesis outlines the concepts of natural law, mutilation, totality, stewardship and authenticity. Questions and answers regarding human happiness, the body, senses and law are drawn from tradition and doctors of the Church such as St. Thomas Aquinas and from the writings of those advocating a post-human approach to augmentation issues. The dignity of the person as well as equality and human health lead to the conclusion that, based upon precedent and natural law, body augmentation technologies should be limited in scope particularly when advocating changes to human reason or reproductive processes.

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Chapter One: Introduction

Developments and enhancements in such fields as computer engineering, neurosurgery, miniaturization, organ transplantation and nanotechnology have brought forth a set of technological advances that, as recently as twenty years ago, could not have been imagined. For these technologies, the infancy stage, involving fundamental problems of construction and electronic modeling, is now over. The challenge today centres on the moral and ethical implications of these technologies: cochlear implants, artificial retinas, neural interfaces, advanced prosthetics, memory augmentations, micro-robotics, cellular rejuvenations, etc. In recent years, the moral issues concerning the application of these body augmentation technologies have been examined using traditional ethical principles such as the nature, purpose, ownership and wholeness of the human body. How do these latest technological developments relate on the ethical level to previous technological and ethics frameworks and how does ethical precedent suffice in providing guidelines for body augmentation technology? We shall examine the views of two philosophies that both concern themselves with the nature of the human body and how technological advances can or cannot be made in order to preserve or even augment levels of a person's abilities either physically or mentally. The questions asked by both philosophies are the same, yet the outcomes of the answers lead to two differing views of society's future.

Do current models of ethics and moral teachings address the advanced body augmentation techniques that are being developed globally? Are these advances not moving society into new schisms: on the one side, those with the

knowledge, financial infrastructure and legal rights to pursue innovations such as cybernetics, nanotechnology, human-animal chimera progressions and, on the other side, those who do not have or would not want, because of ethical, moral or spiritual convictions such innovations to take place. As we shall see, both Roman Catholic and Transhumanist approaches towards body augmentation technologies relate to each other on a level of questioning what should be permissible in augmentation in order to achieve the betterment of the individual and society. The differences in interpretation lay in the foundation of how the human body is perceived and in the dangers that the individual patient and the community as a whole could encounter in striving towards authenticity in life.

1.1 What is Body Augmentation Technology?

While such terms as “cyborg” may conjure up artistic visions or Hollywood productions it is important to realize that in modern first-world societies the integration of technology and humanity has already reached exceptional levels and shows no signs of doing anything but continuing to grow and develop. The multiple levels of integration stretch far beyond mere telecommunications and productivity sectors into the very substance of the human body. Technological aspects of medicine and computerization, miniaturizations and developments in neural-machine interfaces allow for augmentations of nearly all parts of the human body – viewed by many as *imago Dei*, made in the image of God¹. In the early 1960’s, NASA’s speculations about human-machine hybrids

¹ See Genesis 1:26; Genesis 5:1; Genesis 9:6; Romans 8:29; 1 Corinthians 11:7; Corinthians 4:4; Colossians 1:15; Hebrews 1:3.

for space exploration purposes, “Engineering Man for Space: The Cyborg Study,” contemplated human-machine constructions. Like so many developments this proposed macro-application of technology to the cosmos has integrated itself into the daily lives of large segments of humanity. This is to say that while the applications of body augmentation seem to have the greatest impact on the individual, it is as a whole society that we have become more integrated with technologies that sustain our high standards of living and on the greater-scale a majority of individuals have become increasingly reliant on both the normal levels of comfort that technology affords and the promises of increased abilities that future body augmentations will offer.

Technological advances in medicine and computerization have been worked into standard devices and surgeries that people the world over use to improve their lives: pacemakers, artificial retinas, cosmetic surgeries of many types, hearing aids, artificial reproductive methods for infertility, prosthetic limbs and body-parts of any class, “wearable computers” and electronic monitors for personal health or public-safety. All of these are becoming commonplace and can be bought, repaired, up-graded and replaced as required. Klugman details:

Over the centuries, human beings have constructed tools to replace or augment natural physiologic functions: ear horns aided the hard of hearing, eyeglasses enhanced failing eyesight, and dentures enabled a person to eat solid foods. These external devices restored abilities lost to injury or disease. In the past few decades, technological developments have transformed such simple external tools into complex machines that are smaller, more efficient, and implantable. These devices become part of the body, extending aptitudes without encumbering the person with extraneous parts: Cochlear implants permit a limited form of hearing, artificial lenses and implanted telescopes restore sight, and dental implants permanently replace lost teeth. Technology has now gone beyond the dreams of earlier: there are cardiac pacemakers, implantable defibrillators

and insulin pumps, as well as artificial hearts, bones, blood vessels, and skin. (Klugman, 2001, ¶2)

Hence for the purpose of this thesis we may accept the definition that a cyborg-persona encompasses more than what popular fiction characterizes, and view the technical realism that cyborg bodies exist today all around us. The cyborg should not be confused with nor used as a synonym for two other artificially constructed organisms found in science fiction: the android and the robot. An *android* is a constructed, human-shaped, self-aware machine with few, if any, organic components. A *robot* is also a constructed being, but usually does not have a human form and is more likely to perform tasks than is a feeling/sentient entity. Such devices serve as workers performing tasks as directed by another machine or human. The term which derives from Slavic and means “worker” (Klugman, ¶5).

Cybernetic components serve one of two main purposes: to *replace* body parts or to *enhance* human capacities. In replacement cyborgs, the machine returns the individual to something approaching former functioning. For example, implanted telescopes permit some vision to those nearly blinded from macular degeneration. Enhanced cyborgs, however, do more than recapture lost function; the cybernetic implant allows an individual to do things that were not possible before. For instance, if an implanted telescope enables a person to see the stars or to see in the infrared spectrum, then he or she would be an enhanced cyborg. This distinction between replacement and enhancement however, is not to be understood as having to do with a clear divide but ought to be seen in a way similar to a spectrum. The enhanced telescope, in the second instance would both

replace lost visual acuity and confer new extra-human abilities (Klugman, ¶2). The definition of technology by itself is worthy of inspection particularly when examining the policies and judgments of differing groups. Suffice to say that for the purpose of this thesis we can classify body augmentation technologies as “Improvement technologies”² and “Implementation technologies”³ as outlined by essayists such as Daniel Callahan, Daniel Bell, or Norman J. Faramelli (see Shannon, 1987, 14).

1.2 Differing views of augmentation – Catholic & Transhuman

It is this type of technology that appeals to such groups as the Transhumanists. Just who are the Transhumanists? Transhumanists provide us with an interesting example of a radical modern-day philosophy which asks questions regarding, totality, mutilation, stewardship and happiness for which St. Thomas Aquinas already provided answers and commentary in the thirteenth century. Presently two international Transhumanist organizations exist, The Extropy Institute⁴ and the World Transhumanist Association⁵ both of which

² Improvement technologies: technologies such as these enable people to meet their felt needs or to go beyond the limits of their particular natural capabilities. As such, improvement technologies can enhance our physical dimensions or can help decorate or embellish our bodies. (Shannon, 1987, 14)

³ Implementation technologies: are difficult to describe because their purpose is to assist in the implementation of other technologies. One can best think of these technologies as facilitators or enhancers. Thus the computer allows us access to other information technologies . . . planned obsolescence makes up part of this as well. (Shannon, 14)

⁴ The Extropy Institute is a non-profit multidisciplinary research institute advocating human advancement in all levels. Their principles include: affirming continual ethical, intellectual, and physical self-improvement, through critical and creative thinking, perpetual learning, personal responsibility, proactivity, and experimentation. Using technology — in the widest sense to seek physiological and neurological augmentation along with emotional and psychological refinement. (Moore, 2003, ¶2)

publish online journals and organize conferences. There are local Transhumanist groups in many countries and in the United States the Yellow Pages in almost every major city lists discussion groups. A growing body of Transhumanist thinking is appearing on the Web as well as in journal articles and books. Transhumanists also conduct discussion online by means of several open-subscription Internet mailing lists. They are self-described as:

Transhumanism is the philosophy that advocates the use of technology to overcome our biological limitations and transform the human condition. At the present time or in the near future, human capabilities will be extended through such means as genetic engineering, memory-enhancing drugs, collaborative information-filtering, smart agents, intelligence amplification, wearable computers, and the Internet. In the slightly longer term, the accelerating pace of technological development opens up such revolutionary prospects as superhuman artificial intelligence and molecular nanotechnology. The consequences of these developments may include: the abolition of disease; the elimination of aging; the enrichment of our reward-centers so we enjoy a wider diversity of emotions, exhilarating peak experiences and life-long well being; and perhaps the gradual replacement of human bodies with synthetic enhancements (Pearce, 2001, ¶1)

As well, we can read in the Transhumanist FAQ⁶:

Transhumanism can be described as an extension of humanism, from which it is partially derived. Humanists believe that humans matter, that individuals matter. We might not be perfect, but we can make things better and promote rational thinking, freedom, tolerance and democracy. Transhumanists agree with this but they also emphasize what we have the potential to become. Not only can we use rational means to improve the human condition and the external world; we can also use them to improve ourselves, the human organism. And we are not limited only to the methods, such as education, which humanism normally espouses. We can use technological means that will eventually enable us to move beyond what most would describe as 'human' (Bostrom, 2003a, ¶2)

⁵ The World Transhumanist Association is a nonprofit membership organization which works to promote discussion of the possibilities for radical improvement of human capacities using genetic, cybernetic and nanotechnology (World Transhumanist Association, 2004, ¶1).

⁶ F.A.Q a.k.a Frequently Asked Questions, a set of answers to commonly asked questions regarding a topic.

Transhumanists certainly do not represent a major force in medicine or medical ethics nor a source for new treatments today, perhaps just the opposite. Yet they do provide an example of the most extreme view of the body, a view that builds on the very concepts with which St. Thomas wrestled with a thousand years before contemporary radical technological options were even conceived. Yet, while Transhumanists approach questions of the body with the same methodology as employed by St. Thomas they come to opposite conclusions. The questions they ask are often identical to those we can find in the *Summa Theologiae*: Stewardship of the body. (*Prima Pars*, Man Spirit and Matter) Where can happiness be found? (*Prima Secundae Partis*, Man's Last End) What should be held higher – societal law, natural law or the will of a rational individual? (*Prima Secundae Partis*, Law) Who has dominion over the human body and what does this mean in terms of mutilation and totality? (*Secunda Secundae Partis*, Justice) For the Transhumanists, it is for the benefit of the whole body that individual parts be sacrificed and replaced with parts that have the ability to outperform their biological predecessors. Organs or limbs that are not susceptible to infections, aging or decomposition, can be upgraded as future models and advancements are made – allowing the body to continually develop into higher and higher functionality.

Because both Roman Catholic medical ethics and Transhumanism address the questions of just how much of a natural human body can be mutilated, for what purpose the mutilation serves, the integrity of the human body via totality of the person, and the aspects of natural law that combine with these issues, it is

logical to examine both philosophies in an attempt to see what (if any) deductions are reached regarding personhood and the limits of body augmentations. For the purpose of this thesis we shall consider the works of St. Thomas Aquinas, papal encyclicals and writers including Richard McCormick S.J., Leon Kass, Martin Nolan, Kevin O'Rourke and others who have examined the issues of natural law, body augmentation and issues of personhood representing the view of Roman Catholic medical ethics. This is not to exclude the myriad of other scholars and theologians that have contributed to the wide range of views of medical ethics within Catholicism but serves to limit the scope of this thesis as expectedly must be done. "Roman Catholic Medical Ethics" in itself serves as an umbrella that includes views from liberals to conservatives, magisterium to lay-persons, branches as varied as feminist approaches to eco-theologians and while all can contribute to views that can be compared to Transhumanism, our current focus will be narrowed for necessity. Because the principles of mutilation and totality arise in conjunction with the concept of natural law and the stewardship of the body, they form a close connection with body augmentation issues and serve as a beneficial basis to compare the approaches of the Transhumanists to selected Catholic models of body-ethics.

Many, yet not all, of the common surgeries that humanity now has available for device implantation carry normal ethical precautions so as to ensure safety and values to both the individual and the community. Yet, as procedures such as cosmetic surgery became commonplace ethical concerns regarding alterations or augmentations to the human body became less important than

ethical concern about complications due to surgery, side-effects due to poorly tested medical materials and legal restrictions on surgery for minors (with or without consent from their guardians). Renowned bioethicist Arthur L. Caplan (Ctr. for Bioethics, Univ. of Pennsylvania) and medical writer Daniel H. Coelho note the equivalent growth in technological fields and human-interaction while at the same time observing the emergence of bioethics as a field of study.⁷ Both accurately note that the pace of technological development outstrips ethical guidelines that for years have been used to address questions of the body and spirit.

The “betterment” of the person is one of the main issues at the heart of any examination of human-machine amalgamation or use of technology for human augmentation. General Roman Catholic medical guidelines for teaching hospitals and surgical procedures do give a course of action on the use of technologies to repair an injury or address an affliction, but to use such technologies for engineering “better” human beings would be contrary to current accepted norms and create new sets of problems.⁸ Yet as C. Christopher Hook points out, it seems that there is: “clearly going to be an attraction for those who are well to enhance

⁷ Antibiotics, chemotherapy, functional imaging, telemedicine, reproductive technology, artificial organs, and transplantation are just a few of the weapons in our medical arsenal today that simply did not exist only fifty years ago. Not coincidentally, the field of bioethics has also grown over the same time span. Much of the concern about ethics is driven by the power of our new technological medical prowess. All too often it seems as though medicine ask “Can we?” before asking “Should we?” and thus many Americans are doubtful that ethics can ever keep pace with rapidly changing technologies (Caplan & Coelho, 1998, 218).

⁸ While divergence amongst specific hospital boards, teaching colleges and medical institutes exist general Roman Catholic surgical and medical education guidelines follow recommendations as set down by encyclicals, publications of Conferences of Catholic Bishops and boards dedicated to such guidelines: Catholic Medical Missions Board Inc., Catholic Physicians Guild, National Association of Catholic Chaplains, the Pontifical Council on Health Affairs, etc.

themselves for a competitive edge via cybernetics, or to increase such things as longevity via nanotechnology” (Hook 2002, 59).

Unlike Roman Catholic medical ethics, Transhumanism recognizes that its philosophy lacks persuasiveness in general society despite the technological emphasis that many find in their lives. There has been no great precedent of medicine to go beyond the “norm” in maintaining the health of the individual and in matters that are in conflict with traditional roles of the body (cloning for example) and the detrimental consequences that any new technologies may provoke are often met with resentment.

Medical technologies perpetuate transhumanist ideals only insofar as they utilise new technology with the aim of *repairing* humans, rather than *enhancing* them. Medicine has been premised upon restoration, rather than the creation of new levels of human capability through such repair. Thus, the main part of medical history has been only partially transhuman, since it has been limited by the narrow reasons for which it makes use of technology. Indeed, one might even question the degree to which medical technologies are at all transhuman, since the concept of making well does not seem, necessarily, to encompass making a person *more* than well (as would be the ambition of transhumanist technologies). (Miah, 2003, ¶8)

We shall see that in viewing both Transhumanism and Catholic ethics that while principles such as body mutilation and totality are considered by both parties, both parties come to opposite conclusions regarding the objective of happiness and human dignity. While the technological promises outlined in Transhumanism offer an appeal to both lifestyle and health, there are issues of social justice and human authenticity that must be addressed. We shall see the arguments for such issues in our conclusion introducing the models for authenticity and rationality that theologians such as Bernard Lonergan S.J. bring to the discussion.

1.3 Views of the body as machine, temple or Transhuman

Despite the fact that bodies are so central to medicine, “the body” is rarely mentioned in the literature on concepts of “personhood,” in discussion of issues related to personhood, or in questions related to cost/benefit analysis. A patient’s “personhood” is generally understood in terms of rationality or mental capacity and ability to function autonomously, instead of, for example, as related to a beating heart, membership in the species *homo sapiens*, or connected to one’s ability to form emotional bonds with others (see Csordas 1998, 83).

Moreover, because “personhood” has been so narrowly defined, and because bioethics has made personhood its central category, many of the significant problems in bioethics center on bodies whose status as “persons” is unclear. Such would include bodies that lack or have lost rationality, for example: “defective” neonates, anencephalic newborns, brain-dead potential organ donors, patients in a persistent vegetative state, fetuses to be aborted or experimented on, mentally handicapped and incarcerated individuals to be used as research subjects, or elderly individuals suffering from dementia or Alzheimer’s disease. When these patients have not left rational and autonomous specifications as to what their preferences would be, other individuals possessing rationality, preference, and autonomy decide what to do with their bodies (Csordas, 83). One may rationalize that since cybernetic systems involve no stem-cell research, nor embryonic research, nor eugenics, nor the manipulation of genes that some traditional arguments pointing towards the sanctity of life and preservation of

innocents would not apply to their regulation. Yet, while I agree that cybernetic body augmentation technologies do not express themselves upon the body at level of “natural” manipulation, they certainly do affect the quiddity of the body and thus such thinking is premature. The concepts of human dignity and the greater impact upon the human community in terms of social justice and equality hold authoritative sway over an ethical model involving cybernetics and body augmentation not simply because the risk of surgery is solely upon the individual but because the greater good must reach out beyond the “one” in order to serve the “many.” Just as the ways in which humans use tools points to the whole spectrum of human behaviour, from creating art to waging war similarly, the very use of technology forces us to reflect upon humanity. (Klugman, ¶1)

Thomas J. Csordas gives account of the major historical influences that have defined how the human body is analyzed, quantified and evaluated in the western technological world:

Rene Descartes’ metaphor of the body as a machine, in conjunction with Francis Bacon’s empiricism, has greatly influenced medical research and contemporary medicine. Medicine has made significant progress by seeing the body as being comprised of separable and identifiable mechanisms. Because the body has been understood as natural and universal, medical science has been able to conduct empirical study of the body, yielding statistical standards defining the ‘normal’ human body and methods by which medicine can manipulate and control bodies that diverge from those norms. (Csordas, 84)

Furthermore, in accordance with many Transhumanist theories on the body, we see that Csordas takes the manipulation of the body to be an integral part of how one can define the state of the person in medicine today:

In fact, some have deemed the body most ‘human’ when it is most completely manipulated, controlled, transformed or created by human

agency. While medicine has adapted to the legacies of empiricism and mechanism, it has been the Cartesian mind/body dualism that has most strongly influenced contemporary bioethics and guidelines of medical arts, allowing it to focus almost exclusively on the 'mind,' 'self,' or 'person' when it defines and describes the issues and moral parameters of medicine. (Csordas, 84)

Anticipating the evolution and continued investigations into bioethics and the body, while at the same time appreciating the involvement of philosophical beliefs, Csordas comments on the increasingly new interfaces that one encounters when examining the issues of the body and ethics.

Dissatisfaction with a bioethics that employs a philosophical framework, rendering the body superfluous to ethical and moral reflection, has resulted in the recent emergence of a number of alternative approaches that seek fuller descriptions of the moral situation. These approaches employ philosophical frameworks that envision relationships – between self and body, between persona and their experiences, and between person – differently than the framework that draws on Descartes, Locke, and other forebears of liberal political philosophy. These approaches are critical of a medicine that treats merely 'the body' and not 'the whole person.' They are also critical of a bioethics that reduces persons to their rationality and choice, severing the connections between persons and their bodies. (Csordas, 85)

In my opinion, Transhumanist philosophy falls under this new emergence.

Akin to the philosophical agreement between Transhumanists and the theory of a manipulated body being a more human body, Michael Foucault, in investigating the increasing development of medicine managing and treating human conditions and manipulating individual complaints in a manner that increases medicine's own authority, comments on defining what is and is not a "normal" human (see *The Birth of the Clinic*). This is to say that the very definition of what constitutes a "normal" human state of health is in flux and Foucault, like the Transhumanists, recognizes this fluctuation. I find such

comments accurate and others such as Csordas agree with such thinking:
 “medicine offers treatments for aspects of embodied human life — fertility, height, baldness, death — in this way defining an expanding number of human conditions as pathological and amenable to treatment and thereby expanding its own influence. Even when treatments are not available, through seemingly benign techniques of surveillance (especially, for example, genetic testing), medicine seeks to bring all individuals, and increasingly all parts of individual’s lives, into its purview in order to ‘normalize’ individuals and populations” (Csordas, 87).

With the increase in social theories on the body combined with the rise of medical technologies, the margins of the body are being tested and theories are expanding in order to encompass new variations that previously were only parts of mythology. Transhumanism finds itself a part of this recent theory, embracing the technologies and philosophies that allow for the boundary of the body to be moved farther away from western (certainly religious) tradition. Csordas notes this and makes reference to specialists in the bioethics field who recognize the exotic combinations that the body is taking on:

The contemporary cultural transformation of the body can be conceived not only in terms of revising biological essentialism and collapsing conceptual dualities, but also in discerning an ambiguity in the boundaries of corporeality itself. Haraway points to the boundaries between animal and human, between animal/human and machine, and between the physical and nonphysical. Michel Feher contrasts the boundary between human and animal or automation (machine) at one end of a continuum whose opposite pole is defined by the boundary between human and deity. (Csordas, 90)

These views of the body have become standardized and conventional in modern society. The medical ethics that flows from the observation of the body in these models serves the public and is taken as customary although debate and examination is ever present. Yet there are groups, organized and published, that seek to significantly change the scope of how society views the body and embrace the position of a blurred (or nonexistent) boundary between human and machine (technology). We see this in the philosophy of Transhumanism:

The Transhumanist 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. (Hughes, 2002, ¶1)

The declaration, for the most part, looks to a future that has technology capable of human interface at a cellular-level and yet is otherwise vague in precise goals.

We see in Declaration 1 that while conditions such as “confinement to planet earth” have already been overcome, the redesign of “unchosen psychology” and “suffering” are more obscure. Both Declarations 2 & 3 place Transhumanism in a scientifically progressive paradigm but the advocacy of no prohibitions on research gives an uncomfortable impression of a blind-eye to possible illegal or immoral research (a parallel as it were to “the ends justifies the means”).

Declarations 4 is the heart of Transhumanism’s view of body augmentation technologies and the inclusion of extended capabilities for reproductive issues brings into comparative studies issues that Roman Catholicism has much to contribute – from St. Thomas to *Evangelium Vitae*. Declaration 5 hearkens back to Declaration 3 in the need for advancement on all scientific fronts but with a specific caveat that safety on a level of extinction be observed. One of the current successes (at least at a most basic level) that Transhumanists can claim is the implementation of the 6th Declaration’s call for forums of debate. Their online presence encourages this by providing forums and journals for the exchange of ideas. The final Declaration does advocate political neutrality and “well-being” of sentient life but like Declaration 1 includes ambiguous terms such as “posthumans” – a subject that may be worthy of a thesis dedicated solely to its meaning.

A Transhumanist philosophy may advocate free-reign on the topic of scientific experimentation that fuels technological advancement for both

individual integration and society as a whole but as we observe it does not willingly advocate the limitation or scarring of environmental well-being in order to achieve this. The movement is not anti-nature in terms of environmental concerns nor would it advocate a return to the utopian myth of a “noble-savage” society – it does however parallel such notions in essence with a vision of a “noble-cyborg.”

Chapter Two: Catholicism’s view of body ethics and augmentation

Roman Catholicism has a rich history of ethical thinking and the tradition has articulated a well-defined set of ethical parameters that can be adapted to the application of biotechnological advances. Csordas documents the efforts of Jean-Pierre Vernant in examining the status of the body in ancient Greece based upon a belief of wholeness and morphology: “divine bodies were complete and human bodies incomplete... this distinction emphasized not bodily features or morphology, but the being’s place on a continuum of value and foulness. Bodies were understood as mutable along these dimensions without losing their identity” (Csordas, 91). Traditional western paradigms of the body would find acceptance in this ideal, particularly focusing on the idea that a body could at the very least, strive for betterment on a value-based continuum. Likewise, we find that Transhumanist philosophies still find merit in this classical description and yet hold it to a very literal manner desiring betterment of both the spirit and the flesh on a value continuum.

Particularly in the field of human reproduction, the Roman Catholic tradition has provided ethical direction on the use of advanced technologies as well as on their impact on the person and society. At the present time, much of this ethical direction relates to the present study of advanced prosthetics and of computer-assisted body-implants. The Ninth General Assembly of the Pontifical Academy for Life took place at the Vatican in February 2003 and was dedicated to a crucial theme that has a strong social impact: "Ethics of Biomedical Research for a Christian Perspective" The concluding communiqué of the assembly states at the very outset:

It is evident that, especially in the recent decades, biomedicine has developed in an extraordinary way, helped by the enormous progress in technology and computer science that have vastly extended the possibilities for experimentation on living beings and, especially on the human being. There have been tremendous breakthroughs, for example, in the fields of genetics, molecular biology, as well as in transplants and the neurological sciences. (Pontifical Academy for Life, 2003, ¶1)

On the topic of technology and computerization, Roman Catholicism has not remained silent. Yet, the majority of emphasis has been on social implications of technological advances or on class disparity (see Pope John Paul II statement in connection with World Communications Day, May 27, 1989 – *The Church Must Learn to Cope With the Computer Culture*). With the advent of body enhancement technologies these societal issues remain at the forefront of the debate, and at the same time, traditional views of the body are also being reexamined. With the biomedical field expanding so rapidly, the potential for body enhancement has moved beyond the cosmetic stage and into the possibility of faster, smarter, stronger bodies for those who have no real medical need.

Where does Roman Catholic ethics explore the relationship between our bodies and medicine? Current Roman Catholic definitions of strict cybernetics focus more on mental perceptions and an artificial intelligence's ability to form abstractions than on the literal integration of computerized elements into a human body. W. A. Wallace and R.S. Ledley attest to this in their contribution to *The New Catholic Encyclopedia* and only briefly touch upon the broader uses of body augmentation when they define the role of the "cybernetician:" "The cybernetician is committed to a program of research in which animal and human means of communication are studied through the use of electronic and mechanical devices . . . In order to bridge the gap, the researcher in this area must 'down-grade' living phenomena until they approach the level of the nonliving, and 'up-grade' mechanical and electrical phenomena to confer on them the status of vital activities" (Wallace & Ledley, 2003, 451). There is no doubt that these quotients of communication and the simulated formation of concepts amongst artificial intelligences are great parts of the cybernetic world yet they should not be taken as the whole and the direct manipulation of the body must be addressed in order to keep pace.

2.1 Stewardship and the Principle of Totality

Bioethical questions, ranging from ownership and stewardship to prescribed foundations on the body's constitution and care, can all be found in the work of the great theologian, St. Thomas Aquinas: as outlined, *Prima Pars*, "Man Spirit and Matter," *Prima Secundae Partis*, "Law," *Secunda Secundae*

Partis, “Justice” and, as we shall see, many others. The Catholic principle of totality, derived from the Thomistic base, has been applied to contemporary technological innovations that affect the body. As we shall see, totality helps define that the well-being of the whole person must be taken into account in deciding about any therapeutic intervention or use of technology. The case of *IVF* (in vitro fertilization), for example, and similar reproductive procedures, have been addressed in the papal encyclicals *Humanae Vitae* (*On The Regulation of Birth*) by Paul VI: “limits are expressly imposed because of the reverence due to the whole human organism and its natural functions, in the light of the principles We stated earlier, and in accordance with a correct understanding of the ‘principle of totality’” (Paul VI, 1968, ¶17) and *Evangelium Vitae* (*On the Value and Inviolability of Human Life*) by John Paul II: “The various techniques of artificial reproduction, which would seem to be at the service of life and which are frequently used with this intention, actually open the door to new threats against life. . . . they are morally unacceptable”(John Paul II, 1995, 14). In both cases, the principle of totality is appealed to directly. Yet although totality is used as a basis for the contemporary Catholic ethical position, interpretation of the principle remains in dispute, and the application of it to specific components of the body, as distinct from the greater-whole, is also being debated.

Stewardship of the body as applied by St. Thomas is quite clear: there is order to all things in the universe and, to this end, the human person finds themselves in a position of striving forward to reach closer to the Creator, while at

the same time recognizing his or her own limitations (we shall explore more on this “striving forward” in Chapter 5). As Sr. Ruth Caspar O.P. explains:

For Thomas, ...divides the universe into God, and everything that God has made: the Creator and the created universe. We humans, of course, inhabit that created universe; the most profound truth of our existence is that we are God’s creation. We stand on the horizon, inhabiting both realms. We are not God—only God is God—but we are created in the image of God (S.T. I, 93). Each substance in the universe of God’s creation has a place and a purpose, and ours is unique. We become who we are meant to be by actualizing our full potential as humans, and this process will bring us to integrity as we find our way back to the Source from Whom we have come. This requires us to develop two uniquely human faculties: our God-given potential of reason, as we explore the universe in search of truth; and the orientation given to us as creatures with desires and yearnings, so that we choose what is right and good. (Caspar, 2004, ¶8)

Quoting a maxim of Aristotle⁹, Ashley and O’Rourke correctly note that with modern medicine traditional views on stewardship are in flux:

A basic axiom of medicine has always been the Greek dictum, *art perfects nature*, which implies that human persons can be healed (or patched up) and helped to develop to maturity, but they cannot be essentially remade. Today, however, the situation has changed. We must face the questions: Is it right for persons to become their own creators? Can and should human nature be remade? Francoeur (1972) has answered that because ‘we can, we must’ and calls this the ‘technological imperative.’ Jones (1974, 1984), however cautions against the tendency to accept scientific progress as an unalleged benefit. (Ashley & O’Rourke, 1997, 316)

While the Greek axiom may hold for many, Transhuman philosophy does not concur and responds with: “Had Mother Nature been a real parent, she would have been in jail for child abuse and murder” (Bostrom, 2003b, ¶23).

That the technology exists to make changes to the existing form of the body is not in debate. Corrective and cosmetic surgeries today are commonplace.

Optics and micro-computing make regular appearances in the operating room, and robotics has few problems in taking the place of the surgeons themselves. As

Ashley and O'Rourke outline in *Health Care Ethics*:

The first steps toward remaking the human body have already been taken (L. Shapiro et al., 1986; Gustafson, 1994). Three levels of physical remaking seem possible: 1. Surgical procedures which would replace existing organs with transplants, biological constructs, or artificial organs that are not mere substitutes for natural organs but which expand old functions or insert new ones into the body as suggested." (Ashley & O'Rourke, 317)

The second and third levels put forth are new embryological developments and ultimately genetic engineering.

Continuing in this vein both authors bring to light the deep-rooted notion that to change the body in ways outside of natural birth and outside of standard medical needs is contrary to the designs of the divine:

The basic ethical issue here seen by some theologians is how great is the extent of human dominion over nature. This is a classical way of posing the issue, but it is perhaps too much influenced by the Greek image of God as a jealous monarch who becomes angry when Prometheus infringes on his prerogatives. Others would see such attempts to improve on human beings as an insult to the work of the creator, whose masterpiece is humankind, or at least as a fatal temptation to pride. (Ashley & O'Rourke, 318)

As we shall see, attempts to "improve on human beings" are looked at in a Transhumanist philosophy as just the opposite of an "insult," rather a necessary part of humanity.

From the viewpoint of theology the question is this: "by trying to improve on God's work and create a human being other than He created or intended, do we

⁹ "Art imitates nature" (Aristotle, *Physics*, II, c.2, 194a 22)

not attack the scheme of Providence?" (Gilman, 2002, ¶1). In examining body augmentation, we find that the most widespread (yet by-in-large less extreme) surgery today is plastic surgery. Sander L. Gilman reminds us that Roman Catholic teaching defends aesthetic surgery by evoking the theological "Principle of Totality" in which a part of the body can be sacrificed for the good of the whole. Even if the intent of the procedure is to achieve "physical beauty," the principle holds. He further explains that:

one can sacrifice a 'too Irish' nose if the end result is a more coherent body, in one's own estimation. The moral evaluation of the act must show that: a) the intention is right; b) the general health of the patient is not placed at risk; and c) the motives must be proportionate to the means employed. Aesthetic surgery cannot be sanctioned if the purpose is mere vanity or fashion. And what is not 'mere vanity'? Aesthetic surgery, for example, can be sanctioned if it ameliorates 'grave psychological effects . . . such as a sense of inferiority.' Then it is seen as not only permissible but also a necessity. (Gilman, 2002, ¶5)

Pope Pius XII spoke to the Italian Society of Plastic Surgeons in 1958 calling plastic surgery both a science and an art, established for the benefit of humanity in which important ethical and psychological values are concerned. Pope Pius XII: "If we consider physical beauty in its Christian light and if we respect the conditions set by our moral teachings, then aesthetic surgery is not in contradiction to the will of God, in that it restores the perfection of that greatest work of creation, man"(Pius XII, 1958, 6).

Pius XII pointed out an analogy between the remedial work of the cosmetic surgeon and the creating hand of God and stressed the benefits of such body augmentation:

It is easy to deduce how important, delicate and deserving is your profession . . . restoring harmony and dignity to parts of the body and at times also to the spirit. How many minds, depressed with inferiority complexes and practically crippled in their activity, regain serenity and the dynamism of life in your able hands. (Pius XII, 1958, 6)

Such statements on current healing aspects of plastic surgery show that body modification in itself is not unwelcome, indeed in cases of restorative surgery such procedures are commonly classified today as essential to complete healing.

Concluding, Gilman states:

Aesthetic surgery is restorative surgery, restoring one to the ideal body, that divine norm against which one measures the weaknesses and faults of real human beings. Such restoration of the body becomes, as far as religious practice permits it, an acknowledgment of its 'holistic' reconstitution of the entire person – psyche as well as body. Religious responses take the argument of 'happiness' extremely seriously. (Gilman, 2002, ¶4)

Indeed we find that St. Thomas devotes several answers to happiness, including bodily goods, pleasure and power (*Prima Secundæ Partis*, Man's Last End).

Cosmetic surgery is an example of a body augmentation that in the majority of cases today does not need to be performed in order to maintain "normative" levels of human body function. This is to say that it is aptly named "cosmetic" precisely because it deals mainly with the interpretation of one's personal idea of beauty and the desires of individuals to achieve them. The American Society of Aesthetic Plastic Surgeons documents that there were nearly 8.3 million surgical and nonsurgical cosmetic procedures performed in 2003 and the rate of increase is approximately twenty-percent. (Plastic Surgery Research.com, 2004, ¶1) This type of aesthetically optional procedure gives an

example of precedent that Transhumanism views as a precursor to other body augmentation technologies: limb and organ replacements, increases to sensory perceptions, etc. Ashley and O'Rourke comment on this type of surgery also addressing the question of necessity:

What if the purpose of the surgery is not normal function but the destruction or inhibition of certain normal functions? . . . Cosmetic surgery is not directed at restoring normal function, but at improving *appearance*. While human appearance can hardly be called a "function" of the body, yet it is certainly very important in human life, both with regard to sexual attraction and with regard to all our social relationships and sense of personal worth. We can, therefore, grant that it is ethically justified if the purpose is to acquire, when lacking, what is generally regarded as a normal, attractive appearance for one's gender or even to enhance it. (Ashley & O'Rourke, 340)

2.1.1 The Transhumanist view of Stewardship

Let us take Transhumanism as an instance of a radically new view of the body and an aggressive view of the ethics of body-augmentation. The Transhumanist approach seeks to ask and answer nearly all of the traditional questions that Roman Catholic medical-ethics considers. Transhumanism provides us, then, with a "post-modern" view of the body. Consider the Transhumanists credo:

Transhumanism advocates the use of technology to overcome our biological limitations and transform the human condition. At the present time or in the near future, human capabilities will be extended through such means as genetic engineering, memory-enhancing drugs, collaborative information-filtering, smart agents, intelligence amplification, wearable computers, and the Internet. In the slightly longer term, the accelerating pace of technological development opens up such revolutionary prospects as superhuman artificial intelligence and molecular nanotechnology. (Pearce, 2003, ¶8)

Stewardship, as viewed in light of Transhumanist answers, approaches body function and human evolution as a work in progress. This is to say that in a Transhumanist philosophy the human body may be seen as a “temple” but one that is still in the process of creation – definitely not static and definitely something that needs alterations in order to become more akin to the temple’s architect and not the temple itself. Transhumanism does not weigh into discussions on the body from a position on the creation of humanity or a concept of the body as created in a fixed image. Transhumanism understands the individual person to be in total control of his or her own body and all its constituents; thus takes the body as an entity to be used, altered, augmented or discarded as one’s will desires. At the same time we find in other philosophical camps similar views of total freedom to alter or revise the human body, yet with belief in a creator’s complete approval:

First, since theologians generally accept the view that the Creator produced the human race by an evolutionary process, they have to take into account the fact that human beings are not finished masterpieces but rather a work in progress. Thus, it is no insult to God’s creative wisdom for people to suppose that they can further perfect the world and even their own bodies. Indeed, it is to God’s praise that he has generously called them to be co-workers with him in his creative task. (Ashley & O’Rourke, 38)

Such thinking seems perfectly logical to a Transhumanist philosophy and centers on both the continued development of the body and elevation of the person from the position of “temple” to “temple-architect.” Such a change revolutionizes whole aspects of one’s capabilities and changes in attitudes regarding issues ranging from reproductive health to economic well-being and beyond are certainly predictable (if not obligatory).

Human nature exists not in the abstract but in the flux of human history and of individual biographies, where it seems subject to endless variations. How, then, can a universal definition of human nature that is more than an empty commonplace be formulated? With the rise of modern technology, for the first time in history human beings have achieved a real dominion over nature...Moreover, scientists are acquiring mastery of the building blocks out of which all material things are made and may soon tap the sources of energy that will make it possible to reconstruct the work. The ethical implication of these discoveries . . . [is that humans] will no longer be stewards but creators. (Ashley & O'Rourke, 45)

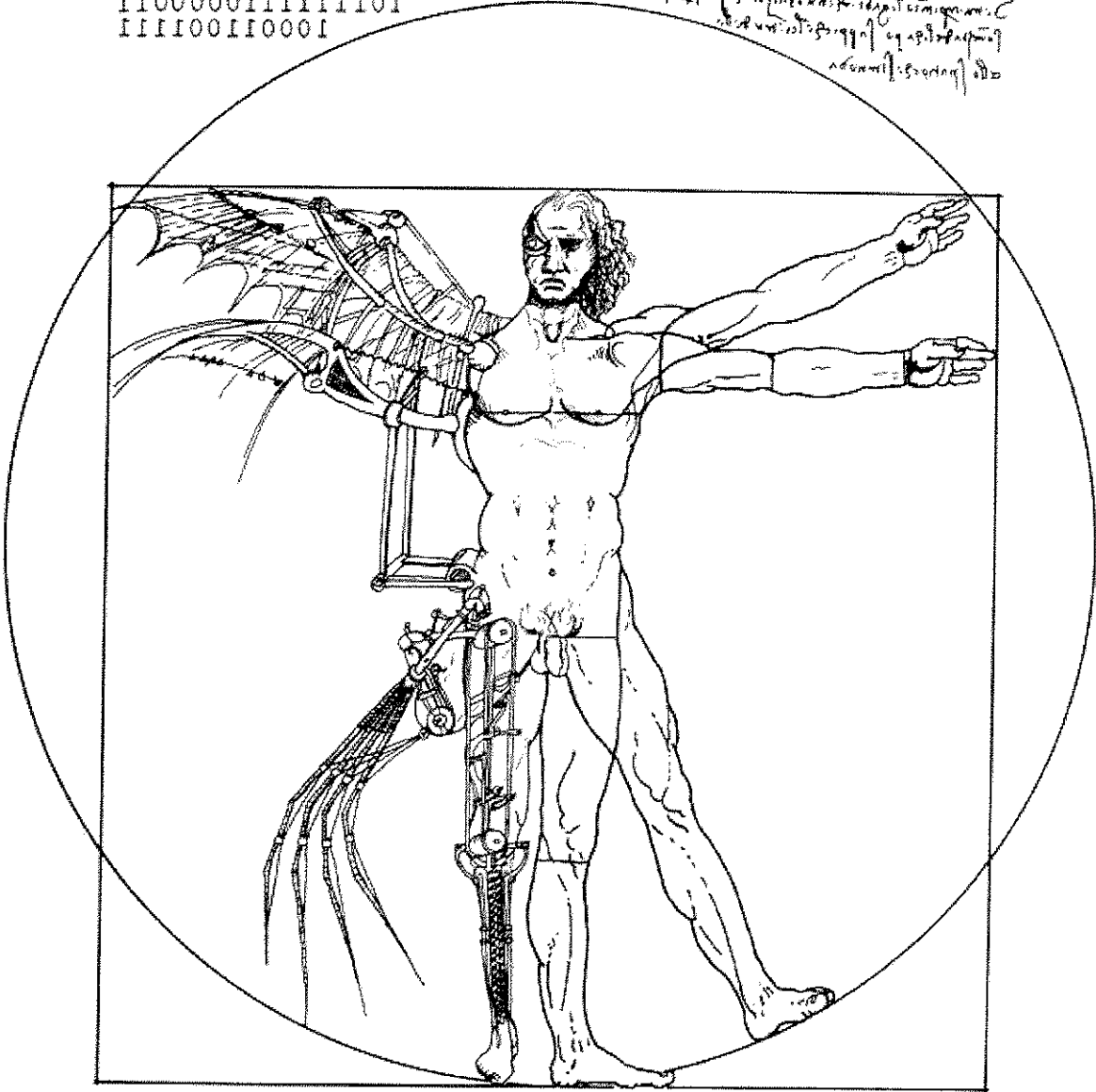
Because there have been conceptual revolutions, particularly in the last century, the understanding of the body has bent away from an analogy of the divine into an engine, complete with pumps, pulleys, conduits and electrics.

Homo technologicus – this is the term which American Catholic ethicist Richard A. McCormick S.J. bestows on a society such as ours which creates, solves and re-creates dilemmas utilizing technology in a comic and tragic circle. He states, in *How Brave a New World* that, “We are, corporately, *homo technologicus*. The best solution to the dilemmas created by technology is more technology. We tend to eliminate the maladapted condition (defectives, retardates, and so on) rather than adjust the environment to it” (McCormick, 1981, 7). The field of bioethics, in which rapid advances of technology have created ethical and moral problems that have never before been addressed (or even imagined), is particularly affected. McCormick is, of course, not the first to note the technological integration of the human being; we can see an illustration of this

merging of the modern with the classical in Thom Pfeil's *Vitruvian Man* (see figure 1).¹⁰

¹⁰ *Cyborg*. Leonardo da Vinci's own mechanical drawings are the basis for cyborg replacement parts in this illustration, which takes da Vinci's Vitruvian Man into the future. Da Vinci's fascination with mechanics and flight are reflected in the images, and da Vinci's mirror writing flows into computer code. Original illustration by Thom Pfeil. © 2001 by Thom Pfeil M.D. University Of Texas Medical Branch, Galveston, Texas.

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Figure 1.

2.2 The Principle of Mutilation

One does not have to look far within the field of medical ethics to see the influence of St. Thomas particularly if one examines foundations of transplant procedures or other similar surgeries within Roman Catholic medical-moral guidelines.¹¹ Roman Catholic medical ethics is grounded on the ethical principles embedded in the Moral Law (a combination of natural law philosophical ethics, the Divine Law, and the teachings of the Magisterium). Indeed, when one begins to look at pastoral medicine in particular, St. Thomas's conclusions on concepts such as natural law, sources of happiness and the body (as described by Andrew Klarmann in *The Crux of Pastoral Medicine: The Perils of Embryonic Man*) act as a "pedestal" in conjunction with biology. Even beyond the direct writings of St. Thomas we find that the methodology behind the fields of moral theology and medicine are linked as David F. Kelly explains, "Like scientific, technological medicine, [methodologies] evolved out of an Aristotelian-Thomistic thought system where nature, secondary causality, and rationality were emphasized"(Kelly, 1979, 400).

Although the material is vast and often interpreted in various forms, it is our goal to examine the following: what exactly are the Thomistic principles of

¹¹ See, *Humanae Vitae* (Boston: Pauline Books & Media, 1968): "It is, in fact, indisputable, as our predecessors have many times declared, that Jesus Christ, when communicating to Peter and to the apostles His divine authority and sending them to teach all nations His commandments, constituted them as guardians and authentic interpreters of all the moral law, not only, that is, of the law of the Gospel, but also of the natural law, which is also an expression of the will of God, the faithful fulfillment of which is equally necessary for salvation."; the National Conference of Catholic Bishop's, *Ethical and Religious Directives for Catholic Health Care Services*: "The moral teachings that we profess here flow principally from the natural law, understood in the light of the revelation Christ has entrusted to his Church." See generally, Thomas Aquinas, *Summa Theologica*, Ia IIae, Q.94; II II Q.70 A1. Ralph McInerny, *Ethica Thomistica* (Washington, D.C.:

totality and mutilation? How are they linked to the body and stewardship, and what influence has Aquinas had on the development of these ideas? What are the modern applications of these ideas, set down centuries ago, and does Aquinas still hold relevance in contemporary arguments regarding changes to the body: organs, limbs, memory, etc.?

What exactly are these concepts? Often regarded as concepts linked with natural law theory, the “principle of totality” and the “principle of mutilation” are integral parts to any examination of the body, particularly in cases involving surgery. Addressing the questions of amputation, organ donation and the sacrificing of individual parts for the good of the whole, these two principles are deeply connected and modern applications and interpretation of St. Thomas’s base are not rare.¹² Although the underlying theory behind the principle of totality and the principle of mutilation goes back for centuries, Pope Pius XII brought the expressions into contemporary use, particularly in Catholic moral theology and bioethics. He did so in his address to the First International Congress on the Histopathology of the Nervous System in 1952 (*The Moral Limits Of Medical Research And Treatment*).

The Catholic University of America Press, 1982); see also previous references to specific points in *Summa Theologiae* – section 1.1.

¹² See Mark J. Cherry, ‘Body Parts and the Market Place: Insights from Thomistic Philosophy’ *Christian Bioethics*, (Taylor & Francis, Volume 6, Number 2 / August 2000: 171 – 193): Thomas Aquinas’ understandings of embodiment and moral uses of the body are usually interpreted as, and cited in support of, foreclosing a market in human organs. Aquinas’ principle of totality requires that one preserve the wholeness of the human body . . . Such considerations will provide significant grounds for concluding that a market in human organs for transplantation appreciates the embodied nature of the human person, respects the body and its parts as personal, rather than as mere things, is consistent with acknowledging God’s dominion over our lives and bodies, and constitutes an appropriate utilization of God’s gifts to us. Moreover, such a market would likely create significant opportunities charitably to help others, to enhance human dignity and to protect against the serious dehumanization of current national bureaucratic procedures for organ donation.

Like many important concepts in moral theology and bioethics there are several definitions, of varying exactness, attached to both of these principles. In my opinion an uncomplicated explanation is given by John Gallagher in his article, "The Principles of Totality: Man's Stewardship of His Body:" "the principle of totality states that in certain cases, mutilation is allowed when it is necessary for the good of the whole. 'Mutilation' here means 'any procedure that either temporarily or permanently impairs the natural and complete integrity of the body or its functions'" (Gallagher, 1984, 218). To be sure, mutilation is a considered a grave violation. As defined in the *Dictionary of Moral Theology*, "Mutilation belongs to the category of murder: the difference is that mutilation is partial destruction of an individual, whereas murder is the total destruction of the physical life... Moral law is concerned with mutilation because no man is absolute in his dominion over the body" (Bender, 1962, 805). The exact gravity of the sin of mutilation does not in fact depend upon the size of the mutilation but rather as Ludoviso Bender explains, "[upon] the importance of the organ involved" (Bender, 805). This emphasis on the substance of the organ is a large factor in the determination of whether or not Transhuman philosophies would be violating Roman Catholic ethical standards in their differing plans for human happiness through augmentation. As we shall see, some of the greatest debate today regarding medical technologies revolves around reproductive organs and on this matter; the church has certainly not been silent.

These definitions stray very little from the original treatment of the principles by St. Thomas in his *Summa Theologica, Secunda Secundae Partis*,

Question 65, Article 1. Aquinas addresses the question of amputation from the aspect of the body as a whole entity, created whole and to be kept whole. In his writings, we see some of the very basic ideas that totality and mutilation bring to any discussion of amputation, grafts or artificial limbs — stewardship, responsibility, and function. Aquinas rationalizes:

Whether in some cases it may be lawful to maim anyone?

Objection 1. It would seem that in no case can it be lawful to maim anyone. For Damascene says (*De Fide Orth.* iv, 20) that “sin consists in departing from what is according to nature, towards that which is contrary to nature.” Now according to nature it is appointed by God that a man's body should be entire in its members, and it is contrary to nature that it should be deprived of a member. Therefore it seems that it is always a sin to maim a person.

Objection 2. Further, as the whole soul is to the whole body, so are the parts of the soul to the parts of the body (*De Anima* ii, 1). But it is unlawful to deprive a man of his soul by killing him, except by public authority. Therefore neither is it lawful to maim anyone, except perhaps by public authority.

Objection 3. Further, the welfare of the soul is to be preferred to the welfare of the body. Now it is not lawful for a man to maim himself for the sake of the soul's welfare: since the council of Nicea [P. I, sect. 4, can. i] punished those who castrated themselves that they might preserve chastity. Therefore it is not lawful for any other reason to maim a person.

On the contrary, It is written (Ex. 21:24): “Eye for eye, tooth for tooth, hand for hand, foot for foot.”

I answer that, Since a member is part of the whole human body, it is for the sake of the whole, as the imperfect for the perfect. Hence a member of the human body is to be disposed of according as it is expedient for the body. Now a member of the human body is of itself useful to the good of the whole body, yet, accidentally it may happen to be hurtful, as when a decayed member is a source of corruption to the whole body. Accordingly so long as a member is healthy and retains its natural disposition, it cannot be cut off without injury to the whole body. But as the whole of man is directed as to his end to the whole of the community of which he is a part, as stated above (61, 1; 64, 2, 5), it may happen that although the removal of a member may be detrimental to the whole body, it may nevertheless be directed to the good of the community, in so far as it is applied to a person as a punishment for the purpose of restraining sin. Hence just as by public authority a person is lawfully deprived of life altogether on account of certain more heinous

sins, so is he deprived of a member on account of certain lesser sins. But this is not lawful for a private individual, even with the consent of the owner of the member, because this would involve an injury to the community, to whom the man and all his parts belong. If, however, the member be decayed and therefore a source of corruption to the whole body, then it is lawful with the consent of the owner of the member, to cut away the member for the welfare of the whole body, since each one is entrusted with the care of his own welfare. The same applies if it be done with the consent of the person whose business it is to care for the welfare of the person who has a decayed member: otherwise it is altogether unlawful to maim anyone.

Reply to Objection 1. Nothing prevents that which is contrary to a particular nature from being in harmony with universal nature: thus death and corruption, in the physical order, are contrary to the particular nature of the thing corrupted, although they are in keeping with universal nature. In like manner to maim anyone, though contrary to the particular nature of the body of the person maimed, is nevertheless in keeping with natural reason in relation to the common good.

Reply to Objection 2. The life of the entire man is not directed to something belonging to man; on the contrary whatever belongs to man is directed to his life. Hence in no case does it pertain to a person to take anyone's life, except to the public authority to whom is entrusted the procuring of the common good. But the removal of a member can be directed to the good of one man, and consequently in certain cases can pertain to him.

Reply to Objection 3. A member should not be removed for the sake of the bodily health of the whole, unless otherwise nothing can be done to further the good of the whole. Now it is always possible to further one's spiritual welfare otherwise than by cutting off a member, because sin is always subject to the will: and consequently in no case is it allowable to maim oneself, even to avoid any sin whatever. Hence Chrysostom, in his exposition on Matth. 19:12 (*Hom. lxii in Matth.*), "There are eunuchs who have made themselves eunuchs for the kingdom of heaven," says: "Not by maiming themselves, but by destroying evil thoughts, for a man is accursed who maims himself, since they are murderers who do such things." And further on he says: "Nor is lust tamed thereby, on the contrary it becomes more importunate, for the seed springs in us from other sources, and chiefly from an incontinent purpose and a careless mind: and temptation is curbed not so much by cutting off a member as by curbing one's thoughts." (Aquinas, *ST*, Q.65, A.1)

St. Thomas's Question 65, Article 1, is primarily a statement relating to the field of justice as it addresses the question of lawfulness and it is keeping with the pattern of justice in relation to the body that he explains in other articles, such

as on restitution. Yet we can see in this statement a deeper level to the totality that Aquinas is talking about: the body itself is not merely being limited to the individual's physical form, but "the body" is also being extended as an example of the whole of society. One of the very basic differences between a personal application vs. a *meta* application is the independence that an individual has in the totality of society as opposed to the dependence that an individual part has in the totality of the body. The natural function of a limb such as a leg or an arm is moot without the body, which it serves; it exists for the benefit of the body. Martin Nolan expresses this larger application of totality in his, "The Principle of Totality in Moral Theology" as:

The principle is absolute in that it makes the position, progress and direction of all 'parts,' of everything less than whole towards the consummation of all in communion. The vast cosmic totality envisioned by St. Thomas in his *Summa contra gentiles* is as absolute as it's sharing the Creator's gift of himself in existence. (Nolan, 1968, 245)

Yet, the application of totality beyond the body leads one into the questions of capital punishment and punishment by mutilation such as loss of a hand or eye in restitution for a crime. While some argue that the benefit to the whole of society is increased with the death of a criminal (even Aquinas makes reference to this possibility) the modern-day Church's position asserts that this application of totality is a violation of the life of the individual and not licit. We can read in Pope John Paul's II encyclical *Evangelium Vitae* (*The Gospel of Life*):

...I confirm that the direct and voluntary killing of an innocent human being is always gravely immoral. This doctrine, based upon that unwritten law which man, in the light of reason, finds in his own heart (cf. Rom 2:14-15), is reaffirmed by Sacred Scripture, transmitted by the Tradition of the Church and taught by the ordinary and universal Magisterium. [51]

The deliberate decision to deprive an innocent human being of his life is always morally evil and can never be licit either as an end in itself or as a means to a good end. (John Paul II, 2003a, ¶57)

The licitness of surgical interventions under the principle of mutilation are governed by conditions that Pius XII first explained in conjunction with the principle of totality to the Twenty-sixth Congress of the Italian Society of Urologists: That the continued presence of functioning of a particular organ causes serious damage to the whole organism or threatens it, that the harm cannot be avoided or reduced except via mutilation, and finally that it is reasonable to expect that the negative effect of the mutilation will be offset by the positive effect of removing the danger to the organism. (Pius XII, 1953, 679)

2.3 Natural Law

When we examine a concept such as natural law we are presented with views that go back to Plato and the Stoics; their views carried forth and decoded by Church Fathers and philosophers incorporated significantly in 20th century Roman Catholic ethics and into the work of theologians and legal analysts. Examining the most recent developments in body-enhancement technology, we quickly enter the realm of natural law as limb or organ augmentation deals directly with some of the basic ideas that Roman Catholic natural law theory has confronted for over two thousand years. While natural law has several definitions, mostly dependent upon area of influence, commentator, or era, there are certain commonalities that can be derived.

John Finnis, writing in *Natural Law and Natural Rights* for the Clarendon Law Series, sees natural law as: “a set of basic methodological requirements of practical reasonableness which distinguish sound from unsound practical thinking . . .” or “a set of general moral standards” (Finnis, 1980, 23). D’Arcy believes that Aristotle determines it in conjunction with imitated laws:

There are two kinds of law: the particular; and the universal . . . By “universal” I mean the law of nature. For there is a notion of what is just and unjust according to nature, which is universal: i.e. it is to some extent perceived by all men alike, even though they have had no mutual communication or association. (D’Arcy, 1978, 1131)

One of the common denominators between genres, time, and person, is the pre-existing independent positive standard that is an irrevocable part of natural law. In natural law theory that is, positive laws, human laws, model themselves upon a set of principles that are the highest expression of nature, reason, God, or other metaphysical supreme(s). One of the greatest questions in natural law theory in the past two hundred years has been an examination of this coupling of positive law and natural law; more precisely it is the moral and legal validity of positive law. This is to say, which (if any) of the two is the higher law? Although some scholars, such as noted Austrian jurist Hans Kelsen¹³, would argue that traditional interpretations of positive law lessen its significance since it emanates from natural law, Finnis rightly points out that as far back as Aquinas positive law was treated on a distinct level of importance. He notes: “Aquinas thinks that positive law is needed for two reasons, of which one is that the natural law “already somehow in existence” does not itself provide all or most of the solutions to the

co-ordination problems of communal life” (Finnis, 28). Jacques Maritain, in *Natural Law and Aquinas*, points out that, “This is the preamble and the principle of natural law; it is not the law itself” (Maritain, 1991, 118). How one is to perceive the natural law and discover its guidance in relation to the positive law is something that is often ascribed to human intuition, or as Aquinas puts it in the *Summa Theologiae*, the “natural inclinations . . . directed according to reason” (Aquinas, *ST*, Q.65, A.1). Today, one may be tempted to draw a parallel between this natural inclination, or in-born unconscious reasoning, as one of the most fundamental genetic conditions with which all humans have been endowed – conscious.

A second commonality between definitions is the immutable quality of natural law. Although most recently this particular aspect has come under close scrutiny, and is even denied by certain scholars, it remains a strong characteristic.

As Cicero stated:

Right reason is a true law, agreeing with nature, infused into all men, unchanging, eternal, which summons to duty by its commands, deters from wrong by forbidding it, and which nevertheless neither commands and forbids the good in vain, nor prevails with the bad by commanding and forbidding them. It is not permitted to abrogate this law, nor is it allowed to derogate from it in anything, nor is it possible to abrogate it wholly. (Cicero, ¶7)

D’Arcy holds to this principle in *Natural Law*. The immutable nature of natural law is coupled with its eternal nature. Whether it is derived from human reason, as a more secular approach would ascribe, or from God, as Ullmann holds:

“Being the creation of the Supreme lawgiver, not the work of man – ‘*nec*

¹³ Austrian legal philosopher (1881-1973) who wrote the constitution adopted by the Austrian

hominum ingeniis excogitata – the divine law is eternal – ‘*aeternum quiddam*’ – and reigns over ‘*universum mundum*’” (Ullmann, 1969, 46). One could argue that the early Church Fathers simply adopted the traditional views of natural law from the stoics or Cicero, simply shifting impersonal notions of reason or ideas of nature as divinity into a Christian settings and a Sovereign as Lawgiver. This though, would gloss over the contribution of the early Christian writers and scholars. Harkening back as far as St. Paul’s letter to the Romans we can see that natural law is ascribed to all people:

... when the Gentiles who have not the law, do by nature those things that are of the law, these having not the law, are a law to themselves; who shew the work of the law written in their hearts, their conscience bearing witness to them. (2; 14-15)

As Michael Crowe explains, in *The Changing Profile of the Natural Law*, it is clear that St. Paul is speaking of the pagans, who although without the Jewish Mosaic law, do have another law which teaches them the difference between right and wrong, a law which is the very foundation of the distinction between good and evil and not simply an indicator. (Crowe, 1977, 53)

In all approaches, the universality of natural law would seem to extend to all persons, whether they share the same religious beliefs or not, and yet there are particularly puritanical approaches formulated by stringent Protestant groups and theologians such as Karl Barth or Felix Flückiger which refute the references in St. Paul’s writings to natural law among pagans or gentiles. Although natural law is in a religious context a major part of the history is a concept that attempts to transcend doctrines and stand by itself, as we find in the *Encyclopedia of*

Bioethics: "Some things are right or wrong, good or evil, of their very nature: not because the law of the land says so; not because one's religion says so; not because of their likely social consequences; but of their very nature. Furthermore, as well as being good or right, they are also obligatory"(D'Arcy, 1133).

Finally, we can see a teleological aspect to natural law that is also explored and defined by different interpreters over several eras. This teleology is tied in closely with the final actions one should resolve to perform based upon the tenets and guidelines of natural law; the natural end is the practical application of the entire theory. It is at this end-stage of applying the natural law that the morality of actions is most often explored, as Gonzalez Moral remarks:

It is intrinsically evil to make use of a natural thing in a way repugnant to its natural end; this is a principle of the first importance in questions of morality. Lying is therefore intrinsically evil, for it involves using human speech in a way directly contrary to its natural end. (D'Arcy, 1132)

The question of enforcement of natural law most often falls into the realm of the theoretical, as it is the positive law that judiciaries and legislative bodies deal with on a practical level. Yet, as far back as Aristotle and Cicero, and particularly during the medieval-period, there was study of those people in (or that segment of) society that created the laws and their conformity with natural law. As Ullmann explains, in *The Medieval Idea of Law as Represented by Lucas De Penna*:

Although all human law is the command of the Ruler as God's vicegerent, any particular command of the ruler which contradicts the divine idea of natural justice to the dictates of natural reason is not law. With this limitation, then, that he is subject to divine or natural law, and hence cannot legislate in opposition to it, the Ruler has the power to issue those commands that are the law. (Ullmann, 1969, xxxiv)

Of course, natural law theory has had its critics over the centuries and, as we have seen, particular definitions emphasize certain aspects over others. In a systematic analysis of natural law, the *Encyclopaedia of Bioethics* provides us with an excellent list of principle objections to the acceptance of natural law as a basis for moral actions, positive law, or as a solution for bioethical dilemmas: Cultural relativism, Evolution, Protestant Reformation objections, Legal Positivism, and Modern Catholic theory.

The first objection goes against one of the earliest definitions of natural law, that put forth by Aristotle. It is the continued exploration of the globe during the centuries since classical time which has brought to light new cultures and peoples with sometimes radically differing moral values and belief systems. This discovery of multiple systems of morality seems to imply that natural law's universality is not a dominant feature of all humans during all times. This discovery of worldwide moral pluralism is related to objections arising from the theories of evolution. In the evolutionary objection, we see an attack on the quality of immutability with which natural law has often been associated — unchanging human nature appeared to be quite changeable given the rise and fall of species, development from ape to proto-human to human, etc. The teleological view that natural law presents also appeared to blur as the evolutionary ends could not be predicted; on the macro-level species would develop or die off, the end result unknown and uncompromising.

Protestant Reformation objections often fall into the question of natural law's relationship to moral actions, grace and, hence, biblical redemption. As the

Encyclopedia of Bioethics outlines, since natural law theory commonly emphasizes the ability of (unredeemed, unconverted) human beings to perform morally good actions, and to acquire and grow in positive virtues. D'Arcy, in fact goes as far to suggest that: "Reformers who wished to insist that there is no righteousness except that which Christ's redeeming death brought to believers did not view Aquinas' natural law theory as appropriate" (D'Arcy, 1133). Although he leaves such an amalgamation of "reformers" vague and greatly generalized.

Legal Positivism has many faces, but at its heart is the contention that positive law needs no basis in natural law for validity. The morality that natural law attempts to presume on positive law is incongruous with Legal Positivists who hold that it is the form of the law which takes precedent with its ability to change and adapt to required situations. In *Ethics and Morals* by Joseph Gerard Brennan we read that, "Positive law is man-made. Though it depends on natural law, it need not itself have any direct foundation in the natural order . . . theory of law is best served by keeping the ethical out of it as much as possible" (Brennan, 1973, 330). Indeed, he goes as far to say: "The concept of law has no moral connotation whatever" (Brennan, 330). Here the test of law comes from procedural validity, not moral validity and, as Ernst Bloch explains in *Natural Law and Human Dignity*: "Hobbes's remark in *Leviathan* that 'no law can be unjust' is a fundamental credo of legal positivism, which answers the question of justice in conventional rather than moral terms" (Block, 1986, xiv).

Finally we can see objections to traditional natural law theory from within Catholicism, beginning mostly in the 1960s with an emphasis on individual rights

and on more personal styles of solving moral dilemmas. D'Arcy shows, "It was felt that the impersonal style of natural law theory, together with its insistence on the absolute and intrinsic evil of certain types of action, did less than justice to the sovereign dignity of the individual human person" (D'Arcy, 1134). Post-Consiliar advances in biblical theology and an emphasis on Christian love in ethical teachings (as opposed to schools of thought such as Scholasticism which emphasize actions) began to show natural law as increasingly unfeeling. Natural law historically, these new thinkers argued, put forward an ethic which was "impersonal, unsympathetic, and lacking in the most characteristic emphases insisted on by Jesus in the Gospels" (D'Arcy, 1135).

All of these points offer valid opinions on natural law that show just how much variance there still is on such a topic, yet it is still very much a force in moral theology and legal theory, finding particular a resurgence after World War II during the trials of war-criminals. No legal precedent had been created for genocidal acts committed during the war and although there were many influences, natural law as a basis for jurisprudence was once again at the forefront. Indeed, with the reevaluation of natural law theories, many aspects of the teaching of scholars and theologians from antiquity to the middle ages came under scrutiny. In my opinion, the moderate nature of St. Thomas's definition of natural law applications figures prominently in modern times, particularly in comparison with other unalterable forms. We can read in *Natural Law and Natural Rights*:

Now Aquinas indeed asserts that positive law derives its validity from natural law; but in the very same breath he shows how it is not a mere

emanation from or copy of natural law, and how the legislator enjoys all the creative freedom of an architect. (Finnis, 28)

Answering charges that the natural law cannot be changed we find:

A change in the natural law may be understood in two ways. First, by way of addition. In this sense, nothing hinders the natural law from being changed, since many things, for the benefit of human life, have been added over and above the natural law both by the divine law and by human laws. Secondly, a change in the natural law may be understood by way of subtraction, so that what previously was according to the natural law ceases to be so. In this sense, the natural law is altogether unchangeable in its first principles, but [not] in its secondary principles. (Aquinas, *ST*, II II Q. 94.)

Deeply linked with Roman Catholic moral theology, natural law has served as a basis for such areas as medical ethics for years, more prominently in some historical eras more than others, yet always in the background as foundation or reference. As Lisa Sowle Cahill writes in "Current Teaching on Sexual Ethics:"

The characteristic Catholic approach to questions of ethics has for several centuries been based on St. Thomas Aquinas's hypothesis of a 'natural moral law.' Aquinas taught that there are certain human values — such as respect for life, co-operation in society, and education of the young — which are known in all cultures. A natural morality common to all persons can be derived from reasonable reflection on these values. (Sowle Cahill, 1993, 526)

During the 1950's, in particular, there was a revival in natural law as a basis for bioethical problems and it was quoted by the highest levels in the church magisterium, including Pius XII and John XXIII. While natural law has been interpreted and reinterpreted for thousands of years, it is important to keep in mind that, as Thomas A. Shannon points out: "There is the continual claim that the Magisterium of the Roman Catholic Church is the guardian and interpreter of

the natural law; the claim for the authority for this function is based on the New Testament and the teachings of Jesus” (Shannon, 1981, 6). As we shall see, it must be noted that as with many other principles and ideas no infallible statements have been made in regards to this and thus the evolution of ideas continues from all levels – within the Church and from without. The topic of natural law is broad and although, as we have seen, there are various interpretations I believe that it must be a part of any examination of augmentation technologies for at least three reasons: a) natural law is increasingly used in cases with new medical technologies such as artificial insemination and *IVF* (as we shall see); b) the role of the physician has changed considerably from one of servant of the patient to, all too often, servant of a legally organized corporate entity or institution; and c) questions regarding augmentation technologies always involve the factor of “rights,” rights of the patient, caregiver, society, etc. Natural law theory is particularly relevant to the bioethics problems put forth in Pope Paul VI’s encyclical letter of 1968, *Humanae Vitae*. We can see that early on in *Humanae Vitae* the natural law is appealed to as a primary authority and the role of the Church as interpreter of that law is clarified:

Let no one of the faithful deny that the Magisterium of the Church is competent to interpret the natural moral law. For it is indisputable – as Our predecessors have often declared – that when Jesus Christ imparted His divine authority [*potestatis*] to Peter and the other Apostles and sent them to all nations to teach His commandments, He established those very men as authentic guardians and interpreters of the whole moral law, that is, not only of the law of the Gospel, but also of natural law. For natural law, [as well as revealed law], declares the will of God; [thus] faithful compliance [*fidelis obtemperatio*] with natural law is necessary for eternal salvation. (Paul VI, 1968, ¶4)

Such a statement, confirming the Church's authority to act as "guardians" and "interpreters" of natural law may hold little to no relevance to Transhumanism who, as outlined, interpret human "improvement" highest of all laws. While *Humanae Vitae* addresses mainly questions dealing with the nature of procreation and reproductive issues, we can see that individual problems fall within the scope of natural law, in particular, because they deal with "body" issues and the nature of life (from conception to marriage and beyond). The encyclical states:

God has wisely arranged the natural laws and times of fertility so that successive births are naturally spaced. But the Church, which interprets natural law through its unchanging doctrine, reminds men and women that the teachings based on natural law must be obeyed [*observandis*], and teaches that it is necessary that each and every conjugal act [*matrimonii usus*] remain ordained in itself [*per se destinatus*] to the procreating of human life. (Paul VI, 1968, ¶11)

Extending to the very nature (perhaps even genetic levels) of all people, natural law is seen in its strictly ethical application as, "the rule of conduct which is prescribed to us by the Creator in the constitution of the nature with which He has endowed us" (New Advent, 1998a, ¶1). Actions that are not compatible with this inborn sense of morality are ethically wrong, and often these same actions are also irrational in the context of not being beneficial to the body or society. More than just the conscious, natural law is ingrained in all humans and is the reflection of God's order. Examples of the kind of conduct that natural law regulates are many and, as we shall see, can be applied to body augmentation technologies just as they are applied to other choices throughout life:

For example, to nourish our bodies is right; but to indulge our appetite for food to the detriment of our corporal or spiritual life is wrong. Self-preservation is right, but to refuse to expose our life when the well being

of society requires it is wrong. It is wrong to drink to intoxication, for, besides being injurious to health, such indulgence deprives one of the uses of reason, which is intended by God to be the guide and dictator of conduct . . . There is, then, a double reason for calling this law of conduct natural: first, because it is set up concretely in our very nature itself, and second, because it is manifested to us by the purely natural medium of reason. (New Advent, 1998b, ¶3)

The concept follows that man is in a state of virtuousness and happiness when realizing the logic of following natural law and the law of spiritual causality: one reaps what one sows. From such thinking we can foresee that the types of body augmentations that Transhumanism seeks to employ, for purposes of personal “betterment” violates natural law as interpreted in Roman Catholicism. Not only would such augmentations stray into the types of “indulgences” of the body and senses that are contrary to the greater good of the person, human dignity is risked in such endeavors.

2.4 Applying Roman Catholic ethics to body augmentation

Not even a genius like St. Thomas could have foreseen such events as cloning, body augmentations, *in vitro* or extra-corporeal gestations, genetic manipulations, and other post-modern technologies. Traditionally Roman Catholic ethicists have had recourse to rely on ethical foundations and established guidelines, from which future problems were addressed by invoking precedent and models. There are the foundations of natural law, the double-effect, the principles of totality and mutilation, as well as the foundations laid down by church writings and scripture. The topic (and prospect) of surgery is rarely one that people often seek to embrace without some type of reservation. The

reluctance increases in conjunction with risk and the invasiveness of the procedures. However, negative reaction to surgical procedures such as those outlined by Transhumanism are not enough to discourage further exploration into the materials and functionality. Ethical attitudes are as much in flux in segments of “first-world” nations as the modern technology itself and mutilations that once repulsed can often find themselves in vogue. Leon R. Kass, writing in *Organs for Sale? Propriety, Property, and the Price of Progress* illustrates a characteristic argument that parallels initial reactions to body augmentations procedures writing:

Most of our attitudes regarding invasions of the body and treatment of corpses are carried less by maxims and arguments, more by sentiments and repugnancies. They are transmitted inadvertently and indirectly, rarely through formal instruction. For this reason, they are held by some to be suspect, mere sentiments, atavisms tied to superstitions of a bygone age. Some even argue that these repugnancies are based mainly on strangeness and unfamiliarity: the strange repels *because* it is unfamiliar... Time and exposure will cure us of these revulsions, especially when there are — as with organ transplantation — such enormous benefits to be won. These views are, I believe, mistaken... As Raskolnikov put it, and he should know, “Man gets used to everything — the beast.” (Kass, 1993, 475)

One of the most important aspects that is associated with technology and bioethics is functionality. On this, Richard McCormick writes: “It can be persuasively argued, I believe, that the peculiar temptations of a technologically advanced culture such as ours is to view and treat persons functionally. Our treatment of the aged is perhaps the sorriest symptom of this” (McCormick, 1981, 11). This functionality extends beyond a single level; it extends from the person as a whole, the individual parts of the body, operations of the psyche, and even to society itself. Functionality has been a part of technological advancements since

the first rock-hammer was fashioned; indeed it is the ultimate goal of a technology to increase functionality. The problematic questions in bioethics arise when we begin to see functionality placed on such a high dais that it overshadows considerations of the individual and society, creating a disparity between the biological and the mechanical. We shall examine more of this disparity as we look to possible body augmentation implications on medical research and social justice. McCormick speaks of "sinful structures" in society that are very much evident in our treatment of health problems explaining that in a general way, the enslavement of persons occurs through structures. (McCormick, 1981, 35)

For McCormick, it is technology (particularly coupled with consumerism) that plays a major role in the creation of such structures. (McCormick, 1981, 35) This is not to say that technology in service of the public health has not made incredible advancements and benefited thousands medically. Artificial hearts have, for example, according to *The Working Group on Mechanical Support*, reached a positive level of reliability and benefit in the general public (perhaps more than is justified by the state of the technology), and their continued use as a viable medical tool is expected. (Levine, 1987, 290) Yet, like McCormick, the working group members have seen the link between technology, society and ethics. We read:

It is far easier to increase than to decrease the use of a technology after it is in place...Experience with medical procedures indicates that dissemination proceeds in the manner of a ratchet; once a medical technology has reached a certain level of use, the public may come to expect and even demand it as a right. (Levine, 290)

There appears to be much consistency among ethicists and theologians today on this point, even from those outside of the Roman Catholic stream.¹⁴ This of course leads to the question: How does an integrated post-human body return to a non-integrated state once the technologies for augmentation are in place? Is there a path to follow to reverse major body modification(s), particularly if said modification(s) has replaced major organs or tissues needed for basic life operations? Currently, Transhumanist guidelines do not address this small problem.

The idea of technology and the artificial influencing of the human body is neither a modern one nor a rare occurrence. Indeed as G.Q. Maguire and Ellen McGee have written in "Implantable Brain Chips? Time for Debate:" "Worldwide there are at least three million people living with artificial implants. They use breast, penile, pectoral, testicular, chin, calf, hair, hormonal, medicinal, and dental prostheses. They also use bionic limbs, cardiac pacemakers, small implantable pumps to assist in pulmonary or systemic circulation of blood, etc" (McGuire, Jr. & Ellen M. McGee, 1999, 12). We shall see further extensions of this influence in the examination of sensory and mental augmentations, for example structures such as the "BodyNet."

We can see in the writings of German philosopher Ernst Kapp the generalized use of technology as an extension of the human body. Carl Mitcham and Jim Grote outline this approach to technology as "object for us." They note

¹⁴ Like McCormick, Paul Ramsey characterizes the relationship of technology and society, in *Ethics at the Edges of Life* he clarifies, "A third tenet of our age I call the Baconian project – that is, the pervasive notion that, for every problem produced by technology used for the relief of the

that, *Grundlinien einer Philosophie der Technik* (1877) — the first book to bear the title “philosophy of technology” — approaches the subject from an anthropological standpoint. “After extensive comparisons between human anatomy and technological inventions, he [Kapp] concludes that weapons and tools are essentially projections of human organs: the hammer an extension of the fist, clothing an extension of the body skin and hair, etc” (Mitcham & Grote, 1978, 1639).

Even beyond the physical organs the technology-body connection extends to differing levels of function (akin to the application of the principle of totality at a multitude of levels). Marshall McLuhan, in *Understand Media: The Extensions of Man* (1964), suggests that just as mechanical technology extends the body, so electronic media extend the nervous system (Mitcham & Grote, 1639). Wearable computing is a reality of today that parallels this extension of the nervous system and at the same time forms a new community never before viewed. Maguire and McGee offer one example of this:

Thad Starner, a Ph. D. candidate in Media Arts and Sciences at Massachusetts Institute of Technology, dresses in a wearable computer and lives connected to the Internet using a miniature computer terminal at all times. His device is the first stage of what he calls ‘the BodyNet, a computer network wired through human bodies.’ (McGuire & McGee, 8)

In the same vein, Ramsey writes: “The human self-image is turning into the image of technological production. This looming peril concerns the soul of the human species on this planet” (Ramsey, 142).

human condition, there will be an as-yet-distant technical solution. That, too, is among our certainties” (Ramsey, 1978, 139).

While the traditional connections between such things as morality, natural law, totality, stewardship and the human body have remained as a strong guide to bioethical problems there has been an evolution in the sciences, especially in the past few centuries, and a concomitant evolution in the theology. Speaking at the Nash Lectures in 1988 on the topic of "Moral Theology in the Year 2000: Reverie or Reality?" McCormick traces some of these historic interpretations such as those of Franciscus Hurth, S.J. (advisor to Popes Pius XI and Pius XII):

The will of nature" he says, "was inscribed in the organs and their functions." He concluded: "Man only has disposal of the use of his organs and faculties with respect to the end which the Creator, in His formation of them, has intended. This end for man, then, is both the biological law and the moral law, such that the latter obliges him to live according to the biological law." For this reason, John C. Ford, S.J. and Gerald Kelly, S.J., wrote in 1963: "One cannot exaggerate the importance attached to the physical integrity of the act itself both in papal documents and the Catholic theology generally. (McCormick, 1988, 11)

Then McCormick shows how Vatican II moved beyond such "physical integrity" when it proposed as criterion the person integrally and adequately considered: "From a personalist standpoint, what must be examined is what the intervention as a whole means for the promotion of the human persons who are involved and for their relationships"(McCormick, 1988, 12). This development towards the incorporation of the person and their relationships is an expanded view of "personhood" as compared to even turn of the century thinking.

Chapter Three: Previous interpretations of the Catholic Medical Ethics

What can we extrapolate from these views and observations of modern theologians and ethicists in regards to the possible use of artificial or enhanced organ developments? McCormick quotes others such as Joseph Fletcher when discussing moral judgments and his view of those processes that we now judge as artificial. He records: "Man is a maker and a selector and a designer and the more rationally contrived and deliberate anything is, the more *human* it is" (McCormick, 1981, 45). For Fletcher, it would appear that there is no artificial; all devices emanate from human design and are therefore natural. In discussing laboratory reproductive techniques he writes, "Laboratory reproduction is radically human compared to conception by ordinary heterosexual intercourse. It is willed, chosen, purposed, and controlled and surely these are among the traits that distinguish *Homo sapiens* from others in the animal genus" (McCormick, 1981, 45).¹⁵

Fletcher's view would be embraced by a Transhumanist philosophy, but McCormick points out an important component that appears to be a more normative approach. In referring to this emphasis on rationality McCormick explains:

This is at best ambiguous and at worst a distortion of the human. Rational control, it is true, is a distinctive achievement of man. But he can use this rationality in inhuman ways. Deliberation and rationality tells us only that a human being is acting, not that is acting humanly. One can, with utter control and deliberateness, do the most monstrously inhuman things. (McCormick, 1981, 285)

¹⁵ 'Willed, Chosen, Purposed, and Controlled' traits may indeed be components of humanity but there are of course other species that can claim such behavior with just as much validity – other species utilizing tools for example.

It is interesting to note the disparity between groups in relation to how they view rationality and how it affects the human condition, human products and human actions. This is not to say that modern interpretations on rationality do not hold it in high esteem – quite the contrary, it is in fact at the pinnacle of the whole person and linked with responsibility and essence. In “The Natural Law: Recent Literature,” McCormick connects rationality to the spirit, and quotes J. Etienne in repudiating a theory of nature which patterns God as a “transcendental engineer.”

We can read:

J. Etienne, with nearly every informed modern writer, rejects a concept of nature which mirrors God as a transcendental engineer who had pre-plotted man's course and embedded this plan in a multitude of concrete personas. Such a caricature is a result of human imagination. Rather, man's essential dignity is in his rationality. This is his prerogative and his fundamental responsibility. (McCormick, 1991, 177)

Although McCormick is writing on the topic of cloning and artificial insemination, his comments regarding the future possibilities and directions of moral discourse surrounding such technological advancements, in the light of over-all convictions about what the “human” is, are very relevant in that they deal with some of the same questions that the implanting of advanced body augmentations produces. He asks:

Will reproductive [technological] interventions, even if they provide certain short-term remedies or advantages, actually improve the over-all quality of human life? If so, how is the improvement to be specified? What is the notion of the human that functions in the description of an ‘improvement’? And who decides this? If the development and application of such technology are likely to be humanely destructive, why will they be such? (McCormick, 1984, 334)

Perhaps the most striking aspect of the question is the query into improved quality of human life. A Transhumanist approach advocates that the quality of life improves dramatically by fusion with the mechanical or electronic and is a boon to human development. Yet, the very improvements held by Transhumanists to be positive (such as advanced uses of implantable computers or prosthetics) are seen as just the opposite by people such as Kass, McCormick and others. Kass goes so far as to observe:

Now, embarked on the journey, we cannot go back. Yet we are increasingly troubled by the growing awareness that there is neither a natural nor rational place to stop. Precedent justifies extension, so does rational calculation: We are in a warm bath that warms up so imperceptibly that we don't know when to scream. (Kass, 486)

Just what are some of the implications of augmentation technology that reach above and beyond the "normal" limits of the human body? Above and beyond the questions the aggregate of the body; deferring to the reasons of "totality of the person" and "non-mutilation," "fairness in competition," and the "urge to produce" greater advantages in production and personal satisfaction as compared to less-technological neighbours there are the issues of cost and accessibility.

Norma Daniels comments:

In general, distributing health care by ability to pay is unjust. Health care (I include nonmedical health services) is of special moral importance. Its function is to maintain, restore, and compensate for losses of normal species functioning, and departures from normal functioning have a significant impact on the range of opportunities open to an individual. Since a society is just only if it assures fair equality of opportunity, health care systems should be designed so that they optimally protect opportunity, given the limits of resources and technology. This fair equality of opportunity account implies that there should be no discriminatory barriers to whatever system of services optimally protects opportunity. Still, individuals have rights or entitlements only to those

services that are part of the design of such a system. They do not have rights to any or every technology that can in some way provide them with a benefit. Rather, technologies must be assessed before being incorporated in a system so that we include only those services that optimally protect opportunity, given fixed and reasonable limits on resources. (Daniels, 1996, 101)

Noting the opposition outlined by Kass and others in respect to augmentation dangers Transhumanists have developed a series of apologetics and counter the worry of “dehumanizing:”

One of the central concerns of the bioconservatives is that human enhancement technologies might be ‘dehumanizing’. The concern, which has been variously expressed, is that these technologies might undermine our human dignity or inadvertently erode something that is deeply valuable about being human but that is difficult to put into words or to factor into a cost-benefit analysis. In some cases the unease seems to derive from religious or crypto-religious sentiments whereas for others (e.g. Francis Fukuyama) it stems from secular grounds. The most prominent bioethicist to focus on the first fear is Leon Kass: Most of the given bestowals of nature have their given species-specified natures: they are each and all of a given *sort*. Cockroaches and humans are equally bestowed but differently natured. To turn a man into a cockroach—as we don’t need Kafka to show us—would be dehumanizing. To try to turn a man into more than a man might be so as well. We need more than generalized appreciation for nature’s gifts. We need a particular regard and respect for the special gift that is our own given nature. Transhumanists counter that nature’s gifts are sometimes poisoned and should not always be accepted. Cancer, malaria, dementia, aging, starvation, unnecessary suffering, cognitive shortcomings are all among the presents that we wisely refuse. Our own species-specified natures are a rich source of much of the thoroughly unrespectable and unacceptable – susceptibility for disease, murder, rape, genocide, cheating, torture, racism. (Bostrom, 2003b, ¶6)

The question now becomes: how does the natural law affect the field of body-augmentation? We have seen the precedent for natural law in the use for bioethical questions involving the body and its functions, and as a measure against which practitioners can attempt to come to a moral act based on a foundation of natural law. Like other specific bioethical problems, there is no one

clear precedent or particular concept that can address the dilemma in its entirety. Perhaps one of most interesting pieces of the discussion can be seen in Jacques Maritain's view in "Natural Law in Aquinas" as it addresses the "artificial" and "function" in a manner which correlates with natural law. Maritain writes: "every being has its own natural law, as well it has its own essence. Any kind of thing produced by human industry has, like the stringed instrument... its own natural law, that is, the *normality of its functioning*, the proper way in which, by reason of its specific construction, it demands to be put into action, it '*should*' be used" (Maritain, 1991, 115). The moral obligation is linked with the way the object, "*should*" be used and, in the case of body augmentation, questions the use of advanced bionics for prosthetics, artificial implants to improve mental or physical conditioning, or the addition of cybernetic grafts on a perfectly normal body. It is the normality of function for these body augmentations to perform higher than the "natural" standard of normal individual body parts, yet it is not necessarily the normality of function of the whole human body to be augmented in areas or to be at a higher state of function. Here, two entities (literally linked together) have two levels of functionality and yet, as outlined, natural law would tell us that the whole (natural state) body would take precedence in importance.

As outlined, we can see that one of the key points of the concept of natural law is that it has not remained constant through the centuries – whether it be from within the Magisterium or without. Will what we deem to be "artificial" today at some future date fit into natural law theory as merely the progression of human evolution or extension of human form? It should be noted: "That the unnatural is

not innately bad. The unnatural or artificial, if sensitive to the Divine licensure under which we function, represents the fulfillment of the biblical commandment: 'and master it'"(Tendler, 1999, 107). While natural law has been used to address the problem of amputations, mainly through its corollary of the principle of totality, the question of adding non-biological portions to the body has not yet been addressed. One of the main difficulties in the application of natural law is the importance of its consistency of application. Like a building-block structure, rulings on issues build on each other: contraception's allowance would imply acceptance of abortions, and artificial insemination, which can imply pre-natal screenings, genetic engineering and so forth. Yet, as Shannon points out in "An Evaluation of Roman Catholic Medical Ethics:"

There has been no infallible declarations on issues of morality . . . This means that all declarations of the Magisterium are subject to re-evaluation. This does not imply, of course, that such declarations are meaningless, useless or irrational. It simply means that they are not the last word on the subject. (Shannon, 1981, 7)

Of course this brings to light the argument: Would the Magisterium agree with such a statement? With this in mind, we can see that the proponents of natural law have an eye open to the future, where possibilities of new definitions of body may be brought forth for natural law to encompass and use as a guide towards a moral end in the benefit of human advancement worldwide.

3.1 Mutilation, Totality & Human happiness/psychology

Another aspect to the principles we have overviewed can be seen in recent times with regard to the totality of person extending to more than the mere

physical. Such application has been put forward as another justification for organ donation. As we can read in "Transplantation of Organs: A comment on Paul Ramsey," Warren Reich speaks of the: "subordination of the physical perfection (of the donor) to his own perfection of grace and charity . . . This would expand the notion of the total person (psychological and spiritual, as well as physical) beyond that which was originally envisioned in the 'principle of totality'" (McCormick, 1975, 503). Of course St. Thomas certainly provides us with considerations on both grace and charity but perhaps most interesting for our examination is the connection between charity and the body that he provides. One of the less developed yet included Transhumanist ideal for reasons to manipulate human bodies that technically have no need for augmentation surgery would be for both the love of one's own body and the opportunities presented for an abundant source of discarded, disease-free organs and limbs for the needy. St. Thomas answers,

Whether a man ought to love his body out of charity?

I answer that, Our bodies can be considered in two ways: first, in respect of their nature, secondly, in respect of the corruption of sin and its punishment. Now the nature of our body was created, not by an evil principle, as the Manicheans pretend, but by God. Hence we can use it for God's service, according to Rm. 6:13: "Present . . . your members as instruments of justice unto God." Consequently, out of the love of charity with which we love God, we ought to love our bodies also, but we ought not to love the evil effects of sin and the corruption of punishment; we ought rather, by the desire of charity, to long for the removal of such things. . . . Although our bodies are unable to enjoy God by knowing and loving Him, yet by the works which we do through the body, we are able to attain to the perfect knowledge of God. Hence from the enjoyment in the soul there overflows a certain happiness into the body, viz., "the flush of health and incorruption," as Augustine states (*Ep. ad Dioscor. cxviii*). Hence, since the body has, in a fashion, a share of happiness, it can be loved with the love of charity. (Aquinas, *ST*, II II, Q.25, A.5)

This psychological aspect to totality and mutilation is not a totally unexplored aspect of catholic morality. Indeed, Pius XII states that not only physical goods, but also certain psychological goods, can justify mutilation. (Gallagher, 227)

Cosmetic surgery, that is, surgery performed for the purposes of correcting physical deformity or for the enhancement of physical attributes (that is not a threat to health) is as Janet Smith writes: “customarily justified as being for the sake of the psychological well-being of the whole person” (Smith, 1991, 185).

Even beyond cosmetic surgery, mutilation has several differing levels — the common denominator being the altering of natural functions. J.J. Lynch points out that: “The use of anesthetics, narcotics, hypnosis, etc., which deprive one temporarily of the use of reason, also entails mutilation,” (Lynch, 1967, 146) but goes on to say that, when performed under normative circumstances, are:

“altogether licit when medically indicated for the patient’s benefit” (Lynch, 146).

The purposeful use of narcotics would then be a mutilation of reason, a human faculty just as precious as one’s limbs or organs.

As we shall see, this danger of the mutilation of human reason may be one of the key issues in any understanding between our examination of Roman Catholic medical ethics and a Transhumanist philosophy. Yet another form of licit mutilation can be seen in blood transfusions and donations, since such actions do not, as J.J. Lynch explains: “diminish one’s bodily integrity to any considerable degree and because the ‘borrowed’ elements soon replace themselves. It would seem preferable, however, to classify these procedures as minor mutilations” (Lynch, 146).

One of the problems in examining totality presents itself when we over-analyze individual cases based on individual body parts or elements that the human body produces/uses. It is fair to say that on the most basic of levels each of us is not now as we used to be only a few moments ago. The body is always in a state of change and since every cell is replaced at least once every seven years (excluding neural tissues) to strictly argue against any “change” to the body would be a moot point. However, the consensus on totality and mutilation must consider the intent behind the act and any overall health to be gained. Kelly in his lengthy commentary on the emergence of medical ethics points out that in:

The case of mutilation presents an extremely complex set of issues. Distinction were made between non-sterilizing mutilations (amputations of limbs, lobotomies, appendectomies, etc.) and sterilizing mutilations (hysterectomies, vasectomies, etc.) Further complications arose when the purpose of the mutilation was for organ transplantation to another person or for medical experimentation... [For non-sterilizing mutilations] Most authors ultimately accepted the fact that all mutilations were ‘direct’ in the physical sense. They were justified according to the principle of totality, which holds that a part of a physical body may be mutilated if it is necessary for the physical health of the whole individual physical organism. (Kelly, 1985, 267)

Even beyond the contribution to medical ethics, St. Thomas’s base on mutilation and totality was appealed to in Canon Law¹⁶ as we can see in the “Rules for Irregularity.” In this particular case dealing with priestly heartiness and the impediment of receiving holy orders, as we can read:

¹⁶ Canon law is the body of laws and regulations made by or adopted by ecclesiastical authority, for the government of the Christian organization and its members. The word *adopted* is here used to point out the fact that there are certain elements in canon law borrowed by the Church from civil law or from the writings of private individuals, who as such had no authority in ecclesiastical society. Canon is derived from the Greek *kanon*, i.e. a rule or practical direction (not to speak of the other meanings of the word, such as list or catalogue), a term which soon acquired an exclusively ecclesiastical signification. (New Advent, 2003a, ¶1)

Mutilation, in the canonical sense, is the separation from the body of one of its principal members or of some part of the body having a distinct office, as a hand or a foot or an eye. He, therefore, who cuts off a finger is not a mutilator, unless it be the index finger or thumb, which, for a priest, are accounted principal members. Those who mutilate themselves or procure mutilation without just cause incur irregularity. (New Advent, 2003c, ¶6)

Of course with regard to the broad scope of the *Summa Theologiae* the statement on irregularity immediately refers to the impediments of receiving Holy Orders, yet the crux of the statement is in my opinion, “without just cause.” This is to say that in an application of mutilating functioning memory or sensory organs would violate the spirit of the statement. Body and soul in unity has always been an important element in moral theology and within the analysis of totality and mutilation, we can see a complementary principle that refers most often to the hierarchical natural life functions in respect to bodily integrity. The “principle of integrity” focuses on the functions of the conscience and reason and unites with totality to bring a discussion of body ethics to a series of levels. No one level, higher functions or lower bodily functions, may ever directly be violated without causing incongruity between the principles, the wholeness of the person and the teachings of the magisterium. We can read in “Ethics & Medics – A Catholic Perspective on Moral Issues in the Health and Life Sciences:”

Usually the principle of totality is seen as being directed toward the preservation of the physical whole of the human body while the principle of integrity refers to the respecting of the hierarchical ordering of the members of the body with “the values of intellect, will, conscience, and fraternity (being) preeminent” [*Gaudium et spes*, no. 61]. As Pope Pius XII pointed out in his address to the Congress of Psychotherapy and Clinical Psychology on April 15, 1953, “Man is an ordered unity, one whole, a microcosm, after the fashion of a State whose charter, determination by the end of the whole, subordinated to this end the

activity of the parts in the right order of their value and function.” (Hass, 1995, 2)

Further, St. Thomas adds to the understanding of the body and unity as whole in his discussions on the soul or intellect being united with the body. We can see this for example in Q. 75, A.6, Response to Objection 3.

Whether the intellectual soul is properly united to such a body?

Objection 3. Further, since the form is the principle of the species, one form cannot produce a variety of species. But the intellectual soul is one form. Therefore, it should not be united to a body which is composed of parts belonging to various species. . . .Reply to Objection 3. The parts of an animal, for instance, the eye, hand, flesh, and bones, and so forth, do not make the species; but the whole does, and therefore, properly speaking, we cannot say that these are of different species, but that they are of various dispositions. This is suitable to the intellectual soul, which, although it be one in its essence, yet on account of its perfection, is manifold in power: and therefore, for its various operations it requires various dispositions in the parts of the body to which it is united. (Aquinas, *ST*, II II Q.75 A.6)

To be certain the concepts of “body,” “soul,” and “species” as known to St. Thomas are surely not identical with modern scientific affirmations but in our examining of the approaches towards body augmentation technologies they are beneficial both as historic basis and varying opinion. The ideas on “body,” “soul,” and “species” also lead us to further discussions on “happiness” and inasmuch as it is the ultimate end goal of both philosophies, all are greatly significant. The goal of Transhumanist philosophy seeks happiness in the augmented individual, though the body and senses, for the augmented human is seen as the ultimate evolution of the animal kingdom and the ultimate good. These goals are the driving force behind research into augmentation and yet St. Thomas once again

anticipates such goals towards happiness (though certainly not in the context of cybernetic manipulations as a route) in *The Human Good*. We can read:

Chapter 32: Happiness does not consist in bodily good.

Similar consideration will show that man's highest good does not lie in goods of the body, such as health, beauty and strength, for these too are common to the good and evil, are unstable and are not subject to will. Moreover, the soul is better than the body, which only lives and has the aforementioned goods though the soul. Therefore since the good of the soul, such as understand and the like, is better than the good of body, the good of body cannot be man's highest good. Again, these goods are common to man and other animals, but felicity is man's proper good. Therefore man's felicity cannot lie in such goods. Moreover, many animals excel men with respect to goods of the body, for some are swifter than man, some more robust, and so on with others. Therefore, if man's highest good were to lie in these, man would not be the best of animals, which is clearly false. (Aquinas, *ST*, II I, Q.2, A.5)

Here St. Thomas warns against planting one's happiness in such things as the body's "health, beauty and strength," giving reasons of instability, commonality and the fact that they are outside of will. Also we see that function is addressed in terms of a person's limitations via "swiftness" and being "robust," speed and strength in terms of human capacity. It is interesting to see that St. Thomas has addressed some of the very yearnings of Transhumanism – their appeal to increase human "goods of the body" and to increase the measure of human speed and strength. We see this again in the comments on human senses:

Chapter 33: Human happiness does not lie in the senses.

For much the same reasons it is apparent that man's highest good cannot lie in goods of the sensitive part, for these goods too are common to man and other animals. Again, intellect is better than sense; therefore the good of intellect is better than the good of sense. Man's highest good, therefore, cannot lie in sense. Again, the keenest sense pleasure lies in food and sex, in which the highest good would have to lie, if it were in sense. However, it goes not lie in these, and therefore man's highest good is not in sense.

Moreover, the senses are loved for their usefulness and for the sake of knowledge. But the whole usefulness of sense is with respect to goods of body. But sense knowledge is ordered to intellectual, hence animals lacking intellect delight in sensing only with reference to its usefulness with respect to body, insofar as good and sex are consequent upon sense knowledge. Therefore, man's highest good, which is happiness, does not lie in the sensitive part. (Aquinas, *ST*, II I, Q.2, A.6)

Because knowledge and intellect are higher than sense, the purpose of which is to aid the intellect and hence knowledge, it is in error to think that happiness lies in senses themselves. This point leads to the question of the expansion and extension of human senses and intellect, as we shall see in our examination of sensory and mental augmentations. Even the Transhumanist goal of augmented bodies towards an aim of perfect human health is addressed by Aquinas in I II,

Question 2, Article 5:

Whether man's happiness consists in any bodily good?

Objection 1. It would seem that man's happiness consists in bodily goods. For it is written (Sirach 30:16): "There is no riches above the riches of the health of the body." But happiness consists in that which is best. Therefore it consists in the health of the body.

Objection 2. Further, Dionysius says (Div. Nom. v), that "to be" is better than "to live," and "to live" is better than all that follows. But for man's being and living, the health of the body is necessary. Since, therefore, happiness is man's supreme good, it seems that health of the body belongs more than anything else to happiness. . . .

On the contrary, Man surpasses all other animals in regard to happiness. But in bodily goods he is surpassed by many animals; for instance, by the elephant in longevity, by the lion in strength, by the stag in fleetness. Therefore man's happiness does not consist in goods of the body.

I answer that, It is impossible for man's happiness to consist in the goods of the body; and this for two reasons. First, because, if a thing be ordained to another as to its end, its last end cannot consist in the preservation of its being. Hence a captain does not intend as a last end, the preservation of the ship entrusted to him, since a ship is ordained to something else as its end, viz. to navigation. Now just as the ship is entrusted to the captain that

he may steer its course, so man is given over to his will and reason; according to Sirach 15:14: "God made man from the beginning and left him in the hand of his own counsel." Now it is evident that man is ordained to something as his end: since man is not the supreme good. Therefore the last end of man's reason and will cannot be the preservation of man's being.

Secondly, because, granted that the end of man's will and reason be the preservation of man's being, it could not be said that the end of man is some good of the body. For man's being consists in soul and body; and though the being of the body depends on the soul, yet the being of the human soul depends not on the body, as shown above (I, 75, 2); and the very body is for the soul, as matter for its form, and the instruments for the man that puts them into motion, that by their means he may do his work. Wherefore all goods of the body are ordained to the goods of the soul, as to their end. Consequently happiness, which is man's last end, cannot consist in goods of the body. (Aquinas, *ST*, I II, Q.2 A.5)

Even beyond this, Aquinas tells us in his Question 4: *What is needed for Happiness*, in *The Ultimate End*, Article 5: *Is the body required for man's happiness?*

It should be said that happiness is the soul's perfection of soul on the part of intellect thanks to which soul transcends bodily organs, not insofar as it is the form of a natural body. Therefore, the perfection of its nature remains insofar as happiness is due it, although not insofar as it is the form of body. (Aquinas, *ST*, II I, Q.4, A.6)

It would appear then that in Thomism, the Transhumanist view not only fails to see stewardship as a possibility of the human condition but it also holds to a) foundation goals that are body-centered in a limited perspective and b) St. Thomas's view shows the body as more than the sum of its parts while at the same time giving it a place in the cosmic order. Is this view still maintained by the present-day Roman Catholic church? An examination of recent rulings on

organ transplantation and body-ethics by Pope John Paul II would lead one to presume so. In 1991 at the First International Congress for the Society for Organ Sharing Pope John Paul II wrote: "In effect the human body is always a personal body, the body of a person. The body cannot be treated as merely physical or biological entity, nor can its organs and tissues ever be used as items for sale or exchange... [Without] such a perspective, grafting of tissue would correspond to the dispossession or plundering of a body" (John Paul II, 1991, ¶4). This "plundering" of the body would be inconsistent with a Thomistic set of rules and above all would ignore the fact that a body is more than the sum of its parts. This is not to generalize the prohibitions that we have outlined as an arrest to scientific research and technological advancement on the part of the Church. As we see the Church does hold to the responsible advancement of most technologies as outlined in documents put out by the Pontifical Academy for Life and the Pontifical Academy of Science.

Apart from St. Thomas, we find that there are those that would warn that a philosophy seeking happiness in an augmented body risk the exact opposite:

The term 'cyberpsychosis' has emerged in science-fiction circles (originating, perhaps, with the role-playing game *CyberPunk* produced by R. Talsorian Games, Inc.) to designate a state of mental illness that results from sacrificing too much of one's humanity in the course of cybernetic modification. When the brain becomes embossed by computer chips, or the body drastically redirected from normal chromosomal development, the question of self-identity takes on new existential urgency. The cybernetically infiltrated person can no longer cling to even the simple protective assertion, "I am human." The sense of dependency on the machine, already the origin of much anxiety in today's world, as Alvin Toffler and W. H. Auden exhort in their separate writings, can hardly cease from magnification when the machine literally penetrates the body and mind (Toffler 1970; Auden 1948). We should not, then, lightly dismiss the possibility that the crisis of identity rendered more likely by

the cyborg lifestyle might lead some hybridized persons to experience crippling neurosis or even madness. The danger is exacerbated because a human being is a complex system, much like an ecosystem or a nation in possessing many layers that interact holistically. Tinkering with such multifaceted systems can have unexpected side effects. (Crittenden, 2002, ¶32)

The dilemmas of the “self” clash with seeking happiness when one pauses to consider just how much of *myself* can I change and still be *myself*. We see such pondering by Harmon L. Smith in discussions on multiple organ transplants and I foresee the predicament extending itself from transplanted biological organs to transplanted artificial organs.

I’ve sometimes wondered how much of my body I could be without before ceasing to be myself: an arm or leg, or eyes or larynx, or perhaps a kidney, or half my stomach, or something else . . . I have sometimes wondered how many organs from other persons could be transplanted into my body before I would no longer be myself. Where, indeed, does one draw the line? (Smith, 1970, 113)

3.2 Mutilation, Stewardship & Totality in Reproductive Issues.

Although we can find much discussion of all totality principles, two of the most important documents with regards to totality and mutilation today (apart from, yet built upon St. Thomas’s original text) are Pius XI’s encyclical *Casti Connubii* (*On Chastity in Marriage*, 1930) and Paul VI’s *Humane Vitae* (*On the Regulation of Birth*, 1968).

Pius XI continued to advocate Thomistic principles that Aquinas had set down:

Furthermore, Christian doctrine establishes, and the light of human reason makes it most clear, that private individuals have no other power over the members of their bodies than that which pertains to their natural ends; and they are not free to destroy or mutilate their members, or in any other way

render themselves unfit for their natural functions, except when no other provision can be made for the good of the whole body. (Pius XI, 1930, ¶71)

Casti Connubii and *Humane Vitae* deal primarily with questions concerning human fertility, sexual relations and marriage, but since the body itself is addressed, both are extremely important in any consideration of possible new views of the human body. Examining such reproductive issues gives us an insight as to how the Church approaches new technologies that affect the body. The cases show us that aspects of both an individual's rights, a state's laws, experimentation and risk are all considered in any judgments on technologies that can affect human organs, relationships and society as a whole. The power over the members of one's body is limited, yet even the power of the whole body is limited in that the stewardship of the individual is bounded. This stewardship of the body and its link to the principles of totality and mutilation is carried forward in the statements and encyclicals of other popes, from Pius XII to today. We see stewardship directly addressed by St. Thomas in the Reply to Object 2 in Question 65 where the added component of "direction" is given. In St. Thomas's reading the ultimate direction is not something that can be found in man or indeed in the many ideas he explains in his writings on *The Ultimate End*. As we have previously seen, the very definition of mutilation is connected to stewardship or dominion' over the body. I outline three differing statements on this point, and while all are slightly different, the crux goes to the heart of stewardship and the issues of the body that will naturally stem from such issues. Margaret Monahan Hogan explains:

In exercising stewardship, the person is permitted the use of the faculties and powers of the body and soul in accord with the immanent finality of the faculties or powers in the service of the whole. The person may not destroy the faculties or powers unless their destruction is required for the good of continued existence or that of mending or avoiding serious injury. (Hogan, 1993, 25)

Gallagher outlines this stewardship with reference to Luis Molina:

Man is not the master of his own life and members as he is the master of money and of other external goods which pertain to him and which he possesses. The Lord indeed conceded to men dominion over external goods ... but dominion over life and members, the Author of Nature who created them, reserves to Himself. (Gallagher, 224)

Bert Joseph Cunningham, in *The Morality of Organic Transplantation*, expresses his analysis of the theological principle of God's dominion over the human body by:

Mutilation is forbidden by the formal, negative element of the Fifth Commandment. Now the Fifth Precept forbids man to take his own life as well as the life of another because man does not have absolute dominion over his own body, nor over the body of his neighbour... Theologians in general will constantly appeal to the basic principle of man's relative dominion over his own body, a dominion which render him only the guardian of his body and of its welfare, and which prevents him from taking away life, since life came from God alone. (Kelly, 1979, 335)

We have looked at cases in which the principle of totality was interpreted to extend beyond the singular body and even beyond the physical. When *Humane Vitae's* proclamation against contraception was released, totality was once again examined. Totality was held by both sides in the contraception debate as justification, both pro and con.

We can read in *Humane Vitae a Generation Later*:

Many contend that if a marriage in a general way is open to children, this need not be true of each marital act. They argue that sexual intercourse is directed toward the totality of the marriage... it is argued that as long as the 'totality' of the sexual acts of a marriage are ordered to procreation, it is not necessary for each act to be so ordered. Or, in other words, it is argued that it is all right to sacrifice the good of the part... for the sake of the whole marriage. (Smith, 90)

Yet I find that, *Humanae Vitae* addresses this precise thinking and labels it erroneous, as we can read:

To justify conjugal acts made intentionally infecund, one cannot invoke as valid reasons the lesser evil, or the fact that such acts would constitute a whole together with the fecund acts already performed or to follow later, and hence would share in one and the same moral goodness. In truth, if it is sometimes licit to tolerate a lesser evil in order to avoid a greater evil or to promote a greater good, [17] it is not licit, even for the gravest reasons, to do evil so that good may follow there from; [18] that is, to make into the object of a positive act of the will something which is intrinsically disorder, and hence unworthy of the human person, even when the intention is to safeguard or promote individual, family or social well-being. Consequently it is an error to think that a conjugal act which is deliberately made infecund and so is intrinsically dishonest could be made honest and right by the ensemble of a fecund conjugal life. (Paul VI, 1968, ¶14)

Ralph McInery continues this traditional interpretation of totality in "*Humanae Vitae* and the Principle of Totality:" "The conceptual question facing the proponents of the principle of totality, then, seems unanswerable. How can a plurality of acts have a moral character denied to each of them taken singly? To speak of single acts as episodes suggests that they can have no moral value as such" (McInery, 1993, 340).

Direct sterilization (hysterectomy, ovariectomy, vasectomy, anovulants, etc.), the purpose of which is to prevent the possibility of conception without reason for health of the body also figures prominently in both encyclicals and the

papal addresses. Such sterilization is considered a grave mutilation since not only does it violate the wholeness of the body, but also mutilates the functions of the procreative organs which hold a special significance in their ability to bring new life into the world. To this end, the reproductive organs hold a kind of double-responsibility: towards that of the current body and to the possibility of a new life and a new independent body. Margaret Monahan Hogan explains direct sterilization as outlined by Pius XII: “The designation ‘direct’ was applied to sterilization if the procedure intends either as an end in itself or as a means to make childbearing impossible” (Hogan, 29). Pius XII said: “Direct sterilization – that is, the sterilization which aims, either as a means or as an end in itself, to render child-bearing impossible – is a grave violation of the moral law, and therefore unlawful” (Hogan, 29). A second determination comes into the sterilization equation when we consider the various other means that can achieve the same end: abstinence or chaste actions – attributes which put reason and will ahead of the body. Yet a further historical link with such thinking can be seen in the argument of whether or not mutilation is licit for purposes of castration with the desired effect of lowering the sex drive. Again, such an action would be disallowed with the underlying justification upholding will and reason over other methods, as Aquinas explains, “Chaste actions may always be achieved without mutilation, however, because such actions are subject to the will” (Aquinas, *ST*, II Q. 65 A. 1).

This brings into the view the question of risk. When determining the degree of risk that a person might undergo, one must also keep in mind the

difference between therapeutic and non-therapeutic research. The same principle of totality cannot be invoked in the case of non-therapeutic experimentation because one person is not related to another person or to society simply as part of the whole. Each individual person is an end in herself or himself and cannot be sacrificed for another, although all share in one common good. This is the basic reason why the public authority has no right to sacrifice individuals for the interest of the state or for scientific progress. Experiments carried out for the good of the state or for scientific progress may provide new knowledge or medical techniques and thus seem beneficial, but they do so at the expense of human rights and human dignity and therefore are immoral. (Ashley & O'Rourke, 347)

3.3 Totality, Mutilation & Stewardship in regards to body augmentation, xenotransplantation and artificial limbs/organs

In looking towards the future application of the principle of totality and the principle of mutilation it is important that we distinguish between the kind of body augmentation technology to which we are referring. While there are several differing types of organ or limb transplantation, they fall into three main types: xenotransplantation, allotransplantation, and artificial transplantation or grafting.

Xenotransplantation refers to the transplantation of organs between *different* species (to date it has excluded inter-species limb transplantation). Transplantation within the human species (allotransplantation) has established an acceptable clinical role, especially involving organs such as the kidney, heart, liver and bone marrow. In fact, its success has led to demand far outstripping

supply; primarily due to shortage of available human donor organs.

Allotransplantation can include re-attachment of lost limbs: primarily digits, hands or the lesser body-parts. The justification for the mutilation involved in allotransplantation is the benefit to the recipient — in proportion to the loss of the donor.

The third category is different from the previous two because of its artificial nature. These body augmentation devices contain no biological component. They are purely synthetic and may (or may not) exceed normal functioning of a comparable natural element. Further, the question of artificial prosthetics and organs in body augmentation can be broken down according to circumstances:

- a) Artificial transplantation used to take the place of a lost/dying limb/organ.
- b) Artificial transplantation used to replace an existing healthy limb/organ.
- c) Artificial transplantation used in medical experimentation/research.

Case a) would appear to be the least controversial with regards to the principles we have outlined. Indeed, for hundreds (if not thousands) of years artificial devices have been used to replace or repair human limbs and organs. The use of such body augmentation is not unusual and where artificial or cadaver organs will provide the same benefit there is obviously no proportionate reason for the loss to the living donor. The uncertainty arises when we look to the future and the advances in technology that allow for superior function, above the normative biological standards, of such artificial additions. An artificial arm which functions at the same basic level as the original holds no great challenge to traditional moral foundations of natural law, totality and mutilation. Aquinas's

Reply to Objection 1 in Question 65 explains that maiming *per se* is not prohibited, but like so many of his declarations one should not halt at one reply; there is no free-license to mutilating surgeries or punishments in this single reply. The basic concept regarding such a limb-replacement surgery falls within the guidelines St. Thomas set out and today is a standard procedure. We can read: "Now every part is directed to the whole, as imperfect to perfect, wherefore every part is naturally for the sake of the whole. For this reason we observe that if the health of the whole body demands the excision of a member, through its being decayed or infectious to the other members, it will be both praiseworthy and advantageous to have it cut away" (Aquinas, *ST*, II II Q.64, A.2). Yet, if we look beyond today's surgeries we may find some unanswered questions. An artificial arm that provides for the tensile strength two times as much as the original may even be labeled as relatively standard, yet what of ten times? One hundred times? One thousand times?

Of all the situations, Case b) appears to have the most opposition in regards to totality and mutilation. As we have seen, Aquinas states quite clearly that: "... so long as a member is healthy and retains its natural disposition, it cannot be cut off without detriment to the whole human being" (Aquinas, *ST*, II II, Q.61 A.5). Indeed, there are multiple reasons, covered by medical and ethical precedent that would hold such a situation to be out of the question: unnecessary risk, no immediate threat to one's health from the existing limb/organ, reliability of the replacement, risks of rejection, etc. Case b) falls into the category of direct mutilation, quite opposite from a case of indirect mutilation which as Fr.

Ludovico Bender defines, “[Indirect mutilation] is of itself an indifferent act which, because of circumstances, produces mutilation; it is lawful if the act is proportionate to the damage ensuing, or justified by circumstances” (Bender, 805). Upon initial examination of case b) we have no situation that serves the good of the whole body, as Gallagher outlines: “Since a member is meant to serve the whole body, it should be dealt with as to serve the body. If it serves the body best by being cut off, then it is licit to cut it off” (Gallagher, 219). Yet it is precisely this view (extrapolated) that such groups as the Transhumanists use to justify their desire for use of the artificial over the biological.

Here the principle of totality and mutilation can be seen as aimed more towards the modern interpretation, as we have previously outlined, wherein the removal of an organ or limb is aiming at a higher value and seeking a higher benefit – beyond the physical good of the whole and seeking happiness of the individual.

Let us return to our examination of applications of totality and mutilation in the modern world with our last Point – c). This scenario would also seem to come into conflict with the general outlines that both principles put forward. As we can read in “The Moral Limits of Medical Research and Treatment” by Pius XII: “knowledge as such and the full understanding of any truth raise no moral object. By virtue of this principle, research and the acquisition of truth for arriving at new, wider and deeper knowledge and understanding of the same truth are in themselves in accordance with the moral order” (Pius XII, 1952, ¶7). But, “Sometimes it happens that a method cannot be used without injuring the rights of

others or without violating some moral rule of absolute value” (Pius XII, 1952, ¶8). As Dr. Carlo Rizzo defines in the *Dictionary of Moral Theology*, “Grafting and transplantation are not permissible if practiced on human beings out of mere experimentation and without immediate therapeutic purpose, especially when very important organs are involved” (Rizzo, 1962, 553). It is important to note that Dr. Rizzo is speaking of grafts which have been previously defined in four basic groups (very much along the same levels of organ transplantation): autoplasmic, homoplasmic, alleloplasmic, and heteroplasmic. (Rizzo, 552) Without over-extrapolating, these categories merely refer to the removal of a more or less large portion of tissue or of an organ from one part of the body to another, dependant upon whether the donor is the same individual, the same race, same species or differing species. (Rizzo, 553)

Again we see that a new addition must be made to the general list of grafting options – *synthplastic*: a non-biological, artificial graft. Whereas, “Grafts (or transplantations) are always allowed with elements removed from a corpse if they can help a sick person,” (Rizzo, 1962, 300) this new form is yet untested, unexplored, and yet appears to be within the limits of Pius’s statement and the traditional use of artificial or cadaver materials to spare living donors. One may see a possible paradox in the process of development: if experimentation with artificial grafting is considered impermissible without immediate therapeutic benefit (considering biological tissues can provide the solution), how could *synthplastic* agents be developed to spare living donors and cadavers?

Unfortunately, although St. Thomas has much material on knowledge, its direct

acquisition and even scientific vs. God-given variations of knowledge, the direct application to this particular scenario does not appear to be readily accessible.

Chapter Four: Sensory and mental augmentations, nanotechnology

Transhumanist attempts to give reason for and application of human memory/intellect augmentation without declaring an acceptance or rejection of a creator that has imbued humanity with reason. We can read:

Since some grand architect has not fixed our intelligence, we may also ask where it might evolve. Of course, if we are concerned exclusively with the course that natural selection might take we are engaged in some serious long-range forecasting. Natural evolution typically takes tens of thousands, if not hundreds of thousands of years. However, there are other means that will allow us to alter *Homo sapiens* in ways in which it would take natural selection hundreds of thousands if not millions of years to duplicate. (Walker, 2002, ¶5)

Three general methods are examined: 1) genetic manipulation of existing brain cells to further growth, 2) an eerie suggestion of new techniques for eugenic programs to breed greater intelligence into subsequent generations¹⁷ and 3) the use of computer technology such as memory storage and calculation speed to provide a boost to human intellect. The first two methods have been examined

¹⁷ As given by the Catholic Encyclopedia: Eugenics literally means "good breeding." It is defined as the study of agencies under social control that may improve or impair the racial qualities of future generations either physically or mentally. Both the word and the definition were fixed by Sir Francis Galton, the founder of the movement. The science has two chief divisions, namely, heredity and environment. Galton believed that heredity was by far the more important. He derived his main idea from the breeding of the race-horse. Just as we can breed horses for points, so also, it is contended, can we breed men for points. The eugenics movement, however, consists of more than study. It includes public action in the way of legislation, administration, and the influencing of human conduct. (New Advent, 2003b, ¶1)

and rejected by theologians but it is the third method that has yet to formally be addressed. *The Catholic World News* reported Feb. 24, 1998:

Pope John Paul II today denounced the spread of a trend toward “new selective eugenics,” and the tendency to use prenatal diagnosis as a tool for identifying and then eliminating handicapped children. He called for measures which could offer legal protect for every human life. The Pope’s remarks were delivered at the general assembly of the Pontifical Academy for Life, which is meeting at the Vatican this week to discuss the implications of the Human Genome Project. (Catholic World News, 1998, ¶1)

This third method is particularly advocated by Extropian philosophy – the Extropian philosophy is a Transhumanist philosophy based upon the Extropian Principles. The Extropian Principles define a specific version or “brand” of Transhumanist thinking. Like humanists, Transhumanists favor reason, progress, and values centered on our well being rather than on an external religious authority. Transhumanists take humanism further by challenging human limits by means of science and technology combined with critical and creative thinking. Extropians challenge the inevitability of aging and death, and we seek continuing enhancements to our intellectual abilities, our physical capacities, and our emotional development. We see humanity as a transitory stage in the evolutionary development of intelligence. We advocate using science to accelerate our move from human to a Transhuman or Posthuman¹⁸ condition. As physicist Freeman Dyson has said: “Humanity looks to me like a magnificent beginning but not the

¹⁸ Katherine Hayles gives assumption behind the definition of “posthuman” with the following: the posthuman view privileges information pattern over material form, so having a biological form is seen as an accident of history rather than an inevitability of life; posthuman view considers consciousness a mere product of biology; the posthuman view thinks of the body as the original prosthesis we all learn to manipulate, so that extending or replacing the body with other prostheses becomes a continuation of a process before we were born; the posthuman view configures the human being so that it can become interchangeable with intelligent machinery. (Hayles, 1999, 2)

final word” (Moore, 2003, ¶1). What does this mean in terms of plausible applications to the human body? We find that work is ongoing in the fields of nanotechnology and cybernetics in order to incorporate the flesh and silicon more efficiently:

Electronic organs, as they become ever smaller and more intimately connected to you, will lose their traditional hard plastic carapaces. They will become more like items of clothing—soft wearables that conform to the contours of your body; you will have them fitted like shoes, gloves, contact lenses, or hearing aids. Circuits may be woven into cloth. Microdevices may even be implanted surgically; electronic pacemakers and cochlear implants are now commonplace, neuromuscular simulation systems seem a promising way to repair spinal cord damage, there is intensive research into the possibility of implanted silicon retinas for the blind, and it is certainly not hard to imagine electronic ear studs, nose rings, or tattoos. Some chips are tiny enough to be injectable and have already been used for tagging and tracking wildlife and identifying pets. Once you break the bounds of your bag of skin in this way, you will also begin to blend into the architecture. In other words, some of your electronic organs may be built into your surroundings. (Mitchell, 1997, ¶4)

Foreseeing the development in cybernetic organisms, G.Q. Maguire, Jr. and Ellen M. McGee report on some of the latest developments in human-machine hybrids and call for more study into an area of technology that has the ability to change not only the physical form of the person, but the mind as well. Ellen McGee teaches ethics and medical ethics at Long Island University and is the director of The Long Island Center for Ethics. G.Q. McGuire, Jr. teaches computer communications at the Royal Institute of Technology in Stockholm, Sweden and has been working on mobile computing and communication for more than ten years. Noting that the rapid miniaturizations of electronics and

precedents in body enhancements have been developing as far back as the 1960s, Maguire and McGee begin their observations with the “Quite Revolution”¹⁹ in biotechnologies. With over three million people living with artificial implants worldwide, ranging from simple cosmetic prostheses to medical biochemical pumps which can replace or augment parts of the nervous system, the linking of human and artificial is no longer science fiction or a rarity. Maguire and McGee note:

If this trend is taken to its limit, computer chips and other electronic equipment implanted with human bodies might replace, augment, and enhance those most human of faculties, our memory and our ability to reason. We could see the coming to be of science fiction’s *cyborg*, a person who has an intimate, perhaps necessary relationship with a machine. (McGuire & McGee, 1999, 7)

Following the steps already taken in cyborg development Maguire and McGee trace bioelectronic development, particularly those that facilitate interfaces between neural tissues and micro probes. They note: “The first steps have already been taken in research on the cochlear implant and on retinal vision. Cochlear implants enable total deaf people to hear sound by directly stimulating the auditory nerve” (McGuire & McGee, 8). This type of implant is an example of a typical pattern – direct stimulation, overriding a damaged or missing nerve function with mechanical aid. Maguire and McGee continue noting that this process has been applied to vision as well: “Work on prosthetic vision was begun in the 1960s, when Giles Brindley attached eighty electrodes to miniature radio

¹⁹ The “Quite Revolution” refers to the rapid acceptance of biotechnologies in conjunction with the boom in miniaturization and computer processing speeds by many of the largest and most influential segments of society such as business and government institutions. Rarely were

receivers and implanted them into a sightless volunteer's brain, hoping to remotely stimulate the visual cortex" (McGuire & McGee, 8). Work on the process continued in varying forms and today visual cortex implants allow the user to recognize phosphene letters as well as patterns of light as darkness. Yet the technological interfaces do not stop at sensory augmentation – applied neural control to aid in contracting paralyzed muscles and in bladder control has also been implemented. As well, Maguire and McGee note a particularly unique development of human-machine hybrids, the wearable (developing into implantable) computer. Wearable devices allow the user to move about and interact freely with the environment while remaining in perpetual contact with either the Internet or others in their wearable-computing-network. Two examples of this are outlined for us:

Thad Starner, a Ph.D. candidate in Media Arts and Sciences at Massachusetts Institute of Technology, dresses in a wearable computer and lives connected to the Internet using a miniature computer terminal at all times. His device is the first stage of what he calls 'the BodyNet, a computer network wired through human bodies.' And Steve Mann, a professor of electrical and computer engineering at the University of Toronto has developed an Internet-connected computer that he has dubbed 'WearCam'. By combining wireless communication with information systems, WearCam allows one to augment and enhance experiences and, through networking, share them with others. (McGuire & McGee, 8).

Maguire and McGee appear to see such body networks as the first step towards the development of a new kind of mind – a collective mind. The developments can allow for the experiences of the same reality between two individuals and bring about the ability to share information, skills, and perceptions like never before. The benefits are quite impressive, Maguire and

"upgrades" to the latest and faster models of technology questioned and rarely were they

McGee note: “(1) the spreading of organizational expertise among workers, (2) providing fast access to procedural process, and schematic information for problem solving, (3) supporting process reengineering, (4) improving organizational memory, etc” (McGuire & McGee, 8). Even beyond the sharing of faculties, we can see a development of a collective consciousness – “the hive mind.” This type of consciousness they ascribe to the development of implantable brain chips, internalizing the wearable computing trends, and making bioengineered bodies common place. Maguire and McGee rightly point out the logical trend in application of bioelectronics with stages of introduction dependant upon the user. The first and easiest adopters being those with disabilities who, seek a more powerful prosthetic device, the next being a movement from therapy too enhancement, with non-disabled individuals seeking devices to augment faculties or senses. Maguire and McGee further speculate that military influences will come into effect at this stage with interfaces coupled to positioning, weapons, etc. Finally the third group of individuals will be those seeking to expand information transfer and capacity – workers, etc. all within roughly twenty to thirty years. Such a time-line and ordering is not unreasonable, and in fact we may have already succeeded in reaching the second stage in development.

We can see the looming question of social justice in the discussion of body augmentation when considering the words of George Annals: ““devices would not only permit us to locate all the implanted at any time, but could be programmed in the future to monitor the sound around them and to play subliminal messages directly to their brains.’ Governments could control and

monitor citizens” (McGuire & McGee, 11). There are of course other possible dangers that technologies such as brain implants could spur, among some of the more mainstream: the urge to alter children to provide competitive abilities, the social impact of implementing a technology that widens the divisions between genders as well as rich and poor, the unforeseen consequences to the image of self (recall theoretical “cyberpsychosis”). In their discussion of the self, Maguire and McGee do hypothesize on what effect supersensory perceptions may have on an augmented individual. With supersensory sight, people could see infrared, radar, ultraviolet images, etc. and the parallel continues with all senses. Just how these capacities could change our conception of “normal” human functioning has been theorized: “these technologies will affect the nature of personal identity and of the traditional mind-body problem. Modifying the brain and its powers could change our psychic states and alter the self-concept of the user, indeed our understanding of what it means to be human” (McGuire & McGee, 11).

Of course, the moral debate includes the integrity of the body and intrusions that technologies will have on the sanctity of the body. Maguire and McGee write: “Many people accept invasion of the organic by the mechanical for curative purposes but feel that using technology for enhancement is wrong. For them, respect for humans requires the physical integrity of the body” (McGuire & McGee, 10). This is of course a traditional religious viewpoint of many, including most issues in Catholic moral theology and Maguire and McGee explain, “on a religious sense improving on the design of creation insults the Creator” (McGuire & McGee, 10).

It is the speed of the advancements and the need for debate before the processes reach a point of no return that alarms those who seek to avoid a repetition of history in which society does first and questions seconds. This is to say that in a world where technological-body advancements are so rapid, they often outstrip ethicists and theologians who appear to be always one-step behind and a little out of breath. Beyond even the "hive-mind" we can see that augmentation technologies are able to stretch into each part of the person, organ by organ, limb by limb and even into blood-cells themselves. Once a mature molecular nanotechnology becomes available, could we replace blood with a single, complex robot? This robot would duplicate all essential thermal and biochemical transport functions of the blood, including circulation of respiratory gases, glucose, hormones, cytokines, waste products, and all necessary cellular components. We discover theoretical work on this part of the body in *The Journal of Evolution and Technology* (A World Transhumanist production):

The device would conform to the shape of existing blood vessels. Ideally, it would replace natural blood so thoroughly that the rest of the body would remain, at least physio-chemically, essentially unaffected, but sustained in a cardioplegic state. It is, in effect, a mechanically engineered redesign of the human circulatory system that attempts to integrate itself as an intimate personal appliance with minimal adaptation on the part of the host human body. A robotic device that replaces and extends the human vascular system is properly called a "vasculoid," a vascular-like machine. But the vasculoid is more than just an artificial vascular system. Rather, it is a member of a class of space- or volume-filling nanomedical augmentation devices whose function applies to the human vascular tree. The device is extremely complex, having ~500 trillion independent cooperating nanorobots. In simplest terms, the vasculoid is a watertight coating of nanomachinery distributed across the luminal surface of the entire human vascular tree. This nanomachinery uses a ciliary array to transport important nutrients and biological cells to the tissues, containerized either in "tankers" (for molecules) or "boxcars" (for cells).

The basic device weighs ~2 kg and releases ~30 watts of waste heat at a basal activity level and a maximum of ~200 watts of power at peak (e.g., Olympic sprint) activity level (Section 2.6). The power dissipation of the human body ranges from ~100 watts (basal) to ~1600 watts (peak), so the device presents no adverse thermogenic consequences to the user. The appliance is powered by glucose and oxygen, as may be common in medical nanorobotic systems. (Freitas & Phoenix, 2002, ¶4)

If a discussion on Roman Catholic approaches towards body augmentation becomes complicated when examining artificial organs or sensory networks, the implications of changing human blood into new substances would open a colossal new set of problems under the heading of symbolism alone – St. Thomas's writings on substance, accidental properties, eucharist would no doubt have fascinating comparative material alone on such a matter.

4.1 Implications on medical research and social justice

As shown, the questions which new artificial limbs, organs and grafts raise fall into a potpourri of moral theories, statements and regulations regarding transplantations, necessity, dominion over one's body, the evolving nature of the body, natural law, totality and mutilation. Perhaps Pius XII gave one of the best statements with regard to these issues:

We respect the principle of totality in itself but, in order to be able to apply to correctly, one must always explain certain premises first. The basic premise is that of clarifying the *quaestio facto*, the question of fact. Are the objects to which the principle is applied in the relation of a whole to its parts? A second premise is the clarification of the nature, extension and limitation of this relationship. Is it on the level of essence or merely on that of action, or on both? Does it apply to the part under a certain aspect or in all its relations? And, in the field where it applies, does it absorb the part completely or still leave it a limited finality, a limited independence? The answers to these questions can never be inferred from the principle of totality itself. That would be a vicious circle. They must be drawn from

other facts and other knowledge. The principle of totality itself affirms only this: where the relationship of a whole to its parts holds good, and in the exact measure it holds good, the part is subordinated to the whole and the whole, in its own interest, can dispose of the part. (Pius XII, 1952a, 13)

What are some possible dangers in extending the principle of totality and mutilation to include the advancement of particular abilities through the use of artificial organs, limbs, grafts and memory implants? Self-love; a disparity between those who can afford the latest technological organ upgrades and advancements and those who cannot; the possible development of abhorrence for the biological in favor of the synthetic or mechanical; the risk of increased physical or mental abilities leading to a new class of society. The Doctor of the Church warns us of finding direction in narcissism and the senses, setting foundations that remain at the core of medical guidelines used today. A Transhumanist approach to St. Thomas's views and Pius XII's statement would hold the last sentence to be the most consequential: "where the relationship of a whole to its parts holds good, and in the exact measure it holds good, the part is subordinated to the whole and the whole, in its own interest, can dispose of the part" (Pius XII, 1952a, 13). A more traditional approach could see the very same importance. The difference lay in the varying interpretations on "the good of the whole," continual advancement and new standards of the human form for Transhumanists, the integrity, responsibility and sacred nature of the body for traditionalists. For St. Thomas, the answer may be simpler as the questions asked today have been answered to his satisfaction centuries ago, recall the refutations on senses and bodily abilities being the ultimate good (section 3.1).

Attempting to answer any worry on artificially augmented physical or mental abilities leading to new classes of society and urging the integration of “post-humans” the apologetics of the Transhumanists point to values such as tolerance and acceptance. They argue that diversification of society is today held as a positive and assuming a condition such as social disparity between cultures (those that could take advantage of augmentation vs. those that could not either by moral or economic reasons) is no more than paranoia.

Modern, peaceful societies can have large numbers of people with diminished physical or mental capacities along with many other people who may be exceptionally physically strong or healthy or intellectually talented in various ways. Adding people with technologically enhanced capacities to this already broad distribution of ability would not need to rip society apart or trigger to genocide or enslavement. Inequity, discrimination, and stigmatization – against, or on behalf of, modified people – could become serious issues. Transhumanists would argue that these (potential) social problems call for social remedies . . . This is task that we can begin to tackle today by fostering a climate of tolerance and acceptance towards those who are different from ourselves. Painting alarmist pictures of the threat from future technologically modified people, or hurling preemptive condemnations of their necessarily debased nature, is not the best way to go about it. (Bostrom, 2003b, ¶15)

A thousand years may have passed since the conclusions of Aquinas yet the modern approach to bioethics and medical research holds congruency with the Doctor of the Church with such publications as the Pontifical Academy for Life’s Concluding Communiqué on the “Ethics of biomedical research. For a Christian Vision” put out in February of 2003. With it we are able to find the continued voice of the Church that speaks to not only body augmentations technologies, but all biomedical study. First and foremost the concluding paper situates and appreciated the characteristic nature of biomedical research to both grow upon

itself and function to aid humanity while at the same time insisting on the need for values. We can see this clearly in Article 2:

In the present setting, every new discovery in biomedicine seems destined to produce a “cascade” effect, opening up many new prospects and possibilities for the diagnosis and treatment of numerous pathologies that are still incurable. Obviously, the acquisition of a growing technical possibility of intervention on human beings, on other living beings and on the environment, and the attainment of ever more decisive and permanent effects, obviously demands that scientists and society as a whole assume an ever greater responsibility in proportion to the power of intervention. It follows that the experimental sciences, and biomedicine itself, as “instruments” in human hands, are not complete in themselves, but must be directed to defined ends and put in dialogue with the world of values. (Pontifical Academy for Life, ¶2)

Yet while approving of the quest for medical technologies to aid humanity and the quest for truth that research entails we find that clear warning is given to practices that may seek knowledge in pursuit of change that does not hold to the traditional welfare of the person. We see this point brought forth in Article 3:

. . . In principle, therefore, there are no ethical limits to the knowledge of the truth, that is, there are no “barriers” beyond which the human person is forbidden to apply his cognitive energy: the Holy Father has wisely defined the human being as “*the one who seeks the truth*” (*Fides et ratio*, n. 28); but, on the other hand, precise ethical limits are set out for the manner the human being in search of the truth should act, since “*what is technically possible is not for that very reason morally admissible*” (Congregation for the Doctrine of the Faith, *Donum Vitae*, n. 4). It is therefore the ethical dimension of the human person, which he applies concretely through the judgements of his moral conscience, that connotes the existential goodness of his life. (Pontifical Academy for Life, ¶3)

It is my opinion that the fourth article gives the clearest answer to any approach of body augmentation that finds itself seeking to change the nature of human function and seeks to “reset” the general biological limitations upon things like memory, intelligence, strength, agility, etc:

In the commitment to research and to recognize the objective truth in every creature, a particularly important role falls to scientists in the area of biomedicine, who are called to work for the well-being and health of human beings, the ultimate aim of every research activity in this field must be the integral good of man. The means it uses, must fully respect every person's inalienable dignity as a person, his right to life and his substantial physical integrity. (Pontifical Academy for Life, ¶4)

It is this "respect" for "every person's inalienable dignity as a person, his right to life and his substantial physical integrity" that is the key. Human dignity, social justice and the person striving for authenticity in life are the standards by which any body augmentation technology must consider. This article in fact quotes Pope John Paul II during the Address to the participants in the Ninth General Assembly of the Pontifical Academy for Life, at which the Pope reaffirmed:

I therefore renew my heartfelt appeal so that scientific and biomedical research, *resist every temptation to human manipulation*, dedicate itself firmly to exploring ways and means to sustain human life, to treat disease and to solve the new problems that arise in the biomedical domain. *The Church respects and supports scientific research* when it has a genuinely humanist orientation, avoiding any form of instrumentalization or destruction of the human being and keeping itself free from the slavery of political and economic interests. In presenting the moral orientations dictated by natural reason, the Church is convinced that she offers a precious service to scientific research, doing her utmost for the true good of the human person. In this perspective, she recalls that, not only the *aims*, but also *the methods and means* of research must always respect the dignity of every human being, at every stage of his development and in every phase of experimentation. (John Paul II, 2003b, ¶4)

Echoing the adage that the ends never justify the means, we find in Article 9 the case for a halt to embryonic experimentation is also relevant to any approach that a Transhumanist philosophy would argue could improve human living conditions and capacities in the future.

The attitude some adopt concerning the legitimacy of sacrificing the (physical and genetic) integrity of human beings . . . in order to benefit other human individuals is likewise totally unacceptable. It is never morally licit to do evil intentionally in order to achieve ends that are good in themselves. (Pontifical Academy for Life, ¶9)

Recognizing that dangers on the greater social level may manifest if biomedical research fails to protect human dignity and integrity we see that Article 10 aims at justice on a global level, warning of a disparity between societies:

The current process of progressive globalization that involves the whole planet and whose consequences do not always seem to be positive, impels us to reflect on biomedical research under the heading of its social, political and economic implications. Given the growing limitation of the resources that are available for the development of biomedical research, it is in fact necessary to pay great attention to achieving a just distribution between the different countries, taking into account the living conditions in the various parts of the world and the emergence of the primary needs of the poorest and most harshly tried peoples. That means that all should be guaranteed the conditions and minimal means so that they can enjoy the benefits deriving from research, and develop and support an endogenous capacity for research. (Pontifical Academy for Life, ¶10)

Responding to the opinions of human dignity set forward, Transhumanists counter that dignity should be seen on various levels and extended to all:

Human dignity is sometimes invoked as a polemical substitute for clear ideas. This is not to say that there are no important moral issues relating to dignity, but it does mean that there is a need to define what one has in mind when one uses the term. Here, we shall consider two different senses of dignity:

- Dignity as moral status, in particular the inalienable right to be treated with a basic level of respect.
- Dignity as the quality of being worthy or honorable; worthiness, worth, nobleness, excellence. (The Oxford English Dictionary)

On both these definitions, dignity is something that a posthuman could possess. What appears to worry bioconservatives is that introducing new kinds of enhanced person into the world might cause some individuals (perhaps infants, or the mentally handicapped, or unenhanced humans in general) to lose some of the moral status that they currently possess, and that a fundamental precondition of liberal democracy, the principle of equal dignity for all, would be zapped. The underlying intuition seems to be that instead of the famed "expanding moral circle", what we have is more like an oval,

whose shape we can change but whose area must remain constant. Thankfully, this purported conservation law of moral recognition lacks empirical support. The set of individuals accorded full moral status by Western societies has actually increased, to include men without property or noble decent, women, and non-white peoples. It would seem feasible to extend this set further to include future posthumans, or, for that matter, some of the higher primates or human-animal chimaeras, should such be created. (Bostrom, 2003b, ¶18)

It is interesting to note that the Transhumanist counter to arguments on the level of human dignity makes appeal to the feasibility of extending equal dignity and fundamental moral status to all under the rubric of Western law and society's acceptance. This then is an aspect of Transhuman faith – faith that the existing social laws will expand based upon natural reason and precedent.

Yet, the limits on medical research and experimentation as outlined by Roman Catholicism are not aimed solely at the research community. The interests of the patient cannot be counter to their own good on the levels of totality that we can previously outlined, the Roman Catholic position on this can be seen in “The Intangibility of the Human Person” as given by Pius XII: “The patient has not the right to involve his physical and psychic integrity in medical experiments or researches, when these interventions entail either immediately or subsequently, acts of destruction, or of mutilation and wounds, or grave dangers” (Pius XII, 1952a, 199). The well being of a patient is the utmost concern and justifiably so as it is ultimately one's state of health that determines functionality throughout life.

Chapter Five: Lonergan & Social Justice on Augmentation Technology

D.M. Thomas explains that a function of the Church is to signal society when threats to humanity, as it perceives, are immanent. To this end he explains:

Part of the prophetic role of the Church is to alert its members and the world at large as to violations in the area of social justice. As life in the world becomes more dependent on the products of technology, sensitivity to availability and distribution becomes more a moral issue. (Thomas, 2003, 787)

If healthcare must serve the totality of a human person, not only their biological functioning, but all ethical decisions should respect the innate and cultural needs of the human person as a member of the world community. Human health is different from merely vegetative or animal health because it involves personality and the sharing of intellectual and spiritual goods (primarily truth and love). Moreover people may lead very fulfilled and valuable lives despite serious physical defects – Beethoven’s deafness, Milton’s blindness, Stephen Hawking’s motor neurone disease. Conversely physical perfection is no guarantee against social and spiritual sickness as typified by Hitler’s SS troops.

Even apart from the extremes, Paul Tillich suggests that many mistake genuine health for what he terms “unhealthy health.” It comes about if healing under one dimension is successful but does not take into consideration the other dimensions where health is lacking or even imperilled by the particular healing. Successful surgery may produce psychological trauma; effective drugs may calm down an uneasy conscience and preserve a moral deficiency; the well-trained athletic body may contain a neurotic personality; the “healed” patient of the analyst may still be sick through lack of any ultimate meaning to life; the

conformist's average life may be sick through inhibited self-alteration; the converted Christian may suffer under repressions which produce fanaticism and may explode in lawless forms; the same society may produce psychological and biological disruptions by the desire for creative insanity. (see *The Meaning of Health*) Individual health is not exclusively an affair of organs and limbs but of the capacities to function humanly. We have seen that various specific abilities may be reasonably sacrificed when essential for the safety of the whole person. Minor functions can at all times be surrendered for more fundamental ones, e.g., amputation of a gangrenous toe to save the foot. Nevertheless the basic functional powers cannot be sacrificed unless this is the only way to preserve life. The good of the human person entails that all basic aspects of the human person be simultaneously respected, even when it is necessary to subordinate, or even in some measure to sacrifice, a lower function to a higher function.

Authentic health must be a multidimensional wholeness and to this end authenticity itself becomes a goal. Canadian Jesuit philosopher and theologian, Bernard Lonergan, devoted most of his life to the elaboration of an integrated and generalized method of inquiry and authenticity giving, in my opinion, a good base to continue our examination of the ethical responses of the Transhumanists and Roman Catholics towards technologies. Lorraine Beaudin, writing on Bernard Lonergan's notions of authenticity and technology integration gives parallels between genuineness and the addition of technology. Although she addresses authenticity and technology in the field of education, I find that her reasoning is applicable to body augmentation in that the technological integration in terms of

body modifications is expanding and linked towards achieving a theoretically higher end-result just as in learning scenarios. Beaudin writes:

Like authenticity, technology integration is never complete. One is never fully authentic – one is always moving towards higher levels of authenticity. Similarly, one is never finished with technology integration. Emerging technologies create new ideas, new opportunities and new questions. If one is to be authentic, one has to attend to all this activity. (Beaudin, 2002, 131)

A Transhumanist position on technological changes to the person in order to create new opportunities attempts to become a more authentic human via augmentations, but ultimately fails to address the fundamental question of authenticity on the level of reasoning. This is to say that Lonergan's call for authenticity stemming from the sustained effort to be attentive, intelligent, reasonable, and responsible via observing, understanding, judging and action, do not come to the same end as a Transhumanistic endeavour. While the efforts to augment a human body, either on the physical or mental level, may be via attentive observation and intelligent questioning of limitations, it is in the stages of reasonable evaluation and responsible action that they fail to live up to *moral* standards. The desire of a Transhumanist philosophy is the betterment of the individual and society but the judgments they have developed out of reflection and understanding of current technological advances do not fall within the limits of medical reasonableness, and the process that one would have to undergo in order to achieve higher levels of cybernetic integration do not fit within reasonable action and accountability. The route to authenticity, however, is not a

straightforward one and many choose to live unauthentic lives; others

“authentically realize unauthenticity.” Lonergan explains this for us:

The sacred name of science may still be invoked but . . . all significant scientific ideals can vanish to be replaced by the conventions of a clique. So the unauthenticity of individuals becomes the unauthenticity of a tradition. Then, in the measure a subject takes the tradition, as it exists, for his standard, in that measure he can do no more than authentically realize unauthenticity. (Lonergan, 1972, 80)

Lonergan suggests in *Insight* that freedom is always exercised in a matrix of human relationship, in community, because we human beings have a primordial sympathy for one another. He explains that we do not live with one another as in an ant hill but in relationship with feelings and commitments. (see *Insight*)

Lonergan reminds us that human progress is essentially and prominently a healing. Because ethical judgments are intrinsically conditioned by the character of the data on which they are based, they are necessarily open to continual refinement and even revision. The social teaching of the Catholic Church insists that the human community, including its government, must be actively concerned in promoting the health and welfare of every one of its members so that each member can contribute to the common good of all. (Ascension Health, 2004, ¶1)

Such a teaching is encapsulated in the principle of the common good and requires respect for persons, social welfare, and amity. Lonergan’s rationalizations and modern day Church statements on social justice show us that the focus of a Transhumanist philosophy upon a utopian vision of upgradeable humans fails to take into account the great importance of relationships on an authentic level, across all levels of society, across boundaries of gender and race. We have outlined the position that surgical mutilation without due cause is unscrupulous,

but the donation of a lung, say, to a person suffering from emphysema or chronic bronchitis is a most excellent form of Christian charity. People sacrifice part of themselves to preserve the existence of others. The good of the body refers to the good of the whole person; not found in splendid isolation but in relationship and communion with others. Even the sacred nature of the relationship between physician and patient is intended to be more than simply requests for personal “betterment” and the placation of such requests. Edmund D. Pellegrino comments on the importance of such medical relationships:

A healing relationship cannot be like that of the mechanic to one’s automobile, or of the biologist to his subject of study, or of the technician to her machinery. The only morally viable model would be the covenantal model. This is the special relationship of a sacred promise and trust between one who is ill and in need of help and one who offers himself or herself as a healer. The Christian healer – and indeed any true healer – is one who is committed primarily to the welfare of the sick person rather than to his own. (Pellegrino, 1999, 122)

It should also be noted that the relationship of the healer to the patient or healers to society flows both ways, which is to say that the patient is responsible to truth in the relationships with healers and medicine in general. Perhaps the deviation in a Transhumanist approach to authenticity and decision-making lies in the ultimate end of their search, which I see as a search for perfection (perfection that they reject could come from sustaining natural biological functions). While the aspiration of perfection is noble, too often do ideologies such as Fascism seem to weave their way into the unfolding quest, often appealing to rationalism, technology and medicine as the answer to all problems that we encounter.

Lonergan explains that as human beings we are more than mere *knowing* subjects, we are *agent*-subjects imbued with a built-in spontaneous need to seek

congruence between what we know and what we do. So while knowledge of the truth is *necessary* in ethical decision making, it is not *sufficient*: knowing needs to be “subsumed under higher operations that integrate knowing with feeling and consist of deliberating, evaluating, deciding, acting” (Lonergan, 1996, 204). The application of a Transhumanist drive; knowing how to augment a human body is simply not enough justification for any further action yet the technical understanding of the processes required to augment humans with cybernetic implants is in itself not the problem. It is in the actions (or desired actions) that the problem manifests itself as such applications could cause an upset to the common good by creating new schisms in society as well as new predicaments to human authenticity. The quest of Transhumanism for augmentation on a social level leaves one questioning just how helpful such technologies will be to members of society that require the basics of food, shelter and ‘regular’ medical treatments. Looking to the slums of impoverished nations and levels of destitution in many so-called First-World nations, it is unlikely that an augmented stomach would be any more efficient when empty than a biological one.

5.1 Technology, augmentation and the limits of progress

D.M. Thomas, in writing on the social effects of technology sums up the relationship of the person to more than the whole and comments on attitudes behind technology and the person:

The technological mentality tends to approach the human as object, number, an element of a process, a mere part of a material whole. If the human subject is reduced to the lesser proportions of object, if the sacred dignity of each person is judged worthwhile only to the extent that is

contributes to some desired goal, then something God-given and essential is lost. (Thomas, 788)

Technology need not be our master. If we think hard about the ethical implications of what a particular technology might permit us to do, if thinking about the ethical consequences of technological innovation becomes an essential part of research in biomedicine, and if we realize that as citizen and patients it is up to each of us to attend to the ethical and social ramifications of what biomedicine does to our lives, our pocketbooks, and our society, then we may be able to shape biomedical progress to best suit our values. (Caplan & Coelho, 1998, 7)

In my opinion, three fundamental points must be respected in looking at any attempt to integrate the human body with enhancement technologies. They are: a) refusing the delusion of a utopian society or happier mental state through the use of cybernetics to increase the innate attributes of the person; b) the utmost warning on the attempt to augment any function of human intelligence with regard to the errors of history in attempting such feats which ultimately leads to the denigration of one class of society at the hands of another; c) the realization that there have been multiple interpretations of past issues regarding the body and bioethics and thus continued study on both the medical and ethical level from the religious and secular worlds must be a priority. Ashley and O'Rourke speak to these points in more detail which provides an excellent base from which to operate:

1. The use of surgery (and genetic manipulations) to improve human bodies is ethically good, provided that they take full account of such risks and are

not carried away by a false ambition to work technical miracles without regard to their real meaning for human living. In particular, Christians should be concerned that such innovations do not weaken the fundamental relations within the family or the sense of the child as a unique gift of God.

2. Genetic engineering and less radical transformations of the present normal human body would be permissible if it improves rather than mutilates the basic human functions, especially as they relate to supporting human intelligence and creativity. Transformation would be forbidden, however, (a) if human intelligence and creativity are endangered and (b) if the fundamental functions that constitute human integrity are suppressed. Experimental efforts of this radical type must be undertaken with great caution and only on the basis of existing knowledge, not with high risks to the subjects or to the gene pool...

3. The principle of stewardship and creativity throws light on many of the problems of human reconstruction. Natural law should not be conceived of as a fixed pattern of human life to which human beings are forever confined. Rather, the Creator has made human beings free and intelligent, and it is precisely this intelligent freedom that is human nature and the foundation of natural moral law. Human intelligence, however, is not disembodied; it depends on a brain and a body that have a specific structure and purpose. In caring for their total health, persons have not only the right but the obligation to understand their psychological and biological structure and to improve themselves even in ways that may seem novel to past generations. Such improvement is good stewardship of the share in divine creativity with which God has endowed humankind, provided it perfect, not destroy, what He has given us already. (Ashley & O'Rourke, 319)

I believe that the attitudes towards body augmentations that strive for human enhancements (particularly those in relations to mental processes) must be approached with diligent prudence. It is this virtue of prudence that works with trying to have the ends justified by the means in a more reflective and positive manner. St. Thomas notes this for us: "in order that a choice be good, two things are required. First, that the intention be directed to a due end . . . Secondly, that man take rightly those things which have reference to the end: and this he cannot do unless his reason counsel, judge, and command aright, which is the function of prudence and the virtues annexed to it" (Aquinas, *ST*, I II Q.58, A.5). I find that the reason "counseling," "judging" and "commanding aright" are precisely those

which Lonergan speaks of and with the virtue of prudence coupled with striving for authentic humanity in a community made of all members of society the quest for any type of Transhuman or Extropian enhancement is no more than an illusion of the body. While Transhumanist approaches towards body augmentation give a sense of comfort to anyone wishing to become, “smarter,” “faster,” or “stronger” and while they give technology as a promise of creating the next evolutionary step for humanity, in the end it is a search to avoid one’s ultimate demise and the hope to carry on living no matter the costs. Such costs for society are too high, but this does not mean that the roads of technological progress and the evolution should be closed off. As Pierre Teilhard de Chardin tells us:

In truth, if anyone can effect, as I was saying, *in actu et in vivo* the essential synthesis of the two faiths that now confront one another in the world, surely by tradition and training, it is the sons of St Ignatius: - but with this condition – and it is an essential condition – that they have clearly grasped once and for all this fundamental truth, in which (if I am not deluding myself) is expressed the essence and the inescapable demands of ‘the modern spirit’. This truth is that the Kingdom of Christ, to which our allegiance is sworn, cannot be established either in battle or in peace, except upon an earth that has been taken, *along all the roads of technology and thought* to the extreme limit of its humanization. (Teilhard de Chardin, 1965, 205)

Both roads are in fact attempting to reach the same general destination where humanity improves upon itself. The irony is that any divergence in the path that does not take into consideration the safety of the whole person – no matter how defined, can unfortunately lead to breakdowns in communication and passage for travelers in both lanes.

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