BIOTECHNOTHEOLOGY AND DEMYTHOLOGIZATION OF STEM-CELL RESEARCH

by Tadej Strehovec

Abstract. Biotechnology deals not only with new types of therapies for preventing and curing diseases but also with the creation of new technologies for the production of human flesh. Its ultimate aim is to create a new human body, a new person. Biotechnology wears the cloak not only of a new scientific paradigm but also of a kind of messianic religion. To develop new therapies, to destroy illnesses, to transform the human body into a nonmortal one—these are some of the promises it makes. In time, many of these promises will undoubtedly prove to be illusory, but they will nevertheless continue to have a significant impact on the way people think. Through a process that I call biotechnotheological analysis I show that biotechnology could eventually become not only a type of secular religion but even a type of mythic para-Christian religion, one that incorporates the two most significant processes at work in every mythical religion: the process of mimesis and the ritual of the scapegoat. The essay is an attempt to understand biotechnological achievements, especially in stem-cell research, in this new biotechnotheological way.

Keywords: bioethics; biotechnology; biotechnotheology; demythologization; embryonic stem-cell research; genetics; Human Genome Project; moral theology; technoscience; technosociety

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In 2003, the first phase of the Human Genome Project was completed. It determined and sequenced between 20,000 and 25,000 human genes and collected all of this information into special databases. With this event, the thinking of humankind entered into a new paradigm—the paradigm of technoevolution. From that year, humankind is capable of controlling and manipulating its own genetic data, and in the future this will be extended to our actual bodies. The paradigm of natural evolution has been replaced by technoevolution, in which technology, new ideologies, policies, and capital will play key roles. The human body, and in a sense also human nature, will not be limited to being a product of nature but will become a

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product of sophisticated technologies that might seek to create a perfect human body, full of happiness and not susceptible to illnesses or death.

Scientists and politicians seek to transform not only our physical nature but also our psychological profile. Behavioral genetics and the development of behavioral drugs make it possible to control our behavior, our relations, even our political decisions. Comprehension of the human genome has given science the power to control our evolution for the first time in human history. This kind of knowledge, and the availability of new technologies stemming from it, will become increasingly important for understanding the nature of the human being and our future society.

Of course, technology and biotechnology are not new developments in human history. Since the time of ancient Greece humankind has been discovering relationships between diseases and nature. Ancient physicians found in nature the best source of health (Reiser 2004). This source was combined with new instruments and medications. Through the work of prominent physicians such as Hippocrates, Galen, Andreas Vesalius, and Giovanni Battista Morgagni the main question has been defined: Where does illness come from? Innovations such as the invention of the stethoscope, thermometer, ophthalmoscope, and artificial-respiration devices, the introduction of anesthetics, the discovery of bacteria, the development of vaccines, ultrasound, dialysis, and so forth have led to the formation of a new technological paradigm in the life sciences and especially in medicine. The question Where does illness come from? received an answer from the Human Genome Project: The main place or location of disease is in the human gene.

Biotechnology, or technomedicine, is looking for new types of medications, new treatments and vaccines, and new ways to influence and change the human genome. These efforts are apparent in stem-cell research. The development of new types of therapies and the creation of new tissues, organs, and even whole bodies in the future will change our comprehension of the world, nature, and the self. The new self-understanding will be more and more dependent on our perception of biotechnology.

The first philosopher to reflect upon the nature of technology was Ernst Kapp (1877), who theorized that technology is an organic projection. In railways he recognized the form of human blood circulation and the nerve system. Philosophers Friedrich Dessauer (1958), Jose Ortega y Gasset (1946), and Martin Heidegger (1977) understood technology as a realization and a new creation of humankind and as generating a new form of truth that only technology is able to reveal. This kind of revelation gives science a power to manipulate humankind as no longer a passive object but now as an active agent in the form of scientific ambition. Other early theorists of technology were Lewis Mumford (1934), Jacques Ellul (1970), Herbert Marcuse (1986), and Jürgen Habermas (1971). They were aware of the prominent role of technology in modern society. They described it

as a machine of civilization, a source of the transformation of places and nature, and as a new kind of ideology capable of manipulating everything.

Philosophical analysis has distinguished four main forms of technology (Mitcham 2004). It identifies technology (1) with its products, such as machines, electronics, and consumer goods; (2) as a distinctive science composed of a large body of knowledge; (3) as a form of activity that never ceases inventing new types of knowledge while making discoveries and yielding products; and (4), in the perspective of Friedrich Nietzsche, as power or will. This latter is evinced when technology takes command in such fields as poetry and religion. The construction of pyramids in Egypt and the building of the tower of Babel are examples of technology as power.

Technoscience can be viewed in modern society as a kind of technological thinking that rests on two main ideas: the idea of autonomy and research, where the human person as individual cannot influence the direction of science, and the idea of the "technological imperative" in which the principle "Can implies ought" is applied. According to these principles, everything that is scientifically possible is also legitimate. Another aspect of technoscience is its relation to politics and economy. Because technoscience gives power to politics and yields economic profits, it in return gains the sort of ethical liberty available to the top-level culture and tends to receive scientific immunity. In this way, technoscience can become desensitized to normal ethical imperatives.

One particularity of technoscience is that it not only is fast and effective but also produces truth. In today's technosociety the tools of technoscience measure reality. Other aspects of human life such as the symbolic, the religious, and the spiritual are considered to be artifacts of an unreal and redundant worldview. If these aspects are perchance taken into consideration by technoscience, it is done only under the rubric of pragmatic (political or economic) reasons.

The last characteristic of technoscience is its tendency to produce fear. Its ability to manipulate atoms and genes threatens and endangers humankind. Because of the speed with which technology develops it is very hard to control. Ethics, legislation, and politics often are simply unable to lead the way for the progress of technoscience. They rather trail behind and are able to deal with it only post-factum. From this there arises a special type of fear toward technoscience that acts as a replacement for the original fear that human persons had for the forces of nature.

To better understand the inner sacrificial and religious logic of technoscience, we must first demythologize it. As Ellul (1970) argues, science should be demythologized. The biotechnotheology that I develop here aims to follow this suggestion with help from the biblical paradigm. Through this approach it is possible to discover positive and negative aspects of truths about current and future biotechnologies, technoscience, and the ideologies that stem from it. I use the Genesis 1 story of the creation of the

world and the eviction of Adam and Eve from Eden as a starting point. This type of approach already can be found in different places in our society, for example in literature (Pablo Coelho), movies (*The Matrix* [1999] and *Breaking the Waves* [1996]), and the critical theory, such as the Critical Art Ensemble (a performance and installation art collective exploring the intersections of art, technology, radical politics and critical theory). In these it is used to show alternative aspects of the truth of today's world.

Genesis 1 is a story about the creation of human persons and original sin. For this analysis of technoscience it is important to reflect on the symbolic fact that through original sin human nature was affected. Every newborn child is contaminated with this symbolic malediction, which, according to Christianity, opens our nature to sin and evil. The event is transmitted from generation to generation. Before their eviction from Eden, Adam and Eve possessed a nature that was nonmortal, immune to suffering, without sin, and of perfect dignity. The human being's constant wish to return to Eden and to regain the pristine nature that it lost is a consequence of this symbolic biblical event. Today's technoscience, and especially biotechnology, is well aware of this reality in human nature. Indeed, biotechnology is rooted in Greek-Roman foundations and in the Judaeo-Christian revelation about the nature of God, world, and humanity. Therefore, technoscience fully accepts this statement about the "fall" of human nature. Technoscience and biotechnology seek to detect and repair the affected points of human nature. Deconstruction and reconstruction are the main methods of this biotechnological work. From this understanding follows the imperative "to detect all infected points of our nature and to remove their consequences."

That such an imperative underlies biotechnology is clear from such practices as the sequencing of the human genome and research into the uses of stem cells. The malediction of the fall can be seen in the Human Genome Project, where the atomic structure of nucleotides (adenine, guanine, cytosine, and thymine) is seen as the source not only of human health but also of disease, suffering, aging, and eventually death. Both the Human Genome Project and stem-cell research probe the entire human, both with respect to the whole genome and the human from the very beginning. Biotechnology sees in the human genome the empirical medium of this fundamental malediction, or original sin. Every human person is affected with the sin-structure at the time of conception, and this connects her to an unredeemed world. Biotechnology is very aware of this reality and accepts it as its main challenge.

Another aspect of the demythologization of biotechnology is the recognition of its messianic nature. Even though biotechnology likes to be neutral and to distance itself from classical religious worldviews, it often is expressed in new-age scientific concepts that are at bottom messianic. In the world of original sin and the malediction of nature, technoscience would

like to "save" humankind through scientific knowledge and technology. Biotechnology would give the human being back its original nature and lead it into a golden age. Classical religions are not necessary within such a paradigm. Technoscience replaces Christianity, for example, and offers new concepts of religion, salvation, and the soul. DNA or the human genome could be recognized in such technosocieties as a new soul-like entity that is holy, nonmortal, and at the same time forbidden fruit for those outside the scientific community. In the secular world, technoscience adopts the role of a technochurch, and scientists become technopriests. Such an "incarnation" of technoreligion can already be found in Scientology, Raelians, and new genomic cults that try to establish contacts with ancestors through the human genome. According to Critical Art Ensemble, the main aims of such technoreligion are the achievement of a virtual body, comfort, community, democracy, and a new form of consciousness (Critical Art Ensemble 1998; 2002).

For our demythologization it is also important to note that in the new technoreligion one finds a type of technomythology. Concepts such as "new Eve," "golden age," and so forth emerge from it along with the concept of a technotrinity. Biotechnology and technoscience may be seen as a kind of para-Christianity. The Christian concept of God as Father, Son, and Holy Spirit can be recognized in concepts that play key roles in the ideology of technoscience: capital as God the Father, knowledge as the Holy Spirit, and the technologically transformed and recreated human person (body) as the Son. This last element within the technotrinity is the main focus of current and future technoscience. Critical Art Ensemble shows in an excellent way that, besides the war machine and the machine for watching, the "flesh machine" is the most important product of today's technoscience (Critical Art Ensemble 1998). Through genetics, in vitro reproduction, pharmacology, and surgery, the flesh machine forces humans to let their bodies undergo technomodifications. These modifications are made according to criteria set by capitalism and new scientific messianic ideologies. Under the name of "significant medical progress" we are witnessing the creation of a new kind of human flesh, and this spirit produces people who have passed technical examinations through eugenic genetic tests, analyses, experiments, abortions, and genetic enrichments. The flesh machine could be seen as a new form of incarnation through which technoscience will come to be incarnated into human flesh. It aims to create "new men" just as Christianity aspires to do. Stem-cell research, for instance, not only produces new tissues but also in its final stages aims to produce parts of human bodies and even completely new bodies. Genomics, proteomics, molecular biology, cytology, and biochemistry are for technoreligion something like the golden gate in Jerusalem, and through these approaches technoreligion and technoscience would like to describe themselves as the single savior of humankind.

René Girard's theory of the scapegoat is a possible explanation for one particular phenomenon of biotechnology, namely, cannibalism. Before we analyze this phenomenon it is important to adopt a Girardian way of thinking about the matter. We must think about biotechnology not only as messianic religion but also as a new kind of mythic religion. Girard's theory is that religion is not a phenomenon of society; rather, society is a religious phenomenon in which society restrains mimetic rivalry and violence. In his works, Girard analyzes different biblical texts such as the narratives of Cain, the scapegoat, Job, and the suffering servant (Girard 1977; 1986; 1987), exposing the relation between rituals, victims, and myths. His thesis is that an innocent victim links together the rival sides in society, establishing a kind of peace. The friendship between Herod and Pilate at the time of Jesus' trial is evident (Luke 23:12). In pagan mythological religion, the logic of looking for an innocent victim, one that is collectively condemned and killed, seems always to be present. After the murder, the victim usually is divinized. According to Girard (2001), such logic is not only present at the temporal foundation of civilization; it is a hidden logic of everyday life in society. Full of tensions, society always generates new innocent victims. It is always a temptation for the majority in society to select and kill a weak victim from among the sick, suffering, strange, or guilty. The elimination of such "evil" makes it possible for the surviving majority to live in peace.

According to Girard, the main cause for such a process is mimesis or a mimetic mechanism, a process related to the human desire to imitate. With it comes envy, which produces violence and hatred. Girard argues that in the beginning of every civilization a founding murder establishes new cults, societies, and civilizations. There is a resemblance between classical civilizations that have foundation murder at the center of the myth of their establishment and modern biotechnology, for biotechnology also knows the system of the scapegoat and of exculpating victims. Biotechnology and technosociety have formed a technoreligion in which new tensions have arisen and in which a new kind of scapegoat ritual takes place. I believe that such an event is recognizable in the first use of the atomic weapon on the 6th and 9th of August 1945 in Hiroshima and Nagasaki, Japan. The brutal killing of hundreds of thousands of innocent habitants "resolved" the conflict between the American and the Japanese governments and—in Girard's approach—created a new kind of civilization. It could be said that biotechnological society was established at that very moment. The Human Genome Project is directly related to this new society. Two years after the use of nuclear weapons in Japan, the American Department of Energy began research on the injuries and traumas of the survivors in both cities. In 1947 the Atomic Bomb Casualty Commission was established by the Commission for Nuclear Energy (Danchin 2000). In the research conducted for this commission scientists studied how radioactive substances

harm the human genome. Over the decades this research has had an enormous impact on the sciences, particularly genetics, molecular biology, biochemistry, and computer science.

We are entering into a time when we can see the end of humankind. According to Francis Fukuyama (1992), there will be an end to natural evolutionary humankind and the beginning of a new techno-humankind. The biotechnological revolution will have an unimaginably large impact on the human body, which in its present form does not meet the demands set by the messianic spirit of technoscience. A new human body or human person will arise. The media transmit images of such technologically transformed humans, for example through the selling of eggs of movie stars or the offering of cloning services. Pictures of healthy young models with blue eyes and exceptional abilities are one sort of new iconography—and its roots are in German National Socialism. The image of the physically fit, strongly intellectual, happy, determined, and brave new person, like the characters in the science fiction film *Gattaca* (1997), is a kind of magnet for present and future technobelievers. Such images could become a source of both creative and negative tensions in society—creative in the sense that biotechnology is forced thereby to recognize the main aim of its technology, and negative in the sense that the modern human person will consequently become dissatisfied with his or her body, emotions, and capacities. Negative tensions could be seen in the many individuals with perceived disabilities who are being atoned for vicariously by the creation of techno-ideal people. In creating an ideal image, biotechnology also creates the space within which the mimetic mechanism can develop, a mechanism that unleashes a deep and strong human desire to be like the ideal. It is reasonable to think that a technomimetic desire could lead to vast investments in science and knowledge that are based on the hope that human beings could transform their bodies into the messianic ideal.

Mimetic forces in society are confronted with two difficulties, however—the limits of knowledge and slowness of research. These difficulties are the main reasons that technoscience may not immediately realize its aims. Therefore, the mimetic mechanism must be supported by the mechanism of the scapegoat. The biblical story of the suffering and death of Jesus clarifies this connection, and Girard's work provides the starting point for our analysis (Girard 2001).

In the New Testament, we find four descriptions of the passion of Jesus. According to Girard, these descriptions are part of a mimetic mechanism. On one side is the Jewish nation, full of suffering under Roman occupation. On another side is the aggressive and corrupt Jewish leadership (priesthood), which would like to keep its power and its peaceful relations with the Romans at any price. On the third side are the Romans, who do not have sympathies with this nation. This world of tensions is the society in which Jesus of Nazareth lives. The Jewish people (disciples and women),

representatives of the Romans, and sometimes even the Jewish leadership (Nicodemus) show respect and thankfulness to Jesus. But at a certain moment, when the danger of social conflict is high, the same people seek to resolve this tension through the selection of an innocent victim.

The high priest, Caiaphas, is aware of such a possibility. He says,

> "You know nothing at all. Nor do you understand that it is better for you that one man should die for the people, not that the whole nation should perish." He did not say this of his own accord, but being high priest that year he prophesied that Jesus would die for the nation, and not for the nation only, but also to gather into one the children of God who are scattered abroad. (John 11:49–53 RSV)

Caiaphas is fully aware of the danger that is coming for the nation and for the Jewish leadership. He recognizes that only the murder of an innocent victim—the prophet from Nazareth—will save the nation from destruction and unite it into one body. This, as we have seen, is the main goal of the scapegoat mechanism. Jesus is aware of this decision by the Jewish leadership. After the decision he does not go among the Jewish people but rather retreats with his disciples: "Jesus therefore no longer walked openly among the Jews, but went from there to the region near the wilderness, to a town called Ephraim, and there he stayed with the disciples" (John 11:54 RSV). Before he enters Jerusalem, he says, "O Jerusalem, Jerusalem, the city that kills the prophets and stones those who are sent to it! How often would I have gathered your children together as a hen gathers her brood under her wings, and you would not!" (Matthew 23:37 RSV) The magnificent reception organized by the citizens of Jerusalem for Jesus changes in only a few hours into a collective condemnation of this innocent man. Barabbas, a substitute victim offered by Pilate, is not innocent enough and therefore is found unacceptable. Pilate's statement that the blood for this death should go on the heads of the people, and his washing of hands, reveal that Jesus was innocent and unjustly condemned. The crucifixion of an innocent victim is the consummation of the scapegoat mechanism.

The resemblance of Jesus' passion to the current logic of technoscience and biotechnology is evident. Biotechnology is a source of new tensions between politics, capital, society, and individuals. The main tensions revolve around the image of a new human body. A human body liberated from disease is becoming the focus of intensive research, even exceeding the merely empirical. Politicians (Bill Clinton, Tony Blair), not scientists, announced the end of the first phase of the Human Genome Project. This endorsement indicates that the project is not only scientific but also political. Tensions with regard to the legalization of reproductive and therapeutic cloning are expressions of such conflicts between capital and politics. As in the case of Caiaphas, a scapegoat mechanism is required to dissolve these tensions, to establish a primary unity, and to prevent the destruction of messianic technoscience and biotechnology. Unlike the old ideologies of Nazism, communism, and fascism, technoscience does not choose vic-

tims from among adult and healthy individuals. Because of the increased implementation of human rights, technoscience is looking for victims among those who do not have such rights. In the first stage, such individuals are unborn human beings and terminally ill patients.

The process characteristic of the scapegoat mechanism is evident in stem-cell research. Biotechnology seeks to establish the myth of the possible immortality and almost absolute health that purportedly can be achieved through the production of cells, tissues, organs, and body parts, or even entirely new bodies, from former human life. The intense pressure that has been exerted through capital, politics, and individuals (such as those following Ronald Reagan and Christopher Reeve) expects results within a very short time. However, because of the slowness with which such progress takes place, this type of research generates tensions within technosociety. The sovereignty and the absolutism of capital and knowledge are thereby shaken, and those who hope to benefit from biotechnological research grow impatient and unsatisfied. Such tensions are the main reason that the mechanism of the scapegoat is set into play, and the search for an innocent victim begins. Politics and the impatient use of capital force biotechnology into new and more efficient kinds of research—in this case embryonic stem-cell research that claims innocent victims. The creation and destruction of human embryos is in truth a process of selecting innocent victims, or scapegoats. These embryos are silent human beings without any rights and deprived of every human dignity. Laboratories become the new Jerusalem, where an in vitro environment provides the space wherein a new type of crucifixion takes place. With this techno-scapegoat mechanism at work, the tensions in technoscience are temporarily resolved. As tensions mount, so will the number of human embryos that will have to be sacrificed. Singular lives are dispensed so the mass of ill humanity may survive.

Neglecting debates over the biological, anthropological, and juridical status of the human embryo leads to a state of affairs in which the identification and justification of new groups of victims is possible. "Lamb of God who takes away the sin of the world" applies also to human embryos and even to euthanized patients. At the sociological level, human embryos become both victims and harbingers of peace in the conflicting world of capital, science, and peoples. Bloody sacrifices that take place in secure, clean laboratories become a new kind of taboo. It is the forbidden topic of discussion; technoscience does not want to hear about it. Nevertheless, because of the biblical revelation of such a mechanism, the process is not easily hidden. After Cain murdered Abel, "the LORD said, 'What have you done? The voice of your brother's blood is crying to me from the ground'" (Genesis 4:10 RSV).

In the context of Jesus' passion, it is evident that biotechnological research that uses embryonic stem cells is an example of the mechanism of the scapegoat. Our brief biotechnotheological analysis has shown that the

embryo has become the new sacrifice for peace, selected either consciously or unconsciously by technoscience. With this selection technoscience seeks to resolve the immediate tensions and conflicts that arise between capital, science, society, technology, and politics. The use of surplus embryos, the creation of new ones only for research purposes, the cloning and destroying of embryos—these are the new forms of crucifixion where the scapegoat mechanism plays out.

The innocent human embryo is the victim of the technoscientific paradigm and is consequently always guilty of something. (So are those at the end of life, who would deprive others of healthful resources.) Because this type of victim is always silent, supposedly beyond pain (but who knows?), and incapable of independent life, embryos have become the means for the realization of the promises made by biotechnology. This inner logic of current technoscience could be defined as a sort of technocannibalistic machine, which is still a taboo theme in today's bioethics. Nevertheless biotechnotheology as a method of biblical demythologization has to reveal it, if humankind wishes to live in peace with technology.

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