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STRESS DUE TO SCIENCE VS. RELIGIOUS DOGMA

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The "Scientific Revolution" most likely began with Sir Francis Bacon (1561-1627), who emphasized that true knowledge could only be obtained by inductive reasoning based on objective experimentation rather than anecdotal reports. Although he believed that God gave man these powers, he rejected the "**superstition, and the blind and immoderate zeal of religion.**" This conflict with the Roman Catholic Church was intensified by Galileo Galilei (1564-1642), who first used the newly discovered telescope to study the heavens and to see mountains, craters and valleys on the moon.

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This suggested that the moon might have plants, animals and people, like Earth, rather than being entirely gaseous as was commonly believed. He also observed four spheroidal satellites or moons orbiting around Jupiter, which, as with Earth and all the other planets, seemed to orbit around the sun. **This was a repudiation of church doctrine that all celestial bodies revolved around the Earth, which was the center of the universe, and never moved.** Galileo published his results and conclusions in 1610, and it was brought to the attention of the Inquisition the following year.

Galileo was severely criticized, but he was a very respected scientist. He met repeatedly with Pope Urban VIII, a patron and friend, who said he could write about his theories only if he treated them as merely mathematical hypotheses. He completed his book that explained the scientific basis for his

opinions in 1630 and the Vatican approved its publication. However, it created such a furor that distribution was stopped. Galileo was summoned to Rome to appear before the Inquisition, subjected to intense interrogation for eighteen days, and threatened with torture and imprisonment if he did not recant his erroneous views. **It was not until 1992, after a 13-year investigation, that Pope John Paul II officially acknowledged that the Church had erred in condemning Galileo for asserting that the Earth revolves around the Sun.**

The Scientific Revolution And The Roman Catholic Church

Galileo's insistence that the universe operated according to mathematical principles was echoed and expanded by Sir Isaac Newton (1642-1727) in his *Principia Mathematica* (The Mathematical Principles of Natural Philosophy). It stated that the universe operated in a rational and predictable way that could be completely explained through mathematics and his concept of inertia, namely: no object can move or stop itself; every object remains at rest until moved by another object; and that all objects in motion remain in motion until redirected or stopped by another object. Thus, all of the planets moved according to a physical attraction between them called gravity that was entirely responsible for the orderly and mechanistic motions of the universe. There was no need to resort to religion or theology for any other explanation. **But how did the universe get in motion if no object could move itself? Who moved the first object? For Newton, that force was God,** and he warned against using the law of gravity to view the universe as a mere mechanical machine similar to a gigantic clock.

Gravity explains the motions of the planets, but it cannot explain who set the planets in motion. God governs all things and knows all that is or can be done. This most beautiful system of the sun, planets, and comets, could only proceed from the counsel and dominion of an intelligent Being. . . . This Being governs all things, not as the soul of the world, but as Lord over all; and on account of his dominion he is wont to be called "Lord God" or "Universal Ruler". . . . The Supreme God is a Being eternal, infinite, and absolutely perfect.

Newton studied the Bible intensively for fifty years and actually wrote more about his religious research than science. He was the first to derive a date for Christ's crucifixion by correlating the Judean and Julian calendars to calculate when the crescent of the new moon was first visible. Although he considered himself to be a devout Christian, he was very critical of the Roman Catholic Church, which he considered to have become corrupted. He could find no justification for the Trinity or the infallibility of Popes in the New Testament, but to deny this, was heresy. The only route to an education at the time was via the Church, and most of what was taught was essentially religious indoctrination emphasizing that the Bible was the Word

of God. Supporting a "non-biblical" idea meant risking death in a vat of boiling oil, or being tortured and then burned at the stake. Nicholas Copernicus, the Polish astronomer, whose 1543 "On the Revolution of Heavenly Bodies" first proposed that the earth and planets revolved around the sun, was very lucky. He died a few days after it was published and it was not until 1616 that Pope Paul V condemned his views as heretical. Giordano Bruno was not as fortunate. He was arrested by the Inquisition in 1592 for asserting that the earth moved around the sun and that stars were actually very distant objects similar to the sun, rather than tiny lights that God had placed on a solid sky to help humans foretell the future. He was interrogated and tortured for nine years, and after being tried and convicted of heresy, was burned at the stake in 1600.

Galileo narrowly escaped a similar fate by recanting his views. In 1633, at the age of 70 and in ill health, the Roman Inquisition forced him to state

I will in future believe every article which the Holy Catholic and Apostolic Church of Rome holds, teaches and preaches ... I held and believed that the sun is the center of the universe and is immovable, and that the earth is not the center and is movable; willing therefore, to remove from the minds of your Eminences, and of every Catholic Christian, this vehement suspicion [of heresy] rightfully entertained against me, ... I abjure, curse and detest the said errors and heresies,... and I swear that I will never more in future say or assert anything verbally or in writing, which may give rise to a similar suspicion against me ... But if it shall happen that I violate any of my said promises, oaths and protestations (which God averts!), I subject myself to all the pain and punishments which have been decreed ... against delinquents of this description.

He was then sentenced to life imprisonment in a Roman dungeon, but this was later commuted to house arrest because of his blindness and poor health. His manuscripts were destroyed and even his right to be buried in consecrated ground was disputed when he died in 1642. Nevertheless, his views had already spread throughout Europe and England, where Newton, who was born the same year, used Galileo's discoveries to develop his theory of gravitation. Fear of such persecution was so pervasive that many scholars delayed publication of their ideas. Some stipulated that their works could only be published after they died, and would presumably be beyond the reach of the church. That didn't always work and there were several instances where all such publications were banned or burned and the heretic's body was dug up. A trial for the corpse was held, it was excommunicated and then burned at the stake –"in the name of our Lord Jesus Christ. . . .Amen!"

Newton was obviously very cautious about publishing his religious beliefs, but this did not include his quest to discover the date for the Second Coming

of Christ and the end of the world. Based on information from the Bible, he calculated that this would probably not occur until 2060, and explained

It may end later, but I see no reason for its ending sooner. . . . This I mention not to assert when the time of the end shall be, but to put a stop to the rash conjectures of fanciful men who are frequently predicting the time of the end, and by doing so, bring the sacred prophecies into discredit as often as their predictions fail.

It is doubtful that Newton believed everyone on earth would be annihilated in this apocalypse, but rather that our world would be replaced by one that ushered in a new era of divinely inspired peace and happiness. Similar beliefs about a "Day of Resurrection" with the establishment of "The Kingdom of God" on earth can be found in Judaism's coming of the Messiah and "Messianic Age", as well as "The Day of Judgment" in Islamic theology.

Newton's 1687 *Principia* conferred such celebrity that he was elected to Parliament a few years later. His observation that gravitational forces between two objects were directly related to their masses and inversely related to the square of the distance between them predicted that if man could travel to the moon, the earth's gravity would be progressively weaker and that eventually the moon's gravity would take over. Since this claim was supported by his mathematical calculations, it was not disputed by religious authorities, who thought it could be utilized to their advantage. The most powerful individual in the Church of England asked Newton's permission to preach on the laws of gravitation as the last and ultimate example of the Divine Ordinance. And Alexander Pope, who pioneered the heroic couplet rhyme, wrote this epitaph for Newton.

Nature and Nature's laws
Lay hid in night:
God said, "Let Newton be!"
And all was light.

It is not generally recognized that Pope's famous "*Hope springs eternal in the human breast*" was also a tribute to Newton's Second Coming of Christ.

Hope springs eternal in the human breast:
Man never is, but always to be blest.
The soul, uneasy and confined from home,
Rests and expatiates in a life to come.

An Essay on Man, Epistle I, 1733

These and other adulations for his numerous discoveries earned Newton a knighthood in 1705, and when he died 22 years later, was the first scientist awarded the honor of burial in Westminster Abby. Alexander Pope's eulogy was an important clue in Dan Brown's best selling novel *The Da Vinci Code*.

Despite being the most renowned scientist of his era, Newton was humble about his achievements, and well aware that he had only scratched the surface of what could be learned. During his final years, he wrote

I do not know what I may appear to the world; but to myself I appear to have been but a little boy, playing on the sea-shore, and diverting myself, in now and then finding a smooth pebble or a prettier shell than ordinary, whilst the great ocean of truth lay all undiscovered before me.

Newton's undiscovered "ocean of truth" most likely refers to his obsession with the occult science of alchemy. According to one of his servants

He very rarely went to bed until two or three of the clock, sometimes not till five or six, lying about four or five hours, especially at springtime or autumn, at which time he used to employ about six weeks in his laboratory, the fire scarce going out night or day. What his aim might be I was unable to penetrate into.

Alchemy and other "black magic" practices had been banned by the Roman Catholic Church because too many monks were practicing these in attempts to transform common metals into gold or discovering the "elixir of life" that conferred eternal youth. However, Newton thought alchemy might provide information on the Second Coming of Christ that could confirm early Christian teachings. He kept meticulous but secret records of his alchemy experiments for three decades and also wrote several versions of an *Index Chemicus* with over 900 headings that had 5000 pages of annotated references to the works of 100 authors. Although he wrote over a million words on alchemy, he rarely published anything because its practice had been illegal in England due to widespread counterfeiting of the coinage. In addition, the Church had banned many of the works he cited and he feared that some of his writings and discoveries might fall into hostile hands.

By the time Newton died in 1727, alchemy had been discredited as the "domain of dunces" because of its worthless medieval beliefs and it was felt that publishing his alchemy research would diminish his reputation. Some of the most important of these manuscripts were not discovered until 1936, when a large cache of his journals and personal notebooks deemed to be "of no scientific value" was sold at a London auction. They revealed that Newton was a deeply religious man, but had refused last rites since he felt strongly that both the Catholic and Anglican churches did not practice correct Christianity. He believed that before Adam and Eve were expelled from the Garden of Eden, all of the laws of science had been revealed and that mathematicians and philosophers like Pythagoras and Plato knew many of these, including gravity. He found evidence of this in the ancient concept of "the harmony of the spheres," especially with regard to the connection between tension and pitch in a stringed instrument and he spent decades scouring ancient texts looking for more evidence of forgotten knowledge. This religious belief was the primary motivation for his interest in alchemy,

and also provided much of the inspiration for his concepts of gravity and the laws of light. As Wordsworth would later explain, Newton had a mind "forever voyaging through strange seas of thought, alone." He had few close friends, no wife, mistress or female friend, and had been described as "the 40-year-old virgin". With respect to his celibacy, Voltaire wrote that concerning women, Newton "had no passion or weakness."

To explain how matter had been created in the universe, Newton adopted some concepts of Paracelsus, the foremost Renaissance alchemist and physician. This "rebirth" period of knowledge and discovery, with its remarkable advances in science, music, literature and art, led to a greater appreciation of the glorious achievements of man. This tended to detract from the daily worship and veneration of the Trinity and saints, and even the accuracy and authenticity of the Bible became suspect. Paracelsus believed that the Genesis creation story actually described the distillation of substances by God, the supreme alchemist, who had created all the elements and minerals in the Universe. Adam, Eve, and the snake in the Garden of Eden were representative symbols similar to the figures often used in alchemy diagrams. This helps to explain why Newton's belief in alchemy was so crucial for his efforts to reconcile scientific advances with the true Christian religion and why he devoted most of his time to this pursuit. He attributed much of his remarkable success to work done by others and as an example of his humility, he wrote "If I have been able to see further than others, it is because I have stood on the shoulders of giants." One of the giants that influenced him the most was Paracelsus, although it is difficult to think of two individuals who were more opposite in so many respects.

The Flowering Of Modern Medicine Foments More Controversy

Phillip von Hohenheim was born in Switzerland in 1493 and later took the name Theophrastus Philippus Aureolus Bombastus von Hohenheim. (The word bombastic, meaning pompous or boastful, is said to have come from this part of his name and whether true or not, accurately described Paracelsus' personality.) His father was a physician and chemist, who taught him at an early age about the medical effects of metals and chemicals. Theophrastus worked in nearby mines extracting different metals and minerals and learning how they were refined and processed. He began his medical studies at the University of Basel at the age of sixteen and later at the University of Ferrara in Northern Italy, where he obtained his medical doctorate in 1516. During his studies, he acquired a strong interest in alchemy, astrology, and other occult practices, and based on this and his knowledge about minerals and metals, he decided to devote his career to developing medicines superior to those that were available. He adopted the name "para-Celsus" to imply that he was greater than Celsus, the celebrated

first century Roman physician who initially described the four cardinal signs of inflammation in *De Medicina*, the first medical encyclopedia.

Newton led an isolated life poring over ancient manuscripts, and was often secluded in his laboratory for weeks in attempts to verify his hypotheses with alchemical experiments. He confined himself to Cambridge and nearby London, and rarely relied on information from his contemporaries. In contrast, Paracelsus traveled extensively throughout Germany, France, the Netherlands, Denmark, Sweden, England, Ireland and Scotland. He visited professors in universities and other centers of learning, as well as mystics, seers, alchemists, old wives and others who had allegedly achieved cures with non-traditional approaches. **His quest was to discover "the latent forces of Nature" and how to use their healing powers.** As he explained, "He who is born in imagination discovers the latent forces of Nature.... Besides the stars that are established, there is yet another — Imagination — that begets a new star and a new heaven." He supported himself by providing medical services that often included alchemical cures and astrological predictions, and participated as an army surgeon in the Netherlands revolt against Spain. He later went to Russia, where he was briefly held captive, but escaped into Lithuania, went south to Hungary, and in 1521, again served as an army surgeon in Italy. His wanderings subsequently took him to Egypt, Arabia, the Holy Land, and, eventually, Constantinople. This was the city where an Arabian savant revealed the supreme secret of the *alkahest* to him. Finding the *alkahest*, which had the power to dissolve every other element, was the goal of every alchemist because it was thought to be an ingredient of the "philosopher's stone" that could turn base metals into gold, as well as the "elixir of life" that provided eternal youth. As a biographer wrote,

He gained his knowledge not from long-coated pedagogues but from dervishes in Constantinople, witches, gypsies, and sorcerers, who invoked spirits and captured the rays of the celestial bodies in dew; of whom it is said that he cured the incurable, gave sight to the blind, cleansed the leper, and even raised the dead, and whose memory could turn aside the plague.

Unlike Newton, Paracelsus did not believe that reading ancient manuscripts, especially for a physician, would reveal anything worthwhile.

A physician must be a traveller. Knowledge is experience. Diseases wander hither and thither, world-wide, and remain not stationary at one place. If a man wishes to learn much of disease, let him travel far; if he do so, he will acquire great experience. Countries are the leaves of Nature's code of law, patients the only books of the true physician. Reading never made a physician—only practice.

Paracelsus became famous for his knowledge and remarkable alchemical and mineral medicine cures. He was invited to return to Basel in 1526 to

accept a position as town physician and Professor of physics, medicine, and surgery at the University of Basel. Students from all over Europe came to hear his lectures, which stressed the healing power of nature and severely criticized the methods being used to treat wounds, such as padding with moss or dried dung that prevented natural draining. "*The wounds must drain, for if you prevent infection, Nature will heal the wound all by herself.*" He also attacked many other common practices, including the use of worthless pills, salves, and infusions. In posting the notice of his lectures for students at the University on June 5, 1527, he also indicated that anyone was welcome. University authorities were incensed by this open invitation and his arrogant attitude. His fierce denunciation of many of Galen's, as well as respected Arabian teachings that were firmly established, also irritated physicians and apothecaries. This antagonism intensified three weeks later, when he burned Galen's books and those of Avicenna, the Arab "Prince of Physicians". He did this in front of the University in a large brass pan filled with sulfur and nitre to make the flames more colorful and dramatic.

Galen was frequently referred to as "The Medical Pope of the Middle Ages" because his views were regarded as gospel. Disputing them was considered heresy by the church, and being convicted of such sacrilege was punishable by torture or being burned at the stake. Ten years earlier, Martin Luther had posted his *Theses of Indulgences* notice criticizing the Roman Catholic Church on the door of The Castle Church in Wittenburg, Germany. He protested the practice of selling indulgences as an alternative to confession and absolution since he viewed this as a violation of the original intention of penance. Petitioners were being falsely told they could find absolution by a financial transaction rather than true contrition. Paracelsus, who had now gained the nickname "the Luther of physicians", wrote

Why do you call me a Medical Luther?... I leave it to Luther to defend what he says, and I will be responsible for what I say. That which you wish to Luther, you wish also to me: you wish us both in the fire.

His career at Basel was short lived. His classes, once overflowing with eager students were now deserted, and he visited nearby cities where stayed with friends, treated some patients and work on his manuscripts. He became well known for his cures and settled in Nuremberg. However, in 1530, he was denounced as an imposter by jealous physicians, despite the fact that he had treated several cases of severe elephantiasis with unprecedented success. Prince Palatin, a strong proponent of alchemy, ultimately invited him to Salzburg, and his reputation for "magical medicines" soared. Most alchemists were searching for ways to transform common metals like tin, iron and zinc into gold or silver. Newton's preoccupation with alchemy was to prove that Christianity was supported by science. In contrast, Paracelsus pursued his research because he believed that good health depended on the

proper balance of minerals, and that certain illnesses could be cured by alchemy that restored this equilibrium. "Many have said of Alchemy, that it is for the making of gold and silver. For me such is not the aim, but to consider only what virtue and power may lie in medicines." He rejected the belief that disease was due to disturbances in the levels of the four humors, and claimed that **Galen had confused cause with effect.**

What you call humours are not diseases—the disease does not consist in a deficiency or excess of black or yellow bile — that it is the disease which makes these humours. How can a physician think to discover the disease in the humours, when the humours spring out of the disease? It is not the snow, which makes the winter, but the winter the snow; for although the snow is gone, the winter remains. You mistake the product of disease for disease itself.

Paracelsus pioneered the use of chemicals and minerals in medicine and made numerous discoveries. He named a new element zinc, after *zinke*, an old German word meaning pointed, because of the sharp pointed appearance of its crystals after smelting. He explained the benefits of certain natural spring waters and tried to reproduce them by adding minerals. He had learned about the pain relieving and sedative effects of opium during his visits to Arabia and Turkey, and discovered that the active ingredients in opium dissolved better in alcohol than water. After trying several concoctions, he developed one he called laudanum (from the Latin *laudare*, to praise), since it relieved so many different complaints. Laudanum made him even more famous, and he allegedly concealed a powdered supply of it inside the large knob at the end of his sword handle. Variations of laudanum became wildly popular in early 19th century England and it was later included in many U.S. patent medicines that were used to treat everything. (The combination of opium and alcohol had a pleasant and pain relieving effect that was often addictive.) In 1530 he wrote a clinical description of syphilis that described the benefits of ingesting measured doses of mercury. Administering mercury in various forms remained the treatment of syphilis until the 20th century, which led to the popular saying, **"A night in the arms of Venus leads to a lifetime on Mercury."** Paracelsus was the first to point out that poisons could have beneficial medical effects if given in small amounts and that "All things are poison and nothing is without poison, only the dose permits something not to be poisonous." His belief that "what makes a man ill also cures him" and "evil can expel evil", anticipated the development of homeopathy over two centuries later.

He was among the first to note that goiters were frequently found in areas with deficient amounts of iodine in the soil and that cretinism was also associated with this type of goiter. One of his major works, *On the Miners' Sickness and Other Diseases of Miners*, documented the occupational hazards of mining and metalworking and emphasized that the "miners'

disease" (silicosis) resulted from inhaling metal vapors, and was not a punishment for sin that was administered by mountain spirits or God. **He rejected the notion that mental states were caused by demons that needed to be exorcised by priests, and viewed psychiatric disorders as diseases that might respond to minerals and other chemicals.** Lithium has been prescribed to treat mania and depression for almost 150 years, and magnesium has long been utilized to take advantage of its sedative properties. As the Swiss psychiatrist Carl Jung later wrote, "We see in Paracelsus not only a pioneer in the domains of chemical medicine, but also in those of an empirical psychological healing science."

Paracelsus died from a fractured skull in 1541 under mysterious circumstances, since its cause was never determined. Some claimed it had been arranged by the orthodox medical faculty or that he was assassinated in an attempt to obtain his secret formulas. On the other hand, he had begun to drink heavily after his experience in Basel, and according to one contemporary account, "He lived like a hog, looked like a carter, found his chief pleasure in the society of the lowest and most debauched of the rabble, was drunk the greatest part of his life, and seemed to have composed all he wrote in this condition." This seems to be supported by a letter from his secretary, stating that during the two years he lived with him, Paracelsus "was drunk every day, rarely undressed himself, and always went to bed with his famous large sword by his side." He was very fond of brandishing it about with an air of braggadocio, and could have died in a barroom brawl.

***Pneuma* Breath Of Life, Holy Ghost, *Archaeus*, The Ether & Vital Spirit**

Paracelsus believed that good health also depended on the harmony between man and Nature and that both were united by a life giving spirit that pervaded the universe. He believed that it was this vital spirit that was God, which put him in conflict with the Church, and especially the Bible, which said that "*God created man in His own image*". In addition, "Then the Lord God formed man of dust from the ground, and breathed into his nostrils the breath of life; and man became a living being." Coptic priests still breathe air into all babies when they are born to instill in them some celestial substance. This concept also remains in words such as inspiration, and enthusiasm, from the Greek adjective *entheos*, "a god within". We use "pneumatic" to refer to things that are filled with or operated by air, but it is derived from *pneuma*, a Greek word for breath, that the alchemists believed contained a mysterious, holy energy from the gods. Aristotle used *pneuma* as a synonym for soul, and Galen taught that it was inhaled into the lungs and was then carried to the heart, which was the seat of emotions and feelings. The Stoic and other Greek philosophers thought the soul also resided in the heart. The Greek New Testament used the term *Hagios Pneuma*, for Holy Spirit or Holy Ghost, which was later replaced by the Latin

Spiritus Sanctus. The Holy Spirit association with breath is most evident in the description of events following the Resurrection, when Jesus suddenly appears in a locked room where the apostles were hiding. "Jesus said to them, 'Peace be with you. As my father has sent me, so I send you.' And when he said this, he breathed upon them and said, 'Receive ye the Holy Spirit.'" That this is not simply a symbolic gesture is clear from a 553 Church decree ruling that Jesus had literally used his breath to transmit the Holy Spirit into the apostles, just as God had breathed life into Adam.

Paracelsus proposed that there was a finely diffused magnetic-like matter or invisible vapor throughout the universe containing the *Spiritus Vitae* (Spirit of Life) that energized the body. It was mixed in with the *pneuma* we breathed in and he called it *archaeus*, meaning "the oldest", since it had existed since the earth was created. It was released when we breathed out, or expired, although some could be stored in certain organs. *Archaeus* is the glue that binds the universe (the macrocosm) to man (the microcosm), which supported his belief in "As above so below." The ancient Greeks believed that there was a similar fifth element that permeated all of space they referred to as "ether" a word meaning upper radiating air. Newton also believed there was an additional substance permeating the atmosphere called the ether that light and sound waves traveled through, and that it was the interaction between the *pneuma* and the ether with molecules of matter that gave rise to all the chemical reactions observed in nature. William Gilbert, who, in his 1600 *De Magnete* coined the term electricity and showed that the earth was a huge magnet, believed that there was empty space a few miles above its surface wherein subtle magnetic or static electrical energies could pass through. In the 1850's, Maxwell showed that the ether was filled with different electromagnetic waves and predicted the presence of radio waves, which Marconi confirmed in 1901. The ether concept no longer exists in physics but the word persists when we refer to radio and TV signals being transmitted "through the ether". And ethereal still connotes something that is light, airy, subtle, intangible, heavenly, divine, or supernatural.

The Roman Catholic Church embraced the ancient Greek concept of ether because it supported the view of earthly life as impermanent and heaven as eternal, but did not support the views of Paracelsus. Most of his manuscripts were published after his death, and although the Roman Inquisition did not start until later, his books were placed on the *Index Expurgatorius*, a list of works from which passages of text considered immoral or contrary to the Catholic religion are removed. Nevertheless his influence had already spread. Robert Fludd used the Paracelsus macrocosm – microcosm analogy to correctly explain that blood must circulate, because the heart is like the sun, that blood is like the planets that orbit around it. William Harvey later also said "So the heart is the beginning of life, the Sun of the Microcosm, as

proportionably the Sun deserves to be call'd the heart of the world, by whose vertue, and pulsation, the blood is mov'd." In explaining how arterial blood could be converted into venous blood within one system he also drew on the macrocosm/microcosm theory and used alchemical terminology derived from Paracelsus. Michelangelo's fresco of Adam's creation on the ceiling of the Sistine Chapel shows God as an elderly bearded man whose finger is not touching Adam's, and life is instilled by a transfer of energy between the two, rather than being breathed in. Similarly, Mary Shelley's 1816 *Frankenstein*, was inspired in part by watching a violent thunder and lightning storm over Lake Geneva and her involvement in experiments in which a dead frog's legs were made to twitch with electricity. Although not specified in the book, all the movie versions show the monster being brought to life by harnessing the electricity in lightning bolts.

Atheism And Current Conflicts Over Creationism, Abortion And Stem Cells

Is a firm belief in the Bible and God incompatible with faith in science? That's the conclusion of two best sellers, "*The End of Faith*" by Sam Harris and Richard Dawkins's "*The God Delusion*." Harris ridicules Christian beliefs that

Jesus Christ, a carpenter by trade, was born of a virgin, ritually murdered as a scapegoat for the collective sins of his species, and then resurrected from death after an interval of three days. He promptly ascended, bodily, to "heaven"—where, for two millennia, he has eavesdropped upon (and, on occasion, even answered) the simultaneous prayers of billions of beleaguered human beings. Not content to maintain this numinous arrangement indefinitely, this invisible carpenter will one day return to earth to judge humanity for its sexual indiscretions and skeptical doubts, at which time he will grant immortality to anyone who has had the good fortune to be convinced, on Mother's knee, that this baffling litany of miracles is the most important series of truth-claims ever revealed about the cosmos. Every other member of our species, past and present, from Cleopatra to Einstein, no matter what his or her terrestrial accomplishments, will (probably) be consigned to a fiery hell for all eternity.

Dawkins doubts that a supernatural creator exists and that any belief in a personal god is a delusion. He defines delusion as a persistent false belief held in the face of strong contradictory evidence, and subscribes to the view that **"when one person suffers from a delusion it is called insanity. When many people suffer from a delusion it is called religion."**

In "*Why I am not a Christian*", the British philosopher Bertrand Russel wrote Religion is based, I think, primarily and mainly upon fear. It is partly the terror of the unknown and partly, the wish to feel that you have a kind of elder brother who will stand by you in all your troubles and disputes. Fear is the basis of the whole thing - fear of the mysterious, fear of defeat, fear of death.

Atheism started to spread in the nineteenth century when men lost their fear of God and acquired a fear of bacteria. As George Bernard Shaw noted,

"We have not lost faith, but we have transferred it from God to the medical profession." Starting in the 1880's, plagues and infectious diseases like anthrax and tuberculosis were shown to be due to microbes. The observation that tuberculosis was always caused by the tubercle bacillus and the disease could not occur without it, demonstrated it was not the result of crowded living conditions or punishment for a sin. On the other hand, many who harbored the bacillus had no clinical evidence of infection and close confinement and unsanitary conditions were obviously contributing factors. In addition, patients who were distressed because of having committed some serious transgression that deserved punishment would also have been more susceptible because of decreased immune system resistance, so it is not hard to understand why such beliefs were prevalent. Furthermore, being touched by the monarch could cure scrofula, a form of tuberculosis that affects the lymph nodes and was known as "The King's Evil". This was especially true in Christian nations like England and France, where the King had divine powers that were conferred on him by being anointed with Holy Oils during the coronation ceremony.

This is believed to have started with Edward The Confessor, who ruled England from 1042 to 1068. His healing gifts were so great that patients allegedly came to touch his coffin for decades. He was canonized by the Roman Catholic Church in 1161 as the patron saint of kings, and Saint Edward's holy healing touch was inherited by his successors for seven centuries, until George I ended it because it was "too Catholic." Most monarchs touched groups of patients primarily suffering from scrofula, and it was customary to give each one a coin to wear around their neck to ward off evil spirits responsible for the disease. Charles II touched 92,107 people during his 25-year reign and King Henry IV of France is reported as touching and healing as many as 1,500 individuals at a time. It seems doubtful that this ritual would have persisted for so many centuries if it had not provided some rewards. Scrofula, is not considered contagious, was frequently inherited and appeared in early childhood as curious clumps of swollen lymphoid tissue around the neck. It is likely that some scrofulous patients may have benefited because of a strong faith that bolstered their immune system. As with other unproven cures, all that anyone heard about were the few successes, especially in children who are particularly susceptible to the power of suggestion. Scrofula is rarely seen today because of the development of streptomycin and other very effective antibiotics. Thus, in medieval times, when there was scant science but great religious faith, magic was mistaken for medicine. Today, the situation has become reversed, and medications are often considered to be magical.

However, the efficacy of antidepressants and drugs used to treat pain, nausea and other subjective symptoms, are largely due to faith in the

physician or medication, and/or the power of the placebo effect. Many feel that both the success of scientific advances and the benefits of a firm faith are required to achieve optimal rewards. As Albert Einstein noted, "A legitimate conflict between science and religion cannot exist. Science without religion is lame, religion without science is blind." But faith in religion is declining in the West. A 2008 Pew survey found that the number of non-believers in America has doubled since 1990 and has increased even more in other democracies, leading the Vatican to lament the growing pattern of Europe's drifting away from Church. Part of this trend may be that religion no longer provides the social support and cohesiveness it previously furnished. A recent study showed that countries with the least social dysfunction, based on 25 measures such as; rates of homicide; abortion; teen pregnancy; sexually transmitted disease; unemployment; and poverty, have become the most irreligious. The U.S. and Portugal, which were the most religious nations as measured by self-reported church attendance, prayer habits and professed beliefs, had the highest rates of social dysfunction. On the other hand, a *Newsweek* survey published last May found that 92 percent of American adults surveyed said they believed in God, which seems to contradict the alleged surge in atheism. But survey results can be deceptive and misleading, since they can be influenced by the interests of the sponsor, how the questions are phrased, the demographics of the targeted audience, and especially the guarantee of confidentiality.

Some who reject religious dogma are reluctant to be labeled as atheists or agnostics because of the stigma associated with these terms. The difference between the two is that atheism is the absence of belief in any gods, whereas agnosticism is not about belief, but about knowledge, and not being sure if any gods exist or not. Others follow the advice of Blaise Pascal, the French theologian, who proposed this wager in his 1660 *Pensees* (Thoughts)

If there is a God, He is infinitely incomprehensible, since, having, neither parts nor limits, He has no affinity to us. We are then incapable of knowing either what He is or if He is ... you must wager. It is not optional. You are embarked. Which will you choose then? Let us weigh the gain and the loss in wagering that God is. Let us estimate these two chances. If you gain, you gain all; if you lose, you lose nothing. Wager then without hesitation that he is.

Voltaire noted, "**If God didn't exist, it would be necessary to invent him**", and "**Faith consists in believing when it is beyond the power of reason to believe.**" One difference between people with a religious faith that rejects any other opinion and those who place their trust in science, is that hypotheses based on presumed facts can ultimately be proven to be right or wrong to everyone's satisfaction. It is not only difficult to prove or disprove religious beliefs, and fervent zealots also feel it is necessary to convert everyone to what they believe is the only true religion. Karl Marx wrote "Religion is the sigh of the oppressed creature, the heart of a heartless

world, and the soul of soulless conditions. **It is the opium of the people.**" Bertrand Russell, who believed that religion was based on fear, warned that "Collective fear stimulates herd instinct, and tends to produce ferocity toward those who are not regarded as members of the herd....**Fear is the main source of superstition, and one of the main sources of cruelty.**"

A good example is the cruelty to Christian pilgrims after Muslim Turks took over Jerusalem in 1071, which prompted Pope Urban II to proclaim the First Crusade led by Peter the Hermit. His "army" consisted mainly of French and German peasants, drawn to the cause by the pope's promise of indulgences, which was interpreted as the freedom to commit any sin they wanted to. On their way through Europe, they massacred, tortured and plundered any Jew they could find, and stole or robbed whenever they could. Retribution was savage for any resistance and in one Yugoslavian battle, they slaughtered 4,000 local residents who dared to resist. The Crusaders also paid a heavy toll, since many of Peter's men died before they reached Asia. When they finally encountered the Turks, the Christian army was overwhelmed. Four thousand died in one fight and a total of 300,000 died in this march. Subsequent successful Crusades were associated with unbelievable barbaric atrocities by Christian soldiers, who raped and indiscriminately slaughtered innocent people and babies in their annihilation of the inhabitants of entire cities. In addition to the Inquisition, numerous pogroms and the Holocaust, there are numerous examples of similar behaviors in other faiths where zealots feel justified in doing anything to destroy or convert non-believers to their religion or political position. We are currently threatened by an Islamic Jihad, or holy war, being waged by Taliban, Hamas, Hezbollah and other extremist groups. Their terrorist activities are targeted not only at other religions or nations, but also within Islam, as illustrated by the ongoing violent Sunni/Shi'ite conflicts in Iraq, political riots in Iran and the disruption of presidential elections in Pakistan and Afghanistan.

It is difficult, if not impossible, to reason with anyone having a strong faith, even when their atrocities are diametrically opposed to the principal precepts of the religion they profess. As Ramon y Cajal, the Spanish physician who received the Nobel Prize for delineating the structure of the nervous system, noted "**That which enters the mind through reason can be corrected. That which is admitted through faith, hardly ever.**" This poses a problem, not only with scientific controversies such as Creationism versus Darwinism, but also medical disputes over abortion, human embryo stem cell research, and religions that prohibit potentially life saving blood transfusions. Such potential conflicts recently surfaced with the appointment of Dr. Francis Collins to head the National Institutes of Health, with its annual budget of \$32 billion for medical research. A distinguished geneticist, Collins, who was previously an atheist, is now a born again Christian

evangelist, and author of the 2006 book, *The Language of God: A Scientist Presents Evidence for Belief*. He also established the BioLogus Foundation, "to address the escalating culture war between science and faith in the United States" and which asserts that "faith and science both lead to truth about God and creation." Critics claim it is a veiled attempt to give creationism a scientific patina. It is not clear how Collins stands on attempts to ban the teaching of evolution in schools, but he recently pointed out Darwin's inability to explain some of man's higher functions and described the concept of Intelligent Design as "infallible" and "beyond science." There have also been concerns about Regina Benjamin's nomination for Surgeon General since she was awarded a papal medal for being a devout Catholic. She has said this would not conflict with contraception or abortion laws.

Like Einstein, Collins believes that both religion and science are necessary and can coexist. But Einstein, whose parents were Jewish, did not believe in God, and described himself as "**a deeply religious nonbeliever.**" As he explained in *The Human Side*, "I do not believe in a personal God and I have never denied this but have expressed it clearly. If something is in me which can be called religious, then it is the unbounded admiration for the structure of the world so far as our science can reveal it." In explaining this to a Rabbi, he wrote "I believe in Spinoza's God who reveals himself in the orderly harmony of what exists, not in a God who concerns himself with fates and actions of human beings." Einstein's religion is a scientific search for truth, and although this differs from the religion of Collins and Benjamin, the quest and hope for harmony between science and religion continues. In commenting on the creationism-evolution controversy, Pope Benedict XVI recently said "**This clash is an absurdity because on one hand there is much scientific proof in favor of evolution,** which appears as a reality that we must see and which enriches our understanding of life and being as such", but that, "**evolution theory does not exclude a role by God.**" This and other debates will likely continue, and could intensify — so stay tuned!!

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