

# The Reconciliation of Science & Religion in Light of Human Genetic Engineering Innovation

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## An Introduction

The never-ending question of “physis” vs. “nomos” (or “natural progression” vs. “human intervention”) has plagued the human race since the days of classical rhetoric in ancient Greece. No lucid conclusions have yet been indisputably drawn. With the human innovation of genetic engineering, it has become even more vital to make such a distinction in order that progressive action can be taken to procure a prosperous future for the human race – a future free of genetic dysfunction. Perhaps the most fundamental concern is reconciling the future of science with the morals of religion. It is only through the convergence of science and theology that progress can be made in such a controversial field. For the purpose of remaining all-inclusive in terms of religion, a theological standpoint has been taken, with a heavy bearing on Christian deliberation as a prime example when such elucidation is required. It remains irrefutable that some minds, conditioned by their scientific or religious environments, find reconciliations between the two to be out of the question. Hopefully, however, an honest mind can imagine the fruits of such a compromise.

## Defining Evolution

“In the beginning was the word. The word was not DNA” (Ridley 16).

The modern theory of evolution begins with a cesspool of genes – the basic units capable of transmitting characteristics from one generation to the next – in constant battle, in Darwinian terminology, of “survival of the fittest.” This battle spawned conglomeration and parasitism of genes as a means of survival. The combination of genes that survived was the fittest (for the particular environment in which it was found) and it was this combination of genes that led to macroorganisms. LUCA, the “Last Universal Common Ancestor” triumphed as victor of the cesspool and as propagator of many species to be developed through the evolution and adaptation of the original LUCA strand of genes (Ridley 20). The process, of course, started out small – with prokaryotic bacteria containing a single loop of RNA – and grew to encompass more complex entities – such as eukaryotic *Homo sapiens* that survive through the replication of DNA.

Macroevolution is defined as “evolution theorized to occur over a **long** period of time, producing **major** changes in species” whereas microevolution is defined as “**minor** change within a species within a **short** period of time” (Merriam-Webster). By classifying these two sorts of evolution as distinct entities, it is ascertainable that macroevolution has been completed (perhaps temporarily, as no new major species are currently developing), while microevolution continues to modify even modern-day species. Thus, over millions of years of macroevolution, species also vary, through microevolution, such that the variants of a species most suitable for an environment live to reproduce and pass on their genes. Therefore, not only do species go extinct – as with the dinosaurs, mammoths, and Dodo birds – but variations of species – like the Neanderthal variation of the *Homo sapiens* species – similarly die off (Cavalli-Sforza 40).

## Religious Creationism

“There is only one religion, though there are a thousand versions of it.” - *George Bernard Shaw*

It is necessary to first draw attention to the grounds on which “religion” has been defined for the purpose of this dissertation. As the product of a predominantly Judeo-Christian society, the treatment of “religion” is, undoubtedly, biased towards this version of belief. For the benefit of an increasingly more objective religious perspective, philosophical theology has been employed as the primary method from which to derive religious information.

A main theme of religious thought is the concept of time. In the creation story cited in the Bible (which is similar to the creation stories of most religions), a week is quoted as the period of time it took God to create light (day one), the sky (day two), the waters, the firmament of land, and vegetation (day three), the sun, moon, and stars (day four), birds of the air and creatures of the sea (day five), livestock, creatures that move along the

ground, and wild animals, and man (day six), respectively with day seven as a day of rest. As for the implied meaning of a “week,” there will never be a clear, fixed resolution. The progression of creation gives way to more complex beings, until man is created. Intriguingly, it is man that is created last, “in God’s image,” and it is man who rules the earth. Thus, it is conjecturable that all living matter derived of an initial substance – that “we” are all one in God (Ephesians 4:4-6). If man was the last creature to be generated through this evolutionary progression, a noticeable link between man’s DNA and the DNA of all preceding LUCA-tangent species would occur – a link that has been proven time and time again with sizeable species such as chimpanzees and gorillas, in Ridley’s novel, and with species as minute as roundworms, evidenced in the Caldwell Lab (with *C. elegans*) here at the University of Alabama.

Another applicable genetic debate concerning religion is whether the sanctity of human life is contained within the genome and whether even the slightest alteration of the genetic sequence is claiming the role of our creator by “designing” future generations of people.

### **Reconciling Evolution with Creationism**

“The immutable and eternal deity knows mutable and temporal things with a transcendent and immutable knowledge.” *Neoplatonic axiom*

In 1637, the “first theologian,” René Descartes, wrote

Thus this “I,” that is to say, the soul through which I am what I am, is entirely distinct from the body and is even easier to know than the body, and even if there were no body at all, it would not cease to be all that it is” (19).

Descartes used a meticulous method through which all things that could be doubted in the slightest could not be true, and therefore, could not be “known.” His exhaustive exploration of truth, then, allows us absolution in genetic engineering, not only knowing that evolution quite possibly could be God’s way of creating man (note again, that man was created last in biblical scripture) but that the soul (created in God’s image) is distinct from biological definition and human tampering. In accordance with most religious beliefs, Descartes asserts a soul that will exist in an afterlife. Scientific method and theology are converging, with genetics as a clear explication. “This means...that there was only one creation, one single event when life was born” (Ridley 22). Perhaps God’s week of creation encompassed the mass of macroevolution and species continue to microevolve into the future while God rests. This suggestion is supported by the mathematical calculations of Gerald Schroeder, a physicist and biologist, who reconciles the 15.75 billion year time frame of scientific evolution with the six “day” creation proclaimed by religion. However, this is just one conjecture and is, by no means, a certainty.

### **Terminating “Survival of the Fittest”**

“Our quickly fattening pigs, short-legged sheep, pouter pigeons, and poodle dogs could never have come into existence in a state of nature, because the very first step towards such inferior forms would have led to the rapid extinction of the race...”

*-Alfred Russel Wallace*

A Darwinian contemporary, Sir Alfred Russel Wallace thoroughly conveys, in his forthright explanation of species variation, that domesticity destroys nature’s mechanism of ridding the genome of genetic pollution by allowing “inferior” forms to survive to reproduce offspring (Porter 102). The, perhaps overlooked, implication of this assertion is that society breeds genetic imperfection in the human species. As the process of reproduction continues entropically through generations, mutations that lead to disease gain propensity. Added to the chaos are the human conventions of medicine, chemical warfare, and anti-bacterial hand soap. All three of these practices promote genetic evolution, and not always in desired manners. Improperly used medications (that is, those that are not taken for the full prescribed amount of time), weapons generating incurable genetic maladies, and anti-bacterial hand soaps that kill only 99.9% of all bacteria (leaving the surviving 0.1% to transcend existing potency and become a further health hazard) catalyze genetic adaptation in bacteria and viruses, as well as mutation in living cells, that promote death not only in the human species, but also in the further animal kingdom.

## **Religious Perspectives of Genetic Engineering**

“Science without religion is lame, religion without science is blind.” -*Albert Einstein*

The answer to such an immense predicament comes at great cost to the human psyche. Is man to ensure the longevity and superiority of his species by seemingly usurping the power of God? Amazingly, answers to the question of genetic engineering can be found within the bounds of religious thought. It is imperative to delineate the divergence of cloning from genetic engineering in the sense in which it is here used. Cloning involves the unnatural fabrication of a contrived being, whereas genetic engineering merely reinforces the increasing perfection of the human genome in a being that does already or will naturally exist.

First, using the Christian religion as an example, the Bible asserts “Physician, heal thyself” as a biblical proverb quoted by Jesus in Luke 22: 23. Various other passages in the Bible convey God’s gift to man of dominion over the ‘dust of the earth,’ of which man is included. “And God blessed them, and God said unto them, Be fruitful, and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth” (Genesis 1:28). God has empowered man with authority to conform the earth to his will.

Some Christian denominations have setup guidelines concerning genetic engineering. One such church, the Seventh-Day Adventists, voices four main ethical concerns (the sanctity of human life, protection of human dignity, acceptance of social responsibility, stewardship of God’s creation) and ten for genetic intervention including truthfulness, prevention of suffering, freedom of choice, and fairness, to name a few (Guidelines on Genetic Engineering).

Similarly, the Jewish community has, perhaps, a more keen interest in genetic engineering as a means of saving their traditional members from extinction. A genetic disorder common to the Jewish community is Tay Sachs Disease, “a fatal genetic disorder in children that causes progressive destruction of the central nervous system” (Ethical Debate). This weakness makes the Jewish religion more open to genetic engineering than would be the case, in surmise, if such a malady did not exist.

Religious groups have also gone to great lengths to research and publicly discuss the ethical issues of scientific progress through projects such as the Society, Religion, and Technology Project begun in 1970 by the Church of Scotland (Bruce). Mediums such as these attempt not only to inform the world about scientific discoveries and their moral ramifications, but also spawn further debate and understanding in the public at large. Publications of the organization help translate the scientific jargon of complex findings, such as the Human Genome Project, into comprehensible, easily accessible documents. By serving to reconcile science with religion, these projects are extremely beneficial to the advancement of modern science.

The broader, theological approach to the question of genetic engineering is quite simple. In his book, *Confessions*, St. Augustine explores the concept of God intimately knowing every aspect of his creation such that nothing can surprise him. “It was superior because it made me, and I was inferior because I was made by it. The person who knows the truth knows it, and he who knows it knows eternity” (123). A perfect being with a perfect will is infinitely greater than an insignificant being moderated by its superior. This is, by no means, an excuse to pursue objectives that are clearly immoral – such as genetically mixing various species – but does, however, ease our minds when productive, beneficial steps are being taken.

### **The Phantasmagoric Mixing Bowl of Science and Religion, of Knowledge and Purpose**

“Science can purify religion from error and superstition. Religion can purify science from idolatry and false absolutes.” -*Pope John Paul II*

Science is the “how,” whereas religion is the “what” of the universe. In Galileo’s “Letter to the Grand Duchess Christine,” the following assertion is made: “I would say here something that was heard from an ecclesiastic of the most eminent degree: “That the intention of the Holy Ghost is to teach us how one goes to heaven, not how the heaven goes”” (Drake 187). Neither science nor religion clearly outlines the will of God, an infinite concept inconceivable to a finite mind. However, the following analogy serves to elaborate such a relationship.

Science provides knowledge of how the world works, and religion provides the purpose for which it works. This appears to correlate nicely with atomic theory and an omnipotent being: atomic theory explains the basic components of the universe while the omnipotent being (God) accounts for its existence. An even more concise analogy can be drawn. Imagine the world as a coded landscape of numbers, such as is true in *The Matrix*, only with one number – the atomic number of an element, perhaps – representing one atom of one

element. One omnipotent being exists that can see the numbers instead of the “symbols” they represent. The relationship between the numbers and symbols is as follows: when a desktop icon of a folder is double clicked on a computer, no true folder has been opened. Instead a sequence of numbers, coding for a particular action, initiated a numerical call for the computer to perform a task. Thus, if the world can be viewed as a giant, convoluted matrix, God can be viewed as the creator of the matrix, the one who sees the numbers instead of the symbols. A further elaboration would be the Jesus figure of the Christian belief as the character “Neo” who actually lives within the confines of the matrix for a given period of time.

And how does this relate to genetics exactly? Given this type of analogy, it becomes clear that genetic engineering alters the “sequence of numbers” that directly affects the physical manifestation of the genome. There is a good argument that genetic engineering, then, is taking on the role of a creator figure. However, to make such a statement, one would then have to concede that genetic engineering is no more a manipulation of numbers than the medicine that meets the same ends. A person with genetic tendencies towards heart disease and artery-choking cholesterol buildup can be kept in “good health” with a cocktail of medications and regular doctor visits that continually changes his or her “numbers.” If a technology was sufficiently developed where those tendencies could be conformed to make the dysfunctional genes functional, it is ethically unacceptable to let such a person suffer. Similarly, if a fetus is known to have a faulty gene for Tay Sachs Disease and technology has advanced to the point where selective gene replacement could replace or repair the faulty gene, it is ethically unacceptable to let such a fetus suffer. To those who argue against this point, how is it ethical to subject a being to a lifetime of expensive medication, painful surgery, and physical discomfort when all such effects could have been avoided?

### **Concluding Thoughts to Ponder**

“Men can do nothing without the make-believe of a beginning. Even Science, the strict measurer, is obliged to start with a make-believe unit, and must fix on a point in the stars' unceasing journey when his sidereal clock shall pretend that time is Nought.”

*-George Eliot*

“Patience is the companion of wisdom.”

*-St. Augustine*

At this point in time, no clear, concise conclusions can be made regarding religion and genetic engineering. As a species, we have not yet developed a full-proof procedure for replacing and repairing defective genes and do not have an all-inclusive understanding of the human genome. The process of acquiring such knowledge and creating such procedures is not for the weary of heart. It will be a tumultuous, constant battle, not only in the field of science, but with the human society as a whole, that will (without becoming too fantastical) most probably be spotted with failure of frightful effects. One of modern society’s greatest fears is the innovation of a sort of genetic monster that had once been a human being. Fantastical productions fueled by the entertainment venue – productions that monopolize on innate human anxiety of transmogrified beings – allow the fear of such an entity to seem justifiable. However, there is a simple scientific truth to be recognized: no drug was created perfect, no surgery always successful, no doctor with an impeccable record. There will be developmental hazards for any burgeoning science. The only consideration to be made is whether the “ends justify the means” and the resulting benefit far outweighs the cost – a consideration that is hard to make since it involves the expense of human life. It is hard to make such a statement and not seem cold-hearted, or dilettante, but imagine life if penicillin had not been implemented as a bacterial counteragent due to developmental hazards. Where would the human species be today without it?

Creating a new variation of the human species with increasing genetic perfection also raises questions with not only ethical concerns but also economical ones. As of yet, there are no distinct, universal guidelines for the treatment of genetic information when such a science becomes commonplace. Who will pay for pricy procedures? Will genetic engineering be universally available? Can genetic information be used in social settings? Will genetic screening be mandatory? Will third-party organizations have access to this information? These questions, and a plethora more, paint the future of genetic engineering as an ethical, religious, and scientific quandary. Documents addressing these issues have been prepared by both the scientific community and in religious circles. *The Universal Declaration on the Human Genome and Human Rights*, first approved by Unesco in 1997 and later adopted by the United Nations, clearly establishes ethical boundaries and

unalienable rights particular to each individual (Lacadena quid. by Mattei). Religious preparations, such as the aforementioned documents drawn up by the Christian and Jewish communities, clearly establish the ethical boundaries religion transposes on scientific revolution. Oddly enough, the scientific communities address the same issues with a similar regard for the sanctity of human life and the profound importance for precaution in future research. Mankind is beginning to come to terms with the inevitability of genetic alteration in the future.

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