



TEILHARD, TECHNOLOGY AND THE EMERGENT GOD

REVEREND CHARLES P. HENDERSON

Author of God and Science; Faith, Science and the Future
chashenderson@mindspring.com

Reverend Charles Henderson speculates on what the religious and scientific perspectives would be of the Jesuit Priest and Scientist, Pierre Teilhard de Chardin, who was equally grounded in both the material and spiritual worlds and held that human progress was not so much at its origin, but at its destination at which all things cohere.

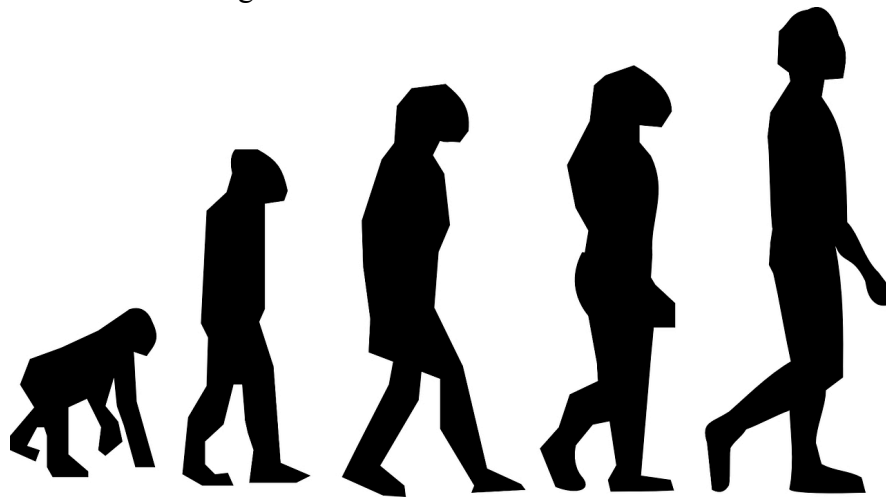
Keywords: God, Pierre Teilhard de Chardin, geoethical, nanotechnology, Jesuit, paleontology, geology, Christian, doctrine, faith, religion, science, theology, church, Catholic, Rome, Vatican II, Darwin, Dawson, Stephen J. Gould, Smith Woodward, scientific, Piltdown Man, Marcellin Boule, little book of piety, China, The Divine Milieu, The Big Bang Theory, Omega Point.

Before approaching the topic of how Teilhard de Chardin might have felt (and we can only speculate about that), about geoethical nanotechnology, I think it might be helpful to give a brief overview of his place in the intellectual life of the 20th century as well as his central contribution, namely his effort to show that science and religion were both indispensable to human thriving, and by extension that technology, in service to both, is critical.

As a matter of fact, Teilhard stands tall among the very few leaders of thought in the 20th century to integrate scientific research with religious vocation. At an early point in his career, this paleontologist and Jesuit Priest made it his personal mission to reconstruct the most basic Christian Doctrines from the perspectives of science, and at the same time, to reconstruct science from the perspective of faith. He would do this by overthrowing all the barriers that had been erected between science and religion in the prior 100 years; mainly in reaction to Charles Darwin. He would take the lessons learned from the study of nature as the foundation upon which to reconstruct Christian Theology. He would single-handedly renege all the dogmas of his own Catholic Church, and he would at the same time, remake the world a modern science on the model suggested by his personal experience of God.

This is a breathtaking project when you think about it. Perhaps not surprisingly, given the magnitude of what he was trying to accomplish, Teilhard was seen by the Vatican as a major threat. Rome insisted that his writings should not be published, he was forbidden to teach or even to speak publicly on religious topics. He was banished from his native country, and yet his ideas were formally, and sometimes secretly, disseminated by his friends and colleagues within the Church. He became a hero and a role model to an entire generation of young Priests and Theologians. Arguably, he set the stage for the renewal movements, which finally came to flower in Vatican II¹.

Indeed, the shockwaves that he set in motion are still shaking our culture and influencing our thoughts six decades after his death in 1955. Yet even as his thought and writings were shaking up the world of religion, he was also reverberating through the realm of science. In fact, Teilhard was suggesting nothing less than a program for the reconstruction of science itself. He put forth a systematic critique of traditional science, which was just as radical and just as provocative as his criticism of traditional religion. He provoked equally extreme reactions in the scientific community. A small number of world-class scientists have taken his ideas seriously; enough to construct their own work around Teilhard's model, but the majority have reacted as defensively as the Vatican theologians.



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Case in point, if the very premise of Teilhard's work in thought is evolution, it is not surprising that the leading, public advocate of Darwinism, Stephen J. Gould, has gone to work trying to destroy Teilhard, writing vehemently and dogmatically, like the guardian of established religion, Gould asserts that Teilhard's entire enterprise is illegitimate. "Teilhard's essential insights are incompatible with science", Gould argues. In addition to that, Gould has made it his

¹ Second Vatican Council, John XXIII, Saint© Bettmann/Corbis 21st ecumenical council of the Roman Catholic Church (1962–65), announced by Pope John XXIII on Jan. 25, 1959, as a means of spiritual renewal for the church and as an occasion for Christians separated from Rome to join in search for reunion. Encyclopedia Britannica Online. <http://www.britannica.com/event/Second-Vatican-Council> Retrieved July 29, 15.

personal mission to expose Teilhard as being guilty of the most outrageous scientific fraud of modern times.

Stepping back a pace, early in Teilhard's career as a student of theology, a chance meeting with the lawyer and amateur archeologist, Charles Dawson², led to an association, which was later to prove both formative and fateful for Teilhard. At the time though, Teilhard's association with Dawson contributed immensely to his progress as a scientist and within the scientific community. Dawson introduced him to the prominent author, Arthur Smith Woodward³, keeper of Paleontology at the British Museum. Smith Woodward opened doors to the scientific establishment that would otherwise have been closed to a young, Jesuit Seminarian. In fact, Dawson and Smith Woodward were to become collaborators in one of the great events of Paleontology, the "discovery" of the famous Piltdown Man⁴, which they presented as an important missing link in the evolution of the Human species.



Credit: Piltdown Man public domain image from <http://publicdomainclip-art.blogspot.com/2010/12/piltdown-man.html>

Teilhard participated with the two Englishmen in their excavations at Piltdown and in the process, his own standing as a very young Paleontologist was established in scientific circles far beyond the precincts of his own Catholic Church.

When Teilhard left England to begin his doctoral work, he was to become a student and eventually a colleague of Marcellin Boule⁵, the greatest, physical anthropologist in France at that

² Charles Darwin, an English Naturalist (b Feb 12, 1809, d. Apr 18, 1882) whose scientific theory of evolution by natural selection became the foundation of modern evolutionary studies.

Encyclopedia Britannica Online. <http://www.britannica.com/biography/Charles-Darwin> Retrieved July 29, 15.

³ Arthur Smith Woodward was keeper of the British Museum's paleontology department who announced the find [known as the Piltdown Man] at a meeting of the Geological Society of London on December 18, 1912.

Encyclopedia Britannica Online. <http://www.britannica.com/biography/Arthur-Smith-Woodward> Retrieved July 29, 15.

⁴ Piltdown Man (*Eoanthropus dawsoni*), also called Dawson's dawn man, proposed species of extinct hominin (member of the human lineage) whose fossil remains, discovered in England in 1910-1912, were later proved to be fraudulent. Encyclopedia Britannica Online. <http://www.britannica.com/topic/Piltdown-man> Retrieved July 29, 15.

⁵ Marcellin Boule was a French Geologist, Paleontologist and Physical Anthropologist (b. Jan 1, 1861, d. July 4, 1942) who made extensive studies of human fossils Europe, North Africa, and the Middle East and reconstructed the first Neanderthal skeleton. Encyclopedia Britannica Online. <http://www.britannica.com/biography/Marcellin-Boule>

time. Thus the foundations were laid for Teilhard's long and successful career as a paleontologist. However in 1953, the Piltdown Man was exposed as a deliberate hoax, perhaps the most astounding fraud in the history of modern science. Until recently, Dawson was believed to have acted alone in this, but in August of 1980, a quarter-century after Teilhard's death, Stephen J. Gould⁶, put forth his own view that Teilhard was a co-conspirator in the fraud. Gould first published his accusations in *Natural History Magazine*⁷ and repeated his case with additional argument and discussion within his book, *Hen's Teeth and Horse's Toes*⁸. Though his "evidence" is entirely circumstantial, Gould's accusations are tightly reasoned, as are the arguments of Teilhard's defenders who have written and published their own views in reply. The briefs for and against Teilhard are far too complex to review here, suffice it to say that the reconstruction of events that originally took place in the years between 1908 and 1914 is difficult in itself to draw firm conclusions based on circumstantial evidence in letters and remembrances written over a century ago, it's impossible.

Partly as a result of these defense and dogmatic reactions to Teilhard, his importance today is underestimated in both the religious and scientific establishments. While many of his ideas have worked their way anonymously into currency, and have been widely accepted, still Teilhard's innovative thinking has been taken seriously only by a minority of thinkers who see science and religion entering into a new era of cross-fertilization and creativity as I, for example, also believe. For the vast majority however, Teilhard's thoughts seem marginal, at best, and his insights are not studied in the depth they deserve. This is partially explained by the active suppression of his ideas in the Church and the suspicion of his ideas within science.

Teilhard's obscurity is also to be explained however, by his own style of writing and his tendency to wander into the realm of speculation. His fertile imagination led him into a fantasy world foreign to science and theologians alike. When one cuts through his sometimes-lurid prose however, one encounters a series of highly imaginative proposals for the reunion of research and religion and the questions raised by his works cannot be avoided.

Anyone interested in extending the search for truth beyond the traditional boundaries between science and religion must wrestle with his basic insights. Step back in time just a few decades, before this date in his career. It was at the height of his career in paleontology, while he was studying bones and fossils in northern China way back in 1927, that Teilhard wrote what he called "a little book of piety" designed to convey both in sincerity of his work in science and the orthodoxy of his faith to his superiors in Rome who were beginning to have their doubts.

Retrieved July 29, 15.

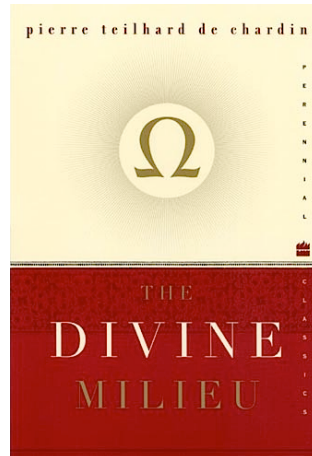
⁶ Stephen J. Gould (b. Sep 10, 1941 d. May 20, 2002) an American paleontologist, evolutionary biologist and science writer. Encyclopedia Britannica Online. <http://www.britannica.com/biography/Stephen-Jay-Gould> Retrieved July 29, 15.

⁷ The *Natural History Magazine* is devoted to promoting a public understanding and appreciation of nature and science. <http://www.naturalhistorymag.com> Retrieved July 29, 15.

⁸ Gould, S.J. (1994) *Hen's Teeth and Horse's Toes: Further Reflections in Natural History*. New York & London: W.W. Norton & Company.

In this book, Teilhard speaks of “*The Divine Milieu*”, and by its very title suggests his theme, The Whole Material World, as the setting of profound, mystical vision of God. It is the world itself, as it is seen through the world of science, that the workings of God are most obvious. Teilhard’s writing is graphic and unrestrained,

“All around us, to right and left, in front and behind, above and below, we have only to go a little beyond the frontier of ostensible appearance in order to see the Divine welling up and going through, but it is not only close to us, it’s in front of us that the Divine Presence has revealed itself, it has sprung up universally, and we find ourselves so surrounded and transfixed by it that there is no room left to fall down and ignore it even within ourselves. By means of all created things, without exception, the divine assails us, penetrates us, and molds us. We imagined it as distant and inaccessible, whereas in fact, we lived deep in its burning layers... As Jacob said awakening from his dream, the world, this palpable world, which we were wont to treat with the boredom and disrespect with which we habitually regard places of no sacred association for us, is in truly a holy place, and we did not know it.”⁹



Needless to say, writing like this did not reassure the religious authorities in Rome, for Teilhard affirmed the material world as a source of mystical illumination. Though Teilhard did not directly criticize any specific Doctrines of the Church, in this little book of piety, this work constituted as assault upon the skeletal supports of traditional theology. Teilhard was just as provocative when he was trying to reassure, when he was trying to stir up the debate. Early on, he describes his book in two sentences, which were intended to convey the modesty of his position, but in reality contained a theological time bomb:

“This little book does no more than recapitulate the eternal lessons of the Church in words of a man who, because he believes himself to feel deeply in tune with his own times, has sought to teach how to see God everywhere, to see God in all that

⁹ de Chardin, P.T. (1968). *The Divine Milieu: An Essay on the Interior Life*. New York: Harper and Row, p. 112.

is most hidden, most solid and most alderman in the world. These pages put forward no more than a practical attitude – or, more exactly perhaps, a way of teaching how to see.¹⁰”

What Teilhard says that he intends no more than to “recapitulate” the eternal lessons of the Church, but he goes on to assert that he is actually teaching the Church how to see, as if for the first time. As a scientist and individual thinker, he is suggesting that the primary source of religious truth is to be found in the material world, rather than the magisterium teaching authority of the Church.

In a real sense, it shall be science that shows Theologians how to see. It shall be the personal experience of a single Priest working on his own way off in distant China, which will indicate to the highest Ecclesiastical Authorities what is essential to Catholic teaching and by implication, what is not essential.

In a highly suggestive essay written in 1939, Teilhard traced the development of science, the entire sweep and history of science, from its earliest beginnings as a mere hobby, to its present as he wrote, “the solemn prime vital occupation of man.” Teilhard follows science from its origins in the cultures of the ancient world, through its period of expansiveness in the 19th Century when it began to take on all the aspects of a substitute religion. Critical in this development of science, in Teilhard’s view, was the Theory of Evolution and its notion of progress through time.

With this sense of moving forward in time from the simplest life forms to the most complex, from the animal to the Human species, from the most basic colonies of bacteria to the highest civilization, evolutionary science became much more than a method of collecting and classifying the facts of life. Increasingly, science was seen as a specific means by which Humanity would move forward into the future. Teilhard wrote,

“Henceforth science recognizes itself as means of extending and completing in man, a world still incompletely formed. It assumed the shape of grandeur and a sacred duty; it became charged with futurity. In the great body, already coming to birth or a Humanity grouped by the act of discovery, a soul was at last released; a mysticism of discovery.”

Now to be sure in the 19th Century, science enjoyed such success at explaining so many of the mysteries of life, that it appeared to many that as if all the many mysteries would one day be explained away. In physics one can penetrate to the heart of matter and develop a clear understanding of that fundamental building block, the atom. In Biology, the evolution of life forms could ultimately be explained through competition of the various species across the expanse of time. By the same token, intelligence could be understood as a function of the

¹⁰ de Chardin, P.T. (1968). *The Divine Milieu: An Essay on the Interior Life*. New York: Harper and Row, p. 46.

circuitry in the brain and the consciousness could be reduced to a complex series of chemical reactions, etcetera.

In other words, argues Teilhard, the mysticism of discovery was fast deteriorating into a mere worship of matter. The religious corollary of this trend was of course, in the 1960s, the Death of God Theology¹¹. For if all the important processes of life could be understood through the tools of analysis just recently developed by science, what further need remained for faith in God or even mystery itself?

In Teilhard's view, the situation changed dramatically however, in the middle of the 20th Century. In physics, atoms of cells were broken down into innumerable sub-particles infinitely more mysterious than the alchemist ever imagined.

Similarly in biology, chemistry and sociology the important phenomena could not be reduced to the simple mechanisms that were once thought to lie at the heart of all things. Far from continuing to explain away the remaining mysteries, science had exposed still deeper mysteries at the very heart of matter itself.

At a more mundane level, science did not prove to be the unmitigated blessing it was once believed to be. As we know, Teilhard lived long enough to witness the explosion of the world's first atomic weapons, and with these weapons a fatal blow was delivered against the 19th Century naïve view of Human progress. If the science of Darwin, Marx and Freud seemed to make certain the death of God, the Nuclear Arms Race¹² secured the death of science as a substitute religion.

In reaction against a naïve anthropomorphic religion, science in its century of triumph had turned increasingly against any theory, which cast nature into a Human mold. Paradoxically, in the late 20th Century, scientists recognized that there is no line of demarcation that can be drawn between the observer and the observed. The science, just like the theologian, cannot take a completely "objective" position as if he were standing separate and apart from the phenomenon being studied. One inevitably sees the world through Human eyes and conceives of it in Human images. Even when one makes every effort to avoid doing so, one still tends to make the world into a mirror.

A majority of scientists have dealt with this situation, as does Stephen J. Gould for example, by opting for militant skepticism. Not only has God been shut out of science, but also any attempt to see in Nature evidence of the final plan, purpose or design is rejected out-of-hand.

¹¹ Elston, J.T. (8 Apr. 1966). Is God Dead. *Time Magazine*.

<http://content.time.com/time/magazine/article/0,9171,835309,00.html> Retrieved excerpt July 29, 15

¹² Nuclear Arms Race – the race between the US and USSR from the 1940s through the 1990s for world leader in nuclear weaponry. <http://www.amnh.org/exhibitions/past-exhibitions/einstein/peace-and-war/nuclear-arms-race> Retrieved July 29, 15.

The very notion of progress itself has been subjected to withering criticism. Teilhard even dealt with this problem as he put it, asked whether life is going anywhere,

“Nine biologists out of ten will tell you, no, it is not they will say so passionately. They will say it is abundantly clear to every eye that organic matter is in a continual state of metamorphosis and even that this metamorphosis brings it with time toward more and more improbable forms. But what scale can we find to assess the absolute or even the relative value of these fragile constructions? By what right for instance, can we say that a mammal, even in the case of man, is more advanced, more perfect than a bee or a rose? We can no longer find any scientific grounds for preferring one of the laborious products of nature to another. They are different solutions, but each equivalent to the next. One spoke on the wheel is as good as any other spoke. No one of the lines appears to lead anywhere in particular.”

Continuing with Teilhard’s view, science in its development and even as I shall show, Mankind in its march, is marking time at this moment because men’s minds are reluctant to recognize that evolution has a precise orientation and a privileged axis. Weakened by this fundamental doubt, the forces of research are scattered and there is no determination to build the Earth. Still he writes,

“I believe I can see a direction and a line of progress for life, a line and a direction, which are in fact, so well marked that I am convinced their reality will be universally admitted by the science of tomorrow.”

As we can see, in the face of the withering destruction of the very notion of progress, still popular within science today, Teilhard asserted that Nature is moving erratically and haltingly perhaps, but none-the-less moving towards higher and higher forms of consciousness. This movement is most apparent in the evolution of the Human species. It is Humanity in particular, which has a clear concept of nature and of nature’s inner workings. Teilhard approvingly quotes Julian Huxley¹³ when he said, “Humanity is nothing else than evolution becoming conscious of itself.”

The specific insights that come into the foreground of awareness as one reflects upon the ascent of this species are both its uniqueness and its relatedness to the whole of the natural world. For Teilhard, the most sublime product of evolution is, of course, the Human person, the individual uniquely aware of itself as a person, yet also aware of its interdependence within the whole. Teilhard would agree with Gould up to a point. One cannot talk scientifically about the superiority of the Human race; one cannot separate the creation of Humanity from the creation of

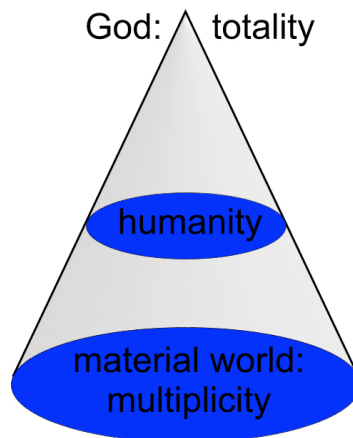
¹³ Sir Julian Huxley (b. Jun 22, 1887 d. Feb 14, 1975) was an English biologist, philosopher, educator and author who greatly influenced the modern development of embryology, systematics and studies of behaviour and evolution. Encyclopedia Britannica Online. <http://www.britannica.com/biography/Julian-Huxley> Retrieved July 29, 15.

other life forms as many creations attempt to do. Humanity did not emerge by fiat of an all-powerful God; on the contrary, our origin and ascent follow the same path taken by all the creatures that share life with us on this planet.

Human consciousness, including a consciousness of God, is the culmination of Nature's own movement through time; it is emergent. Far from being imposed upon, the formless face of the natural world, God emerges from Nature as its final goal and purpose, thus science and religion are brought together; they direct dialectical relation. Teilhard shapes this argument most succinctly in the closing of his great book, *The Phenomenon of Man*,

“To outward appearance, the modern world was born of an anti-religious movement: man becoming self-sufficient and reason supplanting belief. Our generation and the two that preceded it have heard little of talk but conflict between science and faith. Indeed it seemed one moment, as a foregone conclusion that the former was destined to take the place of the latter. ...After close on two centuries of passionate struggles, neither science nor faith has succeeded in discrediting its adversary. On the contrary, it becomes obvious that neither can develop normally without the other. And the reason is simple: the same life animates both. Neither in its impetus nor its achievements can science go to its limits without becoming tinged with mysticism and charged with faith.”

A science “tinged with mysticism and charged with faith.” Are these words simply rhapsodic and metaphorical? Not for Teilhard. As a practicing research scientist he saw the evolution of personhood as neither an exception as a general rule of nature or as a freak occurrence without relevance to other living things. He saw the “phenomenon of man” as an arrow pointing to the final goal and purpose of the universe itself¹⁴.



Growing from the same soil that has given rise to all the other phenomenon of life, Human consciousness and Human personality appear to stand at the very top of the

¹⁴ de Chardin, P.T. (1961). *The Phenomenon of Man*. New York: Harper and Row, pp. 141-42.

tree of life in Teilhard's view. If one were to project the forward edge of evolution in the future, especially as it falls increasingly under Human direction and control, that it makes increasing sense to talk of a higher consciousness as being the inherent end and purpose of evolution. Such notions would drive Stephen J. Gould totally off the wall.

If evolution itself points toward an evolution of consciousness, which has personality, perhaps God should be seen as the goal toward which this universe is moving; hence the deep affinity which Teilhard felt between science and religion. "There is less difference than people think between research and adoration. Religion and science are the two conjugated faces or phases as one-in-the-same act of complete knowledge." Teilhard illustrates these concepts in his image of the cone shown within the image below.

When human beings turn their powers of analysis upon the diversity and multiplicity of life at the base of the cone, this is pure science. However, when Humanity turns its powers of synthesis toward the summit, toward the totality in the future at the pinnacle of the cone that is Theology. Yet science finds its fulfillment only as it turns from investigation and analysis towards synthesis. That is to say, seeing the totality of life and weighing its character testing the relationship of the part to the whole. Likewise, those who engage in the search for God find their fulfillment only as they see God who is available in the material world. A faith that is cut loose from the world is likely to be illusory and unreal. Conversely, the faith that truly counts is one that takes science as a fellow traveler in its search for the holy.

In the past, Teilhard argues, Theologians tend to see God as a supreme being standing over and apart from the material world. In this view God dwelt upon the high and remote plane of pure spirit, and therefore the way of salvation was to be lifted above the contradictions of the material realm into a higher, spiritual plateau.

Teilhard writes, "Since Aristotle there have been almost continual attempts to construct models of God on the lines of the outside Prime Mover.¹⁵" The high and all-powerful God of traditional Theology can influence the world only intervening in its natural processes and contradicting its natural laws. In fact, many Theologians delineate a crystal clear line of demarcation between the natural and the super-natural. The chief signs of God's action in the world are taken to be those otherwise inexplicable events apparently contradicting all reasonable explanation. Obviously, this concept of God is still very much with us. In popular conception, the most sure and certain sign of God's presence is to be found in those startling and unusual coincidences and occurrences that seem to defy all Human understanding. A cancer victim suddenly goes into remission despite clear indication from medical authorities that death is imminent. The popular

¹⁵ de Chardin, P.T. (1969). *Christianity and Evolution: Reflections on Science and Religion*. New York: Harper & Row, p. 194.

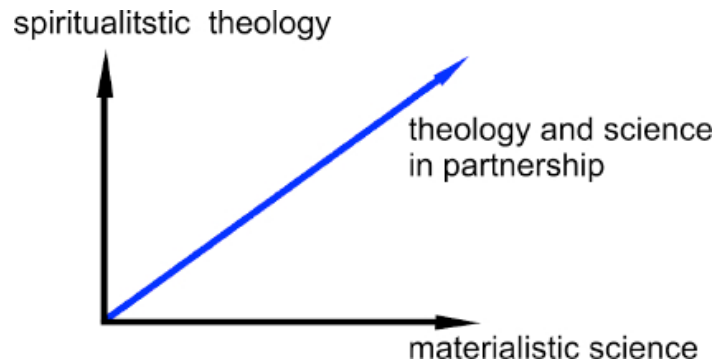
imagination has been trained through centuries of religious instruction to see God's appearance in the world as, by definition, an exception in most unnatural and unusual events. Correspondingly, all hope for future and complete communion with God lies in escape from the material world, which is of course possible only after death.

Thus, one looks for a closer understanding of God by moving in a vertical dimension, as illustrated on within the chart above. One does not progress in life by moving forward in time, on the horizontal scale, but by escaping the contradictions of time and history in the eternal. It is precisely such a notion of salvation, which has been seen as completely antithetical to science. A supernatural God can only be understood in scientific terms as arbitrary and capricious. As Stephen J. Gould reminds us, "It is not so much that scientists has locked God out of history, the breach has resulted as much from the sincere attempt of religious people to see God as perfect, both in power and knowledge as well as love. Yet only a God, who is removed from the ambiguities of life, as we know it, can be perfect. As Stephen J. Gould rightly insists, "Such a perfect God could not have created an imperfect world for such an act of creation would have been completely out of character!

In the meantime, as theologians tended to define God more and more in terms of the supernatural, science has taken its stand in the material world and in nature. In the years since Darwin, scientists have seen Human life evolving in a lineal march through time on the horizontal scale. As the theologians defended God by building walls around the domain of the spirit, so science dug its trenches in the world of matter. Marx' dialectical materialism and his atheism are together the logical consequences of supernaturalism in religion. Scientific atheism is in fact, the inevitable consequences of a Theology, which insists that the knowledge of God must defy Human understanding. When Theologians insist that knowledge of God can only come through a miraculous act of divine revelation rather than being discovered by reason, or that sinful Humanity has no hope of salvation except by fiat of an all-powerful God, then the dialogue between science and religion is interrupted prematurely. Moreover, religion has no role to play in a world, which is committed, finally and forever, to science. That, Teilhard argues, is the greatest Theological tragedy of the modern age, and it is still playing itself out in our time in the 21st Century.

Teilhard's "modest" proposal for the resolution of this dilemma is to chart a new course for both Theology and science. If religion has seen its purpose as raising Human life to higher consciousness in a vertical direction and if science has seen its purpose in moving Humanity forward in a horizontal plane within the boundaries of the material world, the obvious frontier of consciousness involves a movement both upward and

forward. Again, Teilhard offered this simple diagram to depict his agenda for the evolution of Human consciousness¹⁶.



All of which brings us back to the beginning; the question of how Teilhard would have seen the development of nanotechnology and other digital phenomenon of the 21st Century? As my chart suggests, Teilhard's entire frame of thought is premised upon an affirmation of Human progress; not only in the purely technical realm, but also in the realm of consciousness. He did not see an intrinsic conflict between science and religion, but rather affirmed both science and spirituality as essential ingredients of any real Human progress. Perhaps the most radical aspect of his thought was his insight that God resides not so much at the origin of the universe, at the Big Bang¹⁷, but at its destination, the Omega Point¹⁸.

God is in fact the destination toward which the universe is inextricably moving. Drawn as if by an unseen force toward the Omega Point, at which all things cohere. In this relentless march toward the future, he would have seen nanotechnology like the sciences and technologies of the 21st century, as playing an indispensable role. I believe he have been thrilled to learn of the entire notion of cyberspace, of virtual reality, and of those technologies that make the transition from the merely theoretical, to reality. Remember, however mystical and theological his imagination was, his work was equally grounded in the material world, the world of rocks and trees, plants and animals. In his life as well as his work, he exemplified that holistic vision that is clearly the key to our future. Still, a word of caution is on order in conclusion, for like the technology that paved the way for the splitting of the atom, atomic energy, as well as atomic and nuclear

¹⁶ Figure adapted from diagram appearing in: de Chardin, P.T. (1969) *The Future of Man*. New York: Harper and Row, p. 269.

¹⁷ The Big Bang Theory was first proposed as the origin of the Universe by Georges Lemaître, (b. 17 Jul 1894 d. 20 Jun 1966), a Belgian priest, astronomer and professor of physics at the Catholic University at Leuven. Lemaître, G. (1933). *Discussion sur l'évolution de l'univers*. Paris: Gauthier-Villars.

¹⁸ Coined by Pierre Teilhard de Chardin, the Omega Point is a religious belief that the universe is evolving toward a higher level of material complexity and consciousness. de Chardin, P.T. (1959). *The Phenomenon of Man*. New York/London: Harper Torchbooks.

weapons, nanotechnology has the same potential to serve purposes that are destructive as well as creative, evil as well as good. Hence the need for the qualifying adjective, what the world needs now is a geoethical nanotechnology.

Technology is guided both in its development as well as its application by a sense of the sacred world and a commitment to human thriving in the deepest possible sense. With that critical qualification, Teilhard would have been thrilled by the technologies of our 21st Century, especially that of nanotechnology.

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