God’s Philanthropia and Human Disease: Theory of Neoplasia and the Orthodox Understanding of Original Sin as a Guide for Ethical Questions Involving Genetic Manipulation

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One of the difficult and thorny questions that a person can face both theologically and strictly on a person level is the suffering and dying of children. How can a benevolent and omnipotent God allow such a vast injustice toward innocents? What does the suffering of children say about our universe, her laws and the Creator of these laws? What should be the response of humankind toward such suffering? With the advent of powerful new technologies, especially those involving genetic manipulations, these questions have become much less theoretical and much more practical and acute. In this article is an attempt to outline certain points of contact between natural scientists and physicians, on the one hand, and theologians and pastors on the other. Because neoplastic diseases are my area of endeavor, I focus on childhood cancers. However, almost everything I have to say, both in terms of science and theology, can be applied to other childhood maladies, especially congenital and inherited diseases.

The scientific study of people and the diseases that afflict them has led to a number of interesting discoveries. One of these is that neoplasia in human is an inevitable outcome of the laws of our universe. A statement such as this has significant theological consequences.
But first, what is cancer? Cancer is the unregulated, abnormal and disorderly growth of cells in an organ. When an organism is first developing in the womb, it is made up of undifferentiated, pluripotential cells; in other words, cells that do not yet have a specific function and have the potential of developing into any cell or organ in the body. Differentiation and growth of the organism is extremely complex and, normally, is very strictly controlled. For example, the liver grows to an appropriate size and shape and then stops growing. Similarly, the majority of hepatocytes (cells in the liver) are very specific cells, which perform a very specific function, and are found in the liver only. The same is true for all other organs. Malignant cells grow unchecked and cease to look like the parent cells from which they came. This is known as dedifferentiation.

The DNA molecule in every cell controls differentiation and the production of proteins, which basically account for what a cell looks like and what it does. Mutations (changes in the DNA molecule) cause cancers. What causes mutations? According to statistical mechanics and Heisenberg’s uncertainty principle, complicated physical process (such as weather patterns or nuclear decay) cannot be predicted with certainty and that unforeseen results occur. These laws also apply to the DNA molecule. The Second Law of Thermodynamics states that in all reactions in which there is an exchange of energy, the entropy (or randomness) of the system increases. This means that every thermodynamic system progressively becomes more random, more chaotic, and less orderly in time. We see this every day: Weeds overgrow a beautiful garden if it is left untended. The same process occurs with DNA.

Replication of the DNA molecule and its support mechanisms is an exceedingly complicated process. One can only imagine how difficult it is to maintain the integrity of the DNA molecule, the length of which in every cell of our body is a number of centimeters. DNA is subject to the same thermodynamic laws as everything else in the universe.

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Over time, decay and errors occur inevitably. Therefore, DNA is not static but constantly undergoing changes, which are known as mutations. In one sense, this set-up is beneficial to humankind in that it allows for genetic diversity and the development of certain positive traits. However, mutations also allow for the development of cancers. Therefore, as long as the Second law of Thermodynamics holds, mutations (or mistakes) in DNA are inevitable.

It follows that neoplasia is an inevitable outcome of the laws of the universe in which we live. This is a stunning and horrible conclusion, which inevitably leads to a myriad of important theological considerations; for example, the relationship of God to the universe that God created, or the role of humanity in this universe to change the created world through intellect.

What then is the relationship between disease and sin? Occasionally, diseases can be viewed as related to specific behaviors, which communities might judge as personal sins. For example, smoking leads to lung cancer,\(^2\) tongue cancer,\(^3\) esophageal cancer\(^4\) and many others. On other occasions, cancers can arise from collective sin, or what can broadly be termed sins of society, such as chemical or nuclear pollution. For example, there was a marked increase in cancer of the thyroid after the Chernobyl accident.\(^5\)

But what of childhood cancers? Certainly the child is not blamable. Very often these are due to spontaneous mutations, which just happen. As we have seen above, these cancers occur because of the fundamental laws that govern our universe. “Jesus answered, Neither hath this man sinned, nor his parents” (John 9:3).


This concept has a direct parallel in Orthodox theology, specifically in the understanding of the consequences of original sin. The Orthodox Tradition stresses that following original sin, the universe underwent a fundamental change that affected both humanity as well as the universe as a whole. Thus original sin had not only spiritual consequences but physical consequences as well. The universe became subject to decay and remains so to this day. St. Paul teaches that, “For the creation was subjected to futility, not willingly, but because of Him who subjected it in hope; because the creation itself also will be delivered from the bondage of corruption [or in the language of physics, entropy, AH] into the glorious liberty of the children of God. For we know that the whole creation groans and labors with birth pangs together until now” (Romans 8:20-22). This theological concept is proven (and I do not use this term lightly) to be true by physicists and is known as the Second Law of Thermodynamics.

For humankind, following original sin, death, disease and decay were introduced. “The wages of sin is death” (Romans 6:23). St. Maximus the Confessor teaches that, “prior to the fall, the human body was immortal, not prone to disease and lacking the slow wittedness and inertia which is its current state.” Returning to neoplastic diseases, they occur as the result of physical laws, which according to Scripture, are a consequence of sin. However, this condition of sin is only a temporary situation and will be fundamentally different following the Second Coming.

In the Orthodox Tradition, the resurrection of humanity will not only be spiritual but also have a physical component. We, Orthodox, believe that we will be resurrected in the flesh; however, this flesh will be unlike or current bodies. The resurrected bodies will not be subject to disease: “where there is no disease, nor sorrow, but eternal life” (from the Orthodox Funeral service). This future existence is foreseen by the prophet Isaiah, who says “Then the eyes of the blind shall be opened, And the ears of the deaf shall be unstopped. Then the lame

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shall leap like a deer, And the tongue of the dumb sing” (Isaiah 35:5,6).

In addition, our bodies will not be subject to decay. “The Body of Christ did not experience decay” (Troparion of Good Friday, tone 2). In the language of physics, the Second Law of Thermodynamics will not apply. The entropy (or randomness or chaos) in the universe will no longer inevitably increase. Therefore, because the physical laws, which give rise to the inevitability of neoplastic diseases, will no longer be in effect, cancer will no longer occur. Rather, the universe will be guided by new laws: “Then He who sat on the throne said, ‘Behold, I make all things new’” (Revelation 21:5).

The goal of human existence is to achieve the heavenly state, theosis, to become like God (not in essence but by Grace). A foreshadowing of the future life is already seen in the lives of the saints. Many saints approached the Kingdom of God not only spiritually but also physically. This is exemplified in the uncorrupted relics of the saints, which demonstrates that by the grace of God one can overcome decay in this life also.

The analogy of the struggle against disease and spiritual warfare against sin here is striking. Prior to the death and resurrection of Our Lord Jesus Christ, it was not possible to achieve salvation, or the Kingdom of Heaven; just as it is now impossible to achieve salvation by one’s own power, without Christ, irrespective of how hard one tries, or how holy one becomes. After the resurrection of humankind and through the grace of God, the Kingdom of Heaven will open to those who labored to achieve sanctity: “Come unto me, all ye that labor and are heavy laden, and I will give you rest” (Matthew 11:28).

Similarly, we cannot eliminate death and disease by science or technology alone. As we have seen, in order to do this would require the changing of the laws of physics. In spite of medical technological advances, in spite of the fact that 50 percent of all cancers are cured, in the end science and technology loses—always. Every single one of my patients will die, if not of the disease against which we are currently
struggling, then from the next. Yet as an Orthodox physician, I always seek to heal the sick, even while knowing that the true cure can come only after the resurrection of the dead and after the laws of physics, medicine, and biology are no more.

An interesting corollary to this discussion is the support for the Orthodox concept of inner struggle from hard science. In terms of quantum mechanics, statistical mechanics, and thermodynamics, our universe is indeterministic. This means that fundamentally it is impossible to predict the physical future of the universe. These indeterministic laws of physics are also manifest in biology, including human biology. It would seem reasonable to think that human free will, and perhaps even our consciousness, are the result of (or are at least in concert with) these same indeterministic qualities of our universe. Therefore, both cancer (and the suffering it brings), as well as my free choice, are both ontologically liked in the set up of the laws that govern this universe. Hence, the same set of laws that allow for genetic mutation, allow me to choose sin or holiness, to do good or evil. Dostoyevsky once said that, “Because everyone is guilty for everyone else.” (Brothers Karamazov). It now appears that these words now not only have a moral foundation but also a scientific foundation. Turning this idea around, it appears that the laws of the universe, which allow for my personal consciousness and freedom, also compel humanity to struggle to overcome the other consequences of these laws; namely disease and death.

When taking into account the physical consequences of sin, the question arises, can humans fight against sin using physical methods or are we limited to “spiritual” methods? At first glance, one may be tempted to say, no. After all, the holy apostle Paul avers that “we struggle not against flesh and blood” (Ephesians 6:12).

However, this first impression would be incorrect, especially in our Orthodox Tradition: endless fasts, standing in Church for hours, long prayers, prostrations, not to mention the teachings of the hesychasts on breathing techniques during the Jesus prayer. Our unseen warfare has a
very real physical component. This is seen time and time again in the Orthodox Tradition. For example—our liturgy. Everything in the service serves to focus the attention of those in Church on God, on prayer (e.g., the chanting of the service, the iconography, and the smell of incense). These material cues emphasize the hesychastic idea of the unity of humanity as a spiritual and physical being in prayer and life itself.

What do the present arguments have to say about the use of technology? Does this mean that we can fight against sin by technological methods, for example the technology of genetic manipulation, genetic engineering, or stem cell research? As a scientist-physician, in general, it seems to me that technological advances are not inherently good or evil. Yet their application can be either good or evil. Technology when applied to the human condition acquires an ethical dimension. This applies from the most basic to the most advanced. A knife can be used to perform an operation or can be used to rob or kill someone. Nuclear energy can be used to make bombs or medical scanners, radiation therapy, and nuclear medicine.

However, the advent of advanced scientific methods of disease therapy and diagnosis leads to a plethora of new ethical dilemmas. Having established that genetic mutations that lead to cancer are the result of the physical laws of our universe, we return to the question of genetic manipulation. Who decides, or how are we to decide, what is “abnormal,” what defects or abnormalities are to be treated and what methods are permissible (or should be used) in such treatment.

For me, attempts at building of ethical systems based on biology (or even evolutionary theory) have honestly been unconvincing.7 Where is a physician or scientist to turn? What can we as Orthodox Christians

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offer that will be understandable and compelling to physicians, scientists, and lawmakers, who compose the legal framework of our country.

As individual Christians, we must strive for the Christianization all aspects of our lives. Christ and His love should permeate not only our personal life but also our professional life, family life, art, culture, and science and technology. No sphere of human endeavor is outside of Christianity. Hence, science and technology have to be permeated by Christianity, by Christ’s love.

In demonstrating the similarity (in some cases striking similarity) between what on the surface may be considered completely unrelated disciplines (i.e., current understanding of the biology of neoplastic diseases, the laws of physics and patristic concepts of original sin), I hoped to demonstrate the convergence of these seemingly dissimilar disciplines. Noting the inefficacy of ethical systems based solely on the sciences, it follows that cooperation between theologians and scientists is not only warranted but also necessary.

A short article such as this is much too short to for a detailed discussion on the specifics of genetic manipulation; nevertheless, some specific recommendations can be made, based on the material presented. Objections have been raised to genetic manipulation as human meddling in God’s creation, as an assault on what it is to be human, but that is far from the case. On the contrary, genetic mutations that lead to cancer as well as congenital malformations are the result of sin: our own personal sins, the sins of humankind as a whole and Original Sin. As scientists, physicians, and Christians we follow Christ’s example of healing ministry: “Great crowds came to him, bringing the lame, the blind, the crippled, the mute and many others, and laid them at his feet; and he healed them” (Matthew 15:30).

Christ called disease and infirmity the work of the enemy of humankind. Speaking of the woman with severe kyphosis, the Lord said that she was “a daughter of Abraham, whom Satan has kept bound
for eighteen long years” and that she should “be set free on the Sabbath
day from what bound her” (Luke 13:16). We must delve into the secrets
of the Universe, not only the Spiritual but also the physical Universe.
Humankind must use its God-given intellect and talents to create the
harmony of health from the chaos of cancer. Christ teaches us, “these
signs will accompany those who believe: … they will place their hands
on sick people, and they will get well” (Mark 16:17-18). If we are
believers, we must do likewise.