FiRST Principles
Faith Reason Science Technology
Journal of the Institute for Theological Encounter with Science and Technology
ITEST Volume 56 #2 April 2025

Opening Message

April brings new energy to our Earth and inhabitants as the darkness of winter is finally peeled back to reveal the beauty of God's creation. In the same spirit, I am certain you will find plenty of intellectual light shining from the eclectic mix of articles, announcements, and other content we have gathered for you in this issue of *FiRST Principles* journal.

Going forward, we'll be looking for writers with a knack for explanatory elegance, authoritative updates, or surprising revelations and arguments. We especially (but not exclusively) would like to hear more from our members. What essay or article could you contribute to our community? I'm happy to discuss ideas!

Please also note that we are making this journal available at no cost (via email) to non-members who are interested in the intersection of faith and science; they will receive the most recent previous issue every two months. Dues paying members receive the current issue in print. We want to publicize our members' contributions and also bring a wide audience into contact with ITEST and the opportunity of membership. I encourage you to share it with others and urge them to sign up on our website to receive future issues.

In recent months, I have had my head down, working on projects and a new book that have consistently alerted me to the dangers of unbridled expansion of new technological developments. How thrilled am I, then, to finally have time to "lift my head" and read of the many wonderful – sometimes mind-boggling – new efforts of scientists around the world. Just today, I see that physicists in Würzburg have experimentally demonstrated the existence of "quantum tornadoes" that will perhaps enable transmission of information in electronic components without an electric charge.[1] A new genomic study at MIT suggests that human language capacity emerged 135,000 years ago, with implications for our understanding of what makes our roughly 230,000-year-old species unique.[2]

Today, I feel the hope and wonder that drive all ITEST members in our embrace of our religious faith as well as the beauty of a rigorous science – clear-eyed, methodologically secure, and always seeking truth where it may be found. "Beauty?" Absolutely! As Pope Benedict XVI wrote, "Yes, I think these two things go hand in hand: reason, precision, honesty in the reflection on the truth – and beauty. Reason that intended to strip itself of beauty would be halved, it would be a blinded reason." [3]

This Easter, I will offer a special prayer of thanks for the beauty of true science, and for ITEST.

Most Sincerely,
Christopher M. Reilly, ThD
Editor, *FiRST Principles*

1. https://phys.org/news/2025-03-quantum-tornadoes-momentum-space-experimental.html.
2. https://phys.org/news/2025-03-genomic-capacity-language-emerged-years.html.
3. Benedict XVI, Address, meeting with the Clergy of the Diocese of Bolzano-Bressanone (Aug. 6, 2008).

In This Issue...

Announcements

ITEST Webinars

Watch our most recent ITEST webinars on demand.

Date	Title	Presenters	Watch/Register link
02/22/25	The Anthropic Principle, "Are We Special?" Did God Make Our "Goldilocks Universe" for Man?	Robert Kurland, PhD William M. Briggs, PhD	https://faithscience.org/anthropic-principle/
04/05/25	AI and Sin: Medieval Robots and the Theology of Technology	Christopher M. Reilly, ThD Jordan Joseph Wales, PhD	https://faithscience.org/ai-and-sin/

Register now for this webinar.

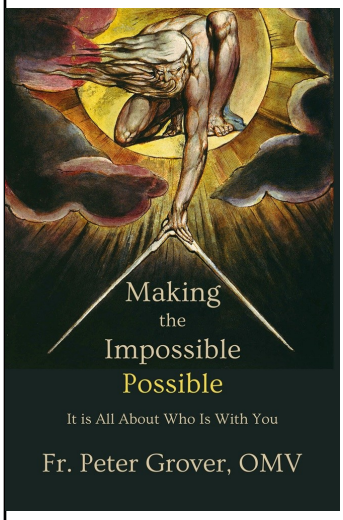
06/14/25	Bioethics and AI as Human Flourishing: Where Catholic and Orthodox Social Teaching Meet in One Christian Social Ethos	Dr. Constantine Psimopoulos Fr. Michael Baggot	https://faithscience.org/bioethics-and-ai/

Watch all previously recorded ITEST webinars at www.faithscience.org/news-and-events/**.**

Book Recommendation

Making the Impossible Possible: It Is All About Who Is With You

by Fr. Peter Grover, OMV



This book explores the transformative power of divine partnership, showing how God works through human imperfections to achieve extraordinary results. Drawing from scripture, personal anecdotes, and life lessons, the book demonstrates that collaboration with God is not limited to saints or the gifted—it is accessible to everyone. The central theme is that faith and trust in God allow ordinary individuals to participate in extraordinary accomplishments while finding fulfillment and simplicity.

Fr. Grover draws from his experiences as a priest and scholar, blending humor, wisdom, and biblical insights. He encourages readers to align their talents with God's will, emphasizing that imperfections do not diminish value or potential. Ultimately, the book inspires readers to trust in God's plan, embrace their unique roles, and strive for a life of purpose and gratitude.

Buy this book at https://enroutebooksandmedia.com/makingtheimpossiblepossible/.

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FiRST Principles - Christopher M. Reilly, ThD, Editor
Sister Marianne Postiglione, RSM, Senior Editor, Sheila Roth, Managing Editor
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Quantum Gravity and Black Holes: How Christian Wisdom Can Aid Science

By Dr. Mattheus A. Uijttewaal

Introduction

Historically, modern science originated in a Catholic society, and with reason. Many have come to think, however, that the Catholic (Christian) faith is actually harmful to science. In contrast, the slow separation has left us with various problems in what I call "grand/exotic science." Besides, there are problems more generally with the perception of science, even with a lack of common sense in society.

These points are addressed here, and thus a return of Christian influences is argued for, in science and more generally in "the West."

Additional details and science/faith topics can be found in my articles online at **https://orakelaar.blogspot.com/**

(Getty Images: Pascal Deloche)

Science born from Christianity

Historians are increasingly aware that modern science (as an independent, self-propagating discipline) arose precisely from Catholic, medieval Western-Europe and that this was no coincidence at all.[1] Science, namely, has some very specific requirements in order to originate and flourish.

The first is a correct worldview. Creation must be independent, well-structured, non-necessary, and following laws of nature which are moreover understandable and reliable. Nowadays this seems pretty obvious, but the almost universal view in the ancient world was one of cyclic pantheism - that history necessarily repeats itself and that the world is some sort of divine extension. No view at all that allows for scientific progress! Yes, especially the ancient Greeks have shown some impressive results, but for those to be useful, they first had to be purified from false preconceptions which was mainly done by the Scholastics (St. Thomas Aquinas IT, d.1274), really, no mean feat.

The second science requisite is a breeding bed to grow and flourish: a society that is just, stable, cohesive, blooming, and with a well organized and international system of learning. Now it is simply called "The West." And Catholic Christianity, with a special mention of the Benedictine order, has contributed decisively to all possible aspects.

The third important contribution of Christianity is to theologically value matter. (Note that Jesus redeemed us through His Body and is still physically present in the Eucharist.) Christianity also provides biblical motivations to investigate creation. *God has ordered all things according to measure, number, and weight* (Wisd 11:20). *The heavens unfold the glory of God; the expanse saith, "I come from his hands"* (Ps 19:1). That means one can learn something about God Himself by studying His creation, right? Moreover, the first commandment is: *Love God with all of your heart, with all of your soul and with all of your* ***mind*** (Matt 22:37). Forget about motivation. This is no less than an order!

And so, the first universities arose from monasteries and cathedral schools. Moreover, papal decrees from the year 1231 secured the universities' independence and the "universality" of their degrees. Consequently, the Catholic Church provided many brilliant philosophers, theologians, and religiously motivated scientists such as Albertus Magnus (GE, d.1280), Blaise Pascal (FR, d.1662), even Galileo Galilei (IT, d.1642). And the great scientists Niels Steensen (DK, d.1686, Geology), Gregor Mendel (AU, d.1884, Genetics) and George Lemaître (BE, d.1963, Cosmology) were not only the "fathers" of their respective fields, but churchmen as well (respectively bishop, Augustinian abbot, and priest.

Conflict view

Despite all this, in time the exact opposite view emerged - that specifically the Catholic faith is inherently hindering the progress of science and that conflicts between science and the Christian faith are in-

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evitable. Great support to this view was lent by anti-Catholic propaganda from the 19th century, specifically the book *History of the Conflict between Religion and Science* by John William Draper (1874), which unsurprisingly was full of historical inaccuracies. The main example given today of a conflict is the geocentrism–heliocentrism controversy and consequent trial of Galileo Galilei in the 17th century. However, Galileo did not have the evidence he claimed to have (the tides are *not* a support for heliocentrism), and he was mainly convicted for overstepping his boundaries by spreading his opinion as fact, reinterpreting the Bible, and insulting his good friend the Pope. He was never tortured as some claim but placed under house arrest (where he actually wrote his most fruitful work about kinematics and the strength of materials), and continued to be treated honorably (*e.g.* receiving a pension from the Vatican until his death) all the while remaining a faithful Catholic. So, no icon at all of the rebellious rational scientist against the stranglehold of irrational religion.

Sometimes Giordani Bruno (IT, d.1600) and his burning at the stake are, quite desperately, invoked as a science-religion conflict. However, Bruno was convicted for religious heresy not for any scientific claim, and in no way can he be considered a respectable scientist.

Quite interesting observations are that Draper's book came to be in connection to the evolution debates following Darwin's book *On the Origin of Species* from 1859. Also, that the idea of the spontaneous generation of life, which had been quite popular before, was only really discredited in 1861 – so practically at the same time – by the great Catholic scientist Louis Pasteur (FR, d.1895).

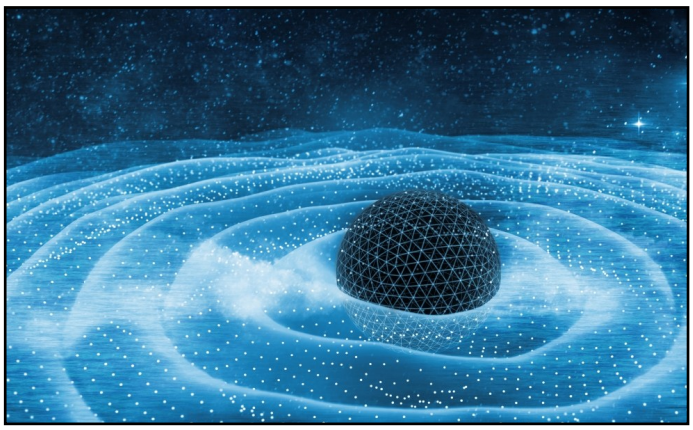
Nature of modern developments

Nowadays, religion (Catholic!) has seemingly lost all relevance to science. Yes, religion provides meaning and direction in life and so differs from science. But for that, it is anything but indifferent to the material world of which we are a part. See the crucial importance of the historical, physical resurrection of Jesus for Christianity! As the brilliant British apologist G.K. Chesterton (d.1936) remarked, "*A mystical materialism has marked Christianity from its birth; its true soul was a Body; among the stoic philosophers and oriental denials that were her first opponents, she fought fiercely and specifically for a supernatural freedom to cure concrete diseases with concrete substances*."

Religion, to many, has lost all relevance more generally, and science has taken its place. Especially important then become the "grand/exotic" sciences that stand quite far from daily life, speak to the imagination, and have philosophical consequences. Cosmology, the description of the universe at large, is one example. And with their importance also comes an uncritical attitude towards their claims resulting from an intellectual blindness regarding their limitations. Because it's all exotic and far away, there's never a confrontation. Astronomy for example is limited to observations - no experiments can be done. How far are situations then repeatable or even directly observable? The "Big Bang," for example, was just a single event and very long ago. More generally for all things historical, observations now are extrapolated backwards, but the validity of that is a fundamental assumption (so can't be tested).

The irrelevance of religion shows that for many, God Himself is not relevant anymore. Instead, importance is only given to (material) creation.

But if creation, not the Creator, is fundamental to our lives, then we're missing out on the guiding light of Grace, and we lose contact with deeper reality. Indeed, in society we're seeing that common sense - groundedness - becomes more and more fleeting. This will be illustrated now through some grave conceptual problems within current "grand/exotic" physics.



Grand physics problems

Physics describes the effect of the four fundamental forces of nature, three of them through quantum (field) theories, namely the strong nuclear force that holds atomic nuclei together, the weak nuclear force that is responsible for nuclear transformations, and the electromagnetic force that rules most of our daily

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life. Those forces, and quantum mechanics in general, only act on small scales. On larger scales the positive and negative charges cancel out, and so their effects disappear.

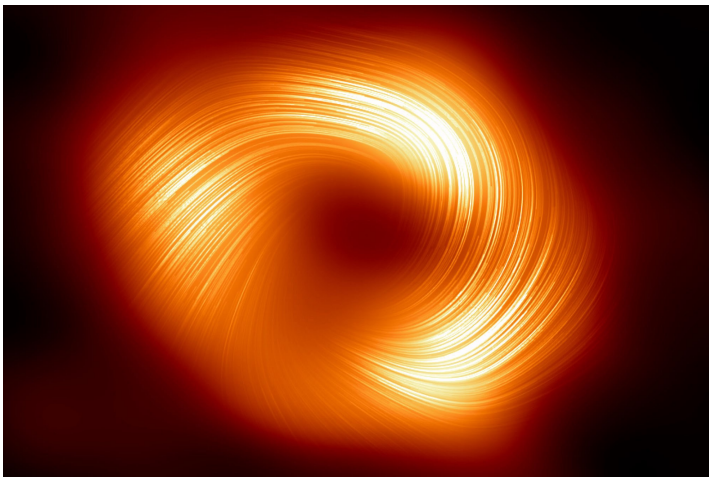
Gravity, on the other hand, only has one type of (positive) mass and requires large lumps of matter to be felt. Therefore, gravity is the only relevant force on grand scales; Newtonian[2] theories provided the first numerical descriptions.

Heliocentrism is the idea that the sun is at the center of the universe and even precedes Newton's description. Because this actually says that the so-called center of mass of the universe (its mass average) determines its center, not the sun which is just a pretty mediocre star. The idea stuck around though, even until today and probably because of sensitivities concerning the mentioned "Galileo affair."

But now, back to Newton. Integral to his theories is that space is "fixed," so something that can't be acted upon but does influence all movement itself.

Ernst Mach[3] understood there's something strange about that; either space itself is a physical thing that can be influenced like all other ones, or not, and then it can't determine the movement of other things either. The resulting Mach's principle (although not well formulated and so still subject to discussion) guided Albert Einstein[4] in formulating his two relativity theories: first his "special" one in 1905 that only applies to linear movements with constant speed, and then in 1916, his Theory of General Relativity for all types of movement, also including gravity in the form of "space-time curvature." Space (and time) have become real physical things that can be changed (to a certain extent). Moreover, all positions and movements are now fundamentally relative to the observer's point of view (thus the theory's name); every perspective is equally valid scientifically, although some are mathematically less complex. From our viewpoint, we can thus very well say that the sun actually revolves around the earth: the definitive deathblow to the heliocentric idea, yet still not recognized as such.

General relativity has been impressively confirmed on various occasions; it directly explained the perihelion shift of Mercury (its parabolic orbit slowly revolves around the sun). Then in 1919, during an eclipse, stars close to the sun were observed to have shifted outwards by exactly the right amount. So light curves in gravity, too! In 1954, a gravitational redshift was observed further confirming that gravity attracts light, and in 1970, a relativistic time delay showed that gravity, like high speeds, slows down time. Lastly, in 2015, gravitational waves were detected from two "black holes" merging, confirming the dynamic aspect of gravity exactly as general relativity tells us.



In 2019, the first picture of such a supposed black hole was taken, leading to a Nobel Prize given to the topic in 2022. Already for a long time, the concept had been generating much popular and scientific attention; see the movie *Interstellar* and the famous Stephen Hawking dedicating a great part of his scientific career to the topic. Yet, it is surprisingly easy to see that black holes just cannot exist and don't follow from general relativity either. Those objects are understood to have a singularity at their center, a place with infinite matter density, and an event horizon, a sphere around the center from which nothing can escape. Proponents do acknowledge that black holes cause an "information paradox" because things carrying information go in and never come out again, so the information is lost. This violates the general rule of information conservation in physics. But the conservation of information is based on another rule that says that everything that goes forward can go backward as well: general time reversal symmetry. It's like mirror symmetry but not left-right but forward and backward motion. However, black holes are exactly called "black holes" because matter disappears into them and cannot get out - so, a clear contradiction of a general physics principle. Scientists then try to "solve" this by combining general relativity and quantum mechanics (about those attempts more in a bit) or posing without any reason or logic so-called "white holes," the supposed time-reversed version of

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black holes, so objects where nothing can get in, only come out?! Yet time-reversal does not change the gravity of matter; specifically, anti-matter does not have anti-gravity! We thus have here a clear example of not just wrong knowledge but bad reasoning in science. Surprisingly, it is acknowledged that matter "appears" to stay frozen just outside where the black hole should be, an effect due to relativistic time dilation slowing down time at high speeds and strong gravity. Still, the simple observation of matter not entering "black holes" does not discredit the black hole concept; instead, the concept discredits the observation as just an "appearance." Seemingly, science nowadays functions like that.

What is actually formed then, is a "Frozen Star," effectively the same as a black hole, only without a singularity and an event horizon, so without "paradox" or physics contradiction. And those *have* been mentioned in the scientific literature quite some time ago but then forgotten about!

It was mentioned that besides the grand-scale gravity described by Einstein's general relativity, physics has three smaller-scale forces that are described by Quantum Mechanical theories. Besides the scales, the frameworks of both descriptions are quite different, and the question arose whether all of physics could actually be combined into one description. So, scientists started looking for a unified theory of Quantum Gravity, the combination of general relativity and quantum mechanics. Yet nowadays quantum theories work fine in the relativistic framework of curved spacetime. Moreover, there are very good arguments for quantum effects (something very small, of individual particles) having no place in any gravity theory (that only acts on grand scales and many particles because of its weakness); neither are black holes a problem to be solved. So, there's really no need for a unified quantum gravity theory nor any real expectation that it would give something new. Still, it is considered an important research goal, mainly because of the supposed black holes and their problems. Yet, even if those would be real, how could the problems of one theory (general relativity) be solved by combining it with another completely unrelated one (quantum mechanics)?! So, another case of mere wishful thinking in science.

Unfortunately, I lack the space here to address the issues surrounding Quantum Mechanics itself, the most mysterious physics theory, but the most misunderstood one, too. Just a few short remarks: it's mainly about explaining the "measurement problem," how measurements differ from other interactions, and there are many "interpretations" that actually explain nothing, only reformulate the issue. The real explanation is that measurements involve human free will (using the quantum Zeno effect) which the brilliant Catholic convert John von Neumann (Hun/US d.1957) knew. Yet it is not popular at all - free will just seems too scary as part of a physics explanation.

To conclude, the Catholic faith/Church with the light of Grace has guided science, provided motivation, support and appreciation. And it seems high time we get back to that: being conscious about the physicality of our faith, its true relation with science (and the importance of that), helping us to confidently bring some common sense back to the present-day world.

God bless! ■

Endnotes

[1] See *e.g.* the recognized historians Thomas Woods, Jr., James Hannam, and Stanley Jaki.

[2] For Isaac Newton, EN d.1727, his *Mathematical Principles of Natural Philosophy* from 1687 brought forth modern science.

[3] AU d.1916, known from the "Mach number" for high speeds.

[4] GE d.1955, made important contributions to quantum mechanics, too.

Dr. Mattheus A. Uijttewaal is a cradle Catholic with a doctorate in theoretical physics. His total of ten years of scientific research resulted in a collection of articles with an H-index of 10 and a total of 900 citations. He was a social volunteer in the USA for two years, and during his Latin travels, met his wife Yasmina in Santa Cruz, Bolivia where they are now living.

ITEST recently hosted a webinar, *Black Holes and Free Will: How Science and Faith Rely on One Another* with presenters, Mattheus Uijttewaal, PhD and Most Reverend Everard de Jong, Auxiliary Bishop of Roermond, The Netherlands. Watch this webinar at https://faithscience.org/black-holes-and-free-will/.

The Meaning of "LET" in Genesis 1

By Thomas P. Sheahen

Abstract

Within the first chapter of the Biblical book of Genesis, the word "Let" appears 11 times. It is hypothesized that each such occurrence indicates an intervention by God, a creative action. Each signifies an upward step, advancing from the initial "Let there be light" through consecutive stages of evolution, to the final "Let us make man…." Genesis 1 thus is seen as a chronology of pointers to God's active management of evolution.

Introduction

Much has been written over many centuries about the interpretation of the first chapter of the Biblical *Book of Genesis*. Long ago it was recognized as Hebrew poetry, containing meaning beyond the mere words. In the fifth century AD, St. Augustine wrote an essay entitled *The Literal Meaning of Genesis*[1] in which he basically said "Don't take it literally." More recent scholars have drawn attention to the milieu in which it was written: competing creation myths from different civilizations. In the 20th century, Fr. Stanley Jaki[2] said there was no value in seeking *concordance*, because the individual days don't match the sequence of known science. Jaki was very critical of many authors (over millennia) who tried to achieve concordance.

Today it is widely agreed that, taken as a whole package, Genesis 1 states very clearly that God created everything and deemed it all "very good" – implying that He loved His creation and all that is in it. That stands in sharp contrast to alternate mythologies such as the warring gods of the Greeks or Romans.

The next few chapters of Genesis present the *Adam and Eve* narrative, and that has long been a rich source of inspiration for rabbis, clergymen, and authors developing themes about the frequently awkward interactions between mankind and God. Inspirational literature seems almost unbounded over the centuries.

The advances of contemporary scientific knowledge, across physics, astronomy, geology, biology, paleontology, plate tectonics, anthropology, and so on made Genesis 1 fit the literary genre of "mythopoetic" (poetic literature). Yet none of these upward steps toward more sophisticated insights has diminished the enthusiasm for searching for additional meaning in the verses of Genesis 1. The attention given by Jewish scholars to the very first word of the Bible is remarkable and quite extensive.[3]

In this essay, I draw attention to one special word that appears in key sentences in Genesis I: in English, "Let." Those are listed in ***Table 1***. My new assertion here is that each occurrence of the word "Let" denotes another creative action by God. This opposes the *Deist* view that God "wound up the clock" and never looked back at His creation.

Upward Steps

As a clarifying observation, it is helpful to describe the trajectory of evolution as a sequence of upward steps in which additional higher dimensions come into play. The first four dimensions are the well-known set of {time, x, y, z}. As complexity increased, probability and information (measured by *entropy*) became significant; intermolecular forces brought about ever more complex chemicals, leading to amino acids and proteins, the building blocks of cells, etc. The upward steps continue into living entities.

The term "higher dimensions" may not be clear to many readers. There are many aspects of reality that cannot be reduced to the realm of atoms and molecules, space and time. The brain may be the platform of the mind, but it is not identical with the mind. Many higher-level functions lie beyond the realm of the physical world. Memory and learning are real, but not physical. At a still more advanced level, virtues like loyalty, trust, and love are eminently real, but very far above basic chemistry and physics.

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Table 1. Biblical verses in Genesis 1 that include "Let"

NIV = New International Version, NAB = New American Bible

Creation of Light

v. 3. "Let there be light, and there was light." (Any translation, Day 1)

Agglomeration of planets? Formation of H_2O molecule?

v. 6. "Let there be a vault between the waters to separate water from water." (NIV, Day 2)

v. 6. "Let there be a dome in the middle of the waters, to separate one body of water from the other." (NAB, Day 2)

H_2O has different phases - some water precipitates

v. 9. "Let the water under the sky be gathered to one place, and let dry ground appear." (NIV, Day 3)

v. 9. "Let the water under the sky be gathered into a single basin, so that the dry land may appear." (NAB, Day 3)

First living things: plant life

v. 11. "Let the land produce vegetation: seed-bearing plants and trees on the land that bear fruit with seed in it, according to their various kinds." (NIV, Day 3)

v. 11. "Let the earth bring forth vegetation: every kind of plant that bears seed and every kind of fruit tree on earth that bears fruit with its seed in it." (NAB, Day 3)

The sky becomes clear; objects out in space become visible for the first time

v. 14. "Let there be lights in the vault of the sky to separate the day from the night, and let them serve as signs to mark sacred times, and days and years, (15) and let them be lights in the vault of the sky to give light on the earth." (NIV, Day 4)

v. 14. "Let there be lights in the dome of the sky, to separate day from night. Let them mark the seasons, the days and the years, (15) and serve as lights in the dome of the sky, to illuminate the earth." (NAB, Day 4)

Animal life: aquatic life, then birds (after the dinosaurs)

v. 20. "Let the water teem with living creatures, and let birds fly above the earth across the vault of the sky." (NIV, Day 5)

v. 20. "Let the water teem with an abundance of living creatures, and on the earth let birds fly beneath the dome of the sky" (NAB, Day 5)

Animals: vertebrae and sentient life

v. 24. "Let the land produce living creatures according to their kinds: the livestock, the creatures that move along the ground, and the wild animals, each according to its kind." (NIV, Day 6)

v. 24. "Let the earth bring forth every kind of living creature: tame animals, crawling things, and every kind of wild animal." (NAB, Day 6)

Self-conscious life (Mankind)

v. 26. "Let us make mankind in our image, in our likeness, so that they may rule over the fish in the sea and the birds in the sky, over the livestock and all the wild animals, and over all the creatures that move along the ground." (NIV, Day 6)

v. 26. "Let us make human beings in our image, after our likeness. Let them have dominion over the fish of the sea, the birds of the air, the tame animals, all the wild animals, and all the creatures that crawl on the earth." (NAB, Day 6)

While I choose the term "higher dimension" to categorize all sorts of higher functions, others might be more comfortable with the term "greater degree of freedom." The terms are interchangeable. The key factor to recognize is that, when a higher reality is reduced to a lower level ("projected downward" in dimensional terminology), something is lost.

A symphony serves to illustrate this point. The listener begins with a plastic disc with microscopic pits in it, which represent a long string of 1's and 0's. Later, a CD player converts that string to an electrical signal; a loudspeaker takes that and projects sound waves toward an eardrum; then bones in the inner ear vibrate to produce hearing; then discernment of overtones, pitch, and volume enhance the experience; and recognizing the style of the composer brings about musical appreciation. Not just sound frequencies, but musical instruments and cultural factors make it a symphony. There are many upward steps in the process. Projecting downward removes one after another of these components until all that is left is a plastic disc.

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The entity that is a living thing is much more than its physical components. Even a grain of wheat is a complex system dependent upon characteristics that far exceed its carbon, hydrogen, and oxygen; it is driven by a very intricate set of instructions known as DNA. The blossoming of a wide variety of life forms follows a general pattern of evolution, where more advanced life forms contain remnants of lesser (earlier) life forms.[4] Think about teeth or ribs for a moment; those go way back. The interesting life forms are those that step up into higher dimensions, with more degrees of freedom.

The 20th century biologist Steven Jay Gould noted a pattern of *punctuated equilibrium*,[5] where nothing changed very much for a long while, and suddenly there were new, different life forms. Were these merely the outcome of random fluctuations? Perhaps, but very improbable.[6] It is an open question to inquire about the specific details of the "punctuation marks" in evolution.

Plenty of scientists have noted that there is nowhere near enough time for the Darwinian[7] notion of "deep time" to accomplish all the observed changes in life forms by random genetic mutations and natural selection.[8] Also, philosophers have noticed the extreme improbability.[9]

My new hypothesis is that each occurrence of "Let" signals an intervention by God, which taken together brought about the universe, planet, and life as we know it.

Interpretations

My new hypothesis is that each occurrence of "Let" signals an intervention by God, which taken together brought about the universe, planet, and life as we know it. An essential component of this assertion is that there is a fuller sense (*sensus plenior*) within the several verses of Genesis 1. There is no way that Biblical authors of long ago could have known any physics, so they could not possibly capture the scientific content that God was aware of.

Applying that hypothesis, we find this sequence of steps:

Day One: "Let there be light" is a very simple statement and includes the joint creation of space and time. That was the *ex nihilo* event, where God made something (light) out of nothing. Space and time came into existence together;[10] the *Big Bang* occurred at this point. That was "the beginning." Using symmetry principles, God gave us the science of physics. A more detailed explanation of this is presented in my own book, ***Everywhen: God, Symmetry and Time.***[11]

Once space and time exist, then it makes sense to describe things happening in time-sequence. Just as "Let there be light" gave us four distinct dimensions $\{x, y, z, t\}$, it is plausible that subsequent "Let" statements introduced additional higher dimensions. The sciences of thermodynamics and chemistry are at a higher level than just physics alone; biology cannot be reduced to chemistry; and life has an irreducible structure.[12] Still higher levels come along later.

Day Two of Genesis is very obscure to the scientific reader of today. Words like "vault" or "dome" don't have a clear meaning. There is an important point here: the Biblical authors may have been inspired, but without knowing any science, they were incapable of grasping the early development of the universe. We have to cut them considerable slack when reading the words they chose. The Bible was not dictated word-for-word (as is the claim about the Koran).

Could creation of the "vault" signify the formation of our planet some 4.5 billion years ago? The initial very hot rock would have a liquid phase (and the core of the earth is still liquid today). As the planet cooled from a very hot rock, could it be H_2O moving into a zone on the pressure-temperature diagram where three phases can exist? Or might this mysterious verse suggest the very special shape of the H_2O molecule, which enables so many different chemical phenomena? One way or another, day two was a change at some hidden level that the Biblical author was completely unable to articulate. The *fuller sense* is very elusive here. Clarity about day two may lie someday in the future.

Day Three first involves the separation of land and water. We should remember that, earlier in the Earth's history, there was a single super-continent; that was unknown in Biblical times.

Day Three is also when the first mention of life occurs. We know from science that plant life preceded animal life. For life to exist, there must have been DNA. So quite possibly, the "Let" of day three was

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the upward step from complex molecules to life -- the creation of plant DNA.

Day Four breaks the sequence of the other days; this is the glaring stumbling block that Jaki called *the Achilles Heel* of concordance.[13] We know from science that the sun, moon, and stars were there much earlier, so this Bible verse seems totally misplaced.

At this point, however, the very original insight of Gerald Schroeder in Israel provides a new, plausible explanation. Schroeder is a physicist who understands relativity, so he proposed that Genesis 1 was written from the viewpoint of one moving with the expansion of the early universe.[14] In that framework, the first day lasts almost seven billion years, the second day ~ 3.5 billion years, and consecutive days get shorter still. In Schroeder's picture, day four is the time when the Earth's atmosphere became *transparent*, due to condensation and precipitation of H_2O, plus some water being tied up in plants (instead of in the atmosphere). A perpetual very dense fog finally "lifted," and it became possible to see what was out in space. The "fog" idea was mentioned by creationists a half century ago, but has otherwise escaped attention in Biblical scholarship circles. Schroeder's account is noteworthy because it has creation occurring in *both* six days *and* 13.8 billion years, and solves the long-standing "Day Four" obstacle to concordance.

Day Five: Sea life and birds are the various stages of animal evolution [sponges, snails, clams, fish, amphibians, …]. Important differences are obvious here. Animal life thrives on the waste products of plant life, and vice versa. Fish filter the O_2 they need from sea water. Therefore, the DNA of animal life has to have substantially different characteristics from that of plants. "Let" at this stage suggests God's creative hand in new types of DNA and new biological laws.

The separate "Let" denoting the emergence of birds would refer to the time after the dinosaurs went extinct. Biblical authors had no experience of dinosaurs. Flying birds are an enormous shift in the progress of evolution – a new direction compared to the ages that went before.

Day Six: Very small mammals came out of hiding after the dinosaurs vanished, and they grew to be larger animals. Such animals have memory and the ability to learn (or be trained). They have a more advanced brain than in previous stages, which is a very clear upward step. One branch of mammals became primates, hominids, etc.

The final stand-alone "Let" statement (about mankind) indicates that this development wasn't mere evolutionary progress, but an intervention by God in His creation, in the sequence of evolution. The distinction between hominids and *Homo Sapiens Sapiens* are due to that intervention. There is something unique in the coding along the DNA molecule of humans, which enables the jump into a *transphysical* aspect of humanity: the whole ensemble of conceptual thought, language, rational decision-making, free will, etc. Accordingly, mankind is not just a very advanced animal, but was promoted by God to be *distinct* from and *superior* to the animals.

Again, it's necessary to grant the Biblical writer plenty of leeway. All the higher properties of mankind (absent in the animals) are assembled in the phrase "in Our own image and likeness."

Conclusion

Treating evolution as a random, unguided process has never been fruitful; there is not enough time for Darwin's "deep time." Instead, each successive step points further ahead, toward the brilliance of the Creator who gave us such an intelligible universe.[15] It is astonishing to realize that, by gently tweaking evolution at a few intervals, God could actually create an intelligent being that is capable of loving God in return.[16]

I cannot guarantee that this interpretation focusing on "Let" is correct, or the only possible interpretation. But I assert that this is a useful hypothesis. The word "Let" has gone unnoticed for a very long time. The notion that "Let" indicates a command or creative intervention by God is entirely plausible. Scripture is a very rich source of wisdom and insight about God and mankind. Obviously, further scholarship is warranted, including comparison with other texts, seeking alternative meanings in Scripture. ■

End notes on page 11

Endnotes

[1] Augustine of Hippo (St. Augustine), *The Literal Meaning of Genesis,* 415 AD

[2] Stanley. L. Jaki, *Genesis 1 Throughout the Ages,* (Thomas More Press: 1992)

[3] A Google search gives 12 pages of commentaries, books, and videos about the word "Beresheet"

[4] Francis S. Collins, *DNA: The Language of God* (Simon & Shuster: 2007)

[5] Steven J. Gould, *Punctuated Equilibrium*, (Harvard University Press: 2007)

[6] Roger Penrose, *The Emperor's New Mind: Concerning Computers, Minds, and the Laws of Physics* (Oxford Landmark Science: 1989)

[7] Charles Darwin, *The Origin of Species,* 1859

[8] Michael J. Behe, *The Edge of Evolution,* (Simon & Shuster: 2007)

[9] Thomas Nagle, *Mind and Cosmos: Why the Neodarwinian Materialistic Conception of Evolution is Almost Certainly False* (Oxford University Press: 2012)

[10] St. Augustine, *The City of God, book XI, section 6,* (Random House: 1950)

[11] Thomas P. Sheahen, *Everywhen: God, Symmetry and Time* (En Route Books: 2021)

[12] Life's Irreducible Structure Author(s): Michael Polanyi, *Life's Irreducible Structure,* Science, 160, No. 3834 (1968), pp. 1308-1312

[13] Stanley L. Jaki, *Op. Cit,* chapter 3, page 94.

[14] Gerald L. Schroeder, *The Science of God* (Free Press: 1997)

[15] Bernard J. F. Lonergan, *Insight: a Study of Human Understanding*, (Longmans, Green & Co., 1958), Chapter 19, section 10

[16] Thomas P. Sheahen, Op. Cit., chapter 8

Dr. Thomas P. Sheahen is Director Emeritus of ITEST and is the author of *Everywhen: God, Symmetry and Time*, a book at the interface of faith and science. He is a physicist who was educated at MIT.

The author is very interested in receiving feedback about this article. Send your comments to ITEST@archstl.org.

On Cryptic Choice and Human Dignity

By Katie Breckenridge

A long-held belief is that fertilization occurs randomly with the fastest sperm "winning the race" to the egg. However, researchers from Stockholm University and Manchester University NHS Foundation Trust[1] have discovered that female follicular fluid in the follicles and tubes of the reproductive system contain certain chemical signals that, in fact, enable eggs to "choose" sperm that are more ideal complements to them from a reduced and select "class" of sperm from the larger conjugal deposit. Further, the researchers found that the follicular fluid from one female may be better at attracting sperm from a man who isn't her spouse, so not only do eggs potentially weed out lower-quality sperm through chemo-attractants, but apparently, they also seek sperm which are more genetically compatible.

… the knowledge that there may be a chemical incompatibility between certain sperm and follicular fluid may be helpful for future infertility treatments, but how is the "choosiness" of eggs currently impacting infertility treatments?

One of the researchers, Dr. John Fitzpatrick, said that the knowledge that there may be a chemical incompatibility between certain sperm and follicular fluid may be helpful for future infertility treatments, but how is the "choosiness" of eggs currently impacting infertility treatments?

The In Vitro Fertilization (IVF) and Intracytoplasmic Sperm Injection (ICSI) processes already expose eggs and embryos to unnatural environments during the maturation and fertilization process. The IVF process involves combining sperm and eggs in a petri dish, creating multiple embryonic human persons at once, while ICSI involves directly inserting one sperm into one egg. This unnatural conception environment can impact[2] cellular processes and alter chromosome structure, the transcription of DNA[3], and embryonic development, leading to conditions such as heart disease, diabetes, cancer, and autoimmune and neurological disorders in IVF children[4]. Previous studies show that the use of artificial reproductive technologies may cause epigenetic changes[5] in children and lead to imprinting disorders such as Beckwith-Wiedemann syndrome[6] and Prader-Willi syndrome.[7]

Continues on page 12

In IVF, following egg retrieval, eggs are isolated from the follicular fluid[8] and placed in a medium[9] for fertilization in a petri dish. Since eggs in these petri dishes are not emitting chemical signals through follicular fluid and are unable to choose sperm, we must ask how the fertilization process changes due to its occurring outside its natural environment? This newfound knowledge may contain the answer as to why children conceived through not only IVF, but ICSI (since the eggs are given even less choice in this option), are at an increased risk for physical and intellectual disabilities.

Increased risk of disabilities

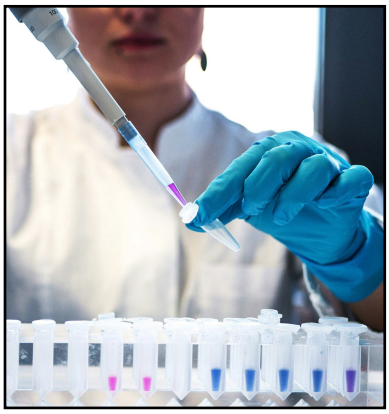
The Perth Hospital's Telethon Kids Institute[10] "...found children conceived through ART were in fact a touch more likely to develop a mild to severe cognitive impairment. On closer inspection, it also looked like some procedures posed a greater risk than others. Children conceived using ICSI had the greatest chance of impairment, for example, with 1 in 32 children diagnosed with some level of intellectual disability compared with 1 in 59 children conceived without any help from fertility treatments." King's College London also reported that[11] "children born after IVF treatments with ICSI (with either fresh or frozen embryos) were at an increased risk of intellectual disability (51% increase – 62 to 93 per 100,000) .... Even when multiple and pre-term births were taken into account, IVF treatment with ICSI and fresh embryos was associated with an increased risk of intellectual disability (66% increase for singleton birth, term birth following ICSI with fresh embryos – 48 to 76 per 100,000)."

> "… the prevalence of major birth defects such as chromosomal and musculoskeletal defects diagnosed by one year of age is two-fold higher in infants conceived by IVF or ICSI than in naturally conceived infants born between 1993 and 1997 in Western Australia."

On top of this issue that such children, conceived in these artificial ways, are at higher risk for intellectual disabilities, researchers at Cambridge University reported[12] that, "the prevalence of major birth defects such as chromosomal and musculoskeletal defects diagnosed by one year of age is two-fold higher in infants conceived by IVF or ICSI than in naturally conceived infants born between 1993 and 1997 in Western Australia." Further, it has been found that girls conceived through IVF[13] are at an increased risk for hormonal imbalances and signs of advanced bone age during puberty.

Preimplantation genetic testing

In addition to a lack of cryptic female choice potentially contributing to physical and intellectual disabilities, how might this lack of choice impact the likelihood that embryonic human persons are going to fail preimplantation genetic screenings[14] because they aren't deemed "good quality," resulting in the outright discarding of their young lives? Former embryologist Dr. Craig Turczynski[15] stated that he's witnessed many embryos that to the trained eye look like they should have successfully implanted but did not, and vice versa. We simply don't know when embryos will continue living, and they should not be treated as commodities to be experimented with in the pursuit of getting a surviving child. Since eggs are unable to choose which sperm they prefer, does this result in the creation of more embryos that don't "make the grade"?



The experimentation and treatment as disposable objects[16] that these embryonic human persons undergo does not honor "the right to life[17] and the physical integrity of every human being from conception to natural death," as is specified in *Dignitas Personae*. Simply because we have the creativity and rationality to implement scientific alternative means to treat infertility does not mean that we are always acting in line with God's will, and we are certainly not striving towards the virtuous ideal when treating embryos as disposable non-persons with which we can experiment and then eliminate. Scientific discoveries must always be questioned regarding whether they help or hurt us as persons called to live in accordance with the will of God. Our developing knowledge about eggs choosing which sperm are "worthy" of fertilizing them is an unexpected insight into God's ultimate design, and one which we should consider when analyzing practices that take the creation of life into one's own hands. ■

Endnotes on page 13

Endnotes

[1] https://royalsocietypublishing.org/doi/10.1098/rspb.2020.0805

[2] https://thembeforeus.com/the-problem-with-polygenic-ivf-screening/

[3] https://selfhacked.com/blog/what-is-methylation-and-how-does-it-affect-our-health/

[4] https://thembeforeus.com/ivf-harms-to-children/

[5] https://www.emjreviews.com/reproductive-health/article/epigenetics-assisted-reproduction-and-intracytoplasmic-sperm-injection-a-review-of-the-current-data/

[6] https://www.emjreviews.com/reproductive-health/article/epigenetics-assisted-reproduction-and-intracytoplasmic-sperm-injection-a-review-of-the-current-data/

[7] https://clinicalepigeneticsjournal.biomedcentral.com/articles/10.1186/s13148-019-0623-3

[8] https://www.zmescience.com/feature-post/health/human-body/how-in-vitro-fertilization-works/

[9] https://fertipro.com/2019/12/10/ferticult-ivf-medium/

[10] https://www.sciencealert.com/there-s-a-surprising-link-between-assisted-fertility-technology-and-intellectual-impairment

[11] https://www.kcl.ac.uk/archive/news/ioppn/records/2013/july/ivf-treatments-risk-of-intellectual-disability-and-autism

[12] https://pubmed.ncbi.nlm.nih.gov/28416029/

[13] https://academic.oup.com/humrep/article-abstract/23/12/2791/612108?redirectedFrom=fulltext

[14] https://www.societyofstsebastian.org/ivf-abortion-bans-breckenridge

[15] https://mycatholicdoctor.com/wp-content/uploads/2023/06/Linacre-PDF-after-print-publication.pdf

[16] https://angelusnews.com/voices/science-ugly-truth-ivf/

[17] https://www.vatican.va/roman_curia/congregations/cfaith/documents/rc_con_cfaith_doc_20081208_dignitas-personae_en.html

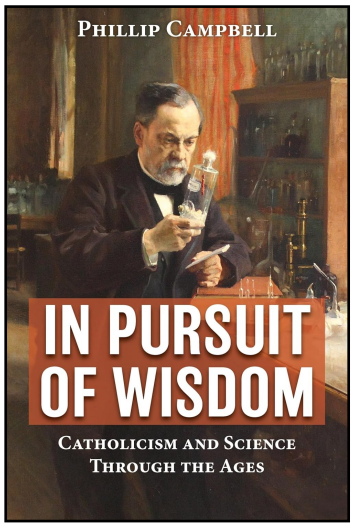
Katie Breckenridge is the author of the book *Silent Sorrows: Let's Talk about Abortion, Reproductive Technologies, and Adoption*.

https://www.amazon.com/dp/1958892491/

In Pursuit of Wisdom: Catholicism and Science Through the Ages

By Phillip Campbell

Review by Ralph Olliges



In the introduction to the book, it is stated that the vast majority of those who left the Catholic Church did not go to another religious tradition. They became "Nones." They did not believe the Church's teachings anymore. Many of the "Nones" believe there is a conflict between religion and science, but the Church teaches that there is no inherent conflict. This book explores science through the ages, and it does its best to dispel the notion that science and faith are contradictory. The author wants us to understand the interactions between science and the Church.

Phillip Campbell begins with the book of Genesis to explain how the Church was involved in history. Monks had the time to pursue their callings as scientists as they invented objects like eyeglasses and the mechanical clock. Where would we be today without their inventions? Through the monasteries the people were educated, and through the cathedral school the first universities were created. Campbell mentions Saint Anselm, Peter Abelard, Saint Bernard of Clairvaux, and Roger Bacon and their scientific contributions during the Medieval years.

The Renaissance years brought us Nicholas of Cusa, Copernicus, and Galileo. Ptolemy's system of the Earth being part of the center of the universe would be challenged by Copernicus and others. Copernicus began to postulate a heliocentric universe around 1507. Saint Augustine had argued that the seven days of creation were figurative. Thus, not every bible passage had to be taken literally. That brings us to Galileo. The Church did not appreciate his arrogance especially when speaking about theological matters. It is when Galileo deviated from mathematical astronomy into matters of faith that the Church objected. This deviation is what caused Galileo anguish. If Galileo would have stayed within his own lane, we may never have had the huge controversy of the Church restricting Galileo.

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Thanks to the Church, the Gregorian Calendar replaced the Julian Calendar in 1582. Then the 1600s were a time when deeply religious scientists founded various scientific disciplines which still exist today. Leibniz and Newton are examples of those who provided areas of knowledge for mankind.

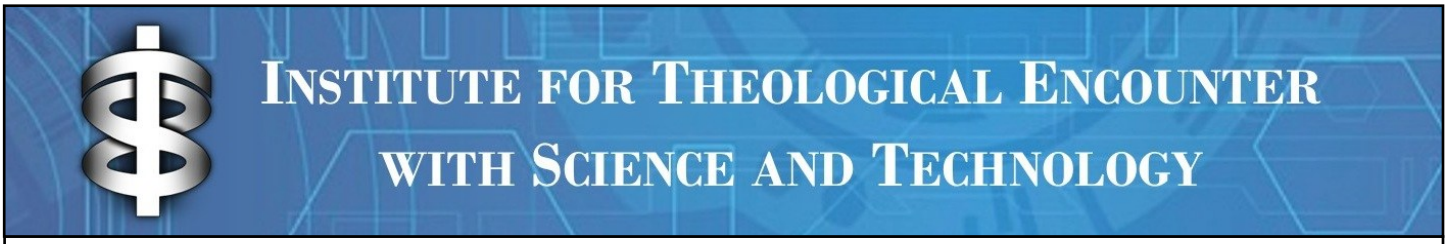
Next, the Darwinian dilemma is discussed. Remember that Darwin proposed his theory of natural selection which attempted to explain evolution. Some Catholic scientists had proposed evolution prior to Darwin. Much earlier, Saint Augustine had believed that God created the world in seed form where He imbued nature with a goal-directedness. Catholic policy was one of caution, as it is in most cases, so the Holy Office has never condemned evolution. Fr. Georges Lemaître's theoretical model about the expanding universe was confirmed with the use of a California telescope by Edwin Hubble and others.

Catholic tradition has always maintained that faith and science represent two very different modes of knowledge. Faith and reason each possess their own methodology, but they work together to discern the truth. "Scientism is the belief that scientific knowledge is the only means by which we can know anything about the world." (p 239). While the Church does not have any qualms with science, it does have issues with scientism. For example, Gregor Mendel unlocked the rules of genetics, establishing the rules of heredity. "Mendelian genetics explains how existing traits are passed on, while Darwin purported to explain how new traits came into existence in the first place." (p 242) The Church always contended that the bible teaches salvation, not science. Pope Pius XII condemned science as the sole determinant of truth. Fr. Robert Spitzer, SJ, founder of the Magis Center, has many publications and media that present this view. "On October 22, 1996, Pope Saint John Paul II delivered a speech to the Pontifical Academy of Science on the occasion of the Academy's sixtieth anniversary, entitled "Truth Cannot Contradict Truth." (p 261) Both science and religion can flourish and aid each other in finding the truth.

I highly recommend this book for everyone to read. It provides great insight into the various arguments about science and religion. In reading this book, I learned a few things that I did not know, and I learned that I held misconstrued understandings about topics such as those about Galileo. ■

Reference

Campbell, Phillip. *In Pursuit of Wisdom: Catholicism and Science Through the Ages*. Our Sunday Visitor. Huntington, Indiana. 2024.



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On the Vatican's New Document on Artificial Intelligence

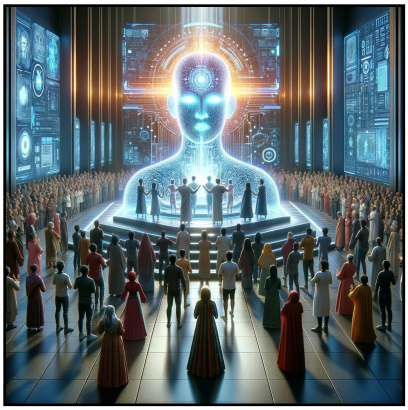
By Christopher Reilly, ThD

On January 28, 2025, the Vatican's Dicastery for the Doctrine of the Faith and the Dicastery for Culture and Education jointly issued *Antiqua et Nova: Note on the Relationship between Artificial Intelligence and Human Intelligence*.[1] The document is an extraordinary lesson in "wisdom both ancient and new" regarding the new technologies referred to as artificial intelligence (AI). Most importantly, it helps to distinguish many of the unique characteristics of human intelligence that are unlikely to be replicated by any technology, machine, or device. This is a welcome correction to the hyperbole that surrounds the supposed advancements toward artificial general intelligence (AGI), which is defined by many as a state of machine-based intelligence that is expected to have the same perception, understanding, and reasoning capabilities as human persons.

Right from the beginning, the document spells out the crucial importance of gaining clarity on the unique nature of human intelligence: "The Christian tradition regards the gift of intelligence as an essential aspect of how humans are created 'in the image of God' (Gen. 1:27)" (1). It implies much about the essence of human persons as dual physical and spiritual beings. Intelligence is a characteristic of the person as a whole, not only a set of limited, task-oriented faculties. "In the case of humans, intelligence is a faculty that pertains to the person in his or her entirety, whereas in the context of AI, 'intelligence' is understood functionally, often with the presumption that the activities characteristic of the human mind can be broken down into digitized steps that machines can replicate" (10).

Human intelligence, unlike machine calculations, "includes abstraction, emotions, creativity, and the aesthetic, moral, and religious sensibilities" (11) as well as many kinds of expressions. Human intelligence includes *intellectus*, or intuition of truth, as well as *ratio*, which is discursive and analytical reasoning (14). Human intelligence therefore includes knowing, understanding, willing, loving, choosing, and desiring (15). Exercise of intelligence is a path to truth and ultimately an openness to God (21). "In this way, the human person becomes fully what he or she is called to be: 'the intellect and the will display their spiritual nature,' enabling the person 'to act in a way that realizes personal freedom to the full'" (23).

According to the document, the capacities of AI are relatively limited. "While AI is an extraordinary technological achievement capable of imitating certain outputs associated with human intelligence, it operates by performing tasks, achieving goals, or making decisions based on quantitative data and computational logic" (30). Reckless comparisons between machine intelligence and human nature can cause harm: "Drawing an overly close equivalence between human intelligence and AI risks succumbing to a functionalist perspective, where people are valued based on the work they can perform" (34). A very important statement is that "not all technological advancements in themselves represent genuine human progress" (38). Although the Church has long been friendly to the practical and spiritual benefits of man's technological efforts, there is now an important divide between positive technologies and those that are more likely to cause harm than enhance persons' path to holiness. There is the typical refrain that AI, as a technology, can be used for good and bad purposes (40), but there is also an acknowledgment that "it is not only the ends that are ethically significant but also the means employed to achieve them" (41). AI technology therefore influences our vision for humanity, can "shape and engage consciences," and can reinforce certain power dynamics.



The remainder of the document covers a wide range of the concerning effects of AI in society and on individuals. Most importantly, "as society drifts away from a connection with the transcendent, some are tempted to turn to AI in search of meaning or fulfillment—longings that can only be truly satisfied in communion with God" (104). This substitution for God is the sin of idolatry, although "it is not AI that is ultimately deified and worshipped, but humanity itself—which, in this way, becomes enslaved to its own work" (105). I consider this to be perhaps the most consequential lesson of *Antiqua et Nova*.

I find *Antiqua et Nova* to be a very welcome teaching

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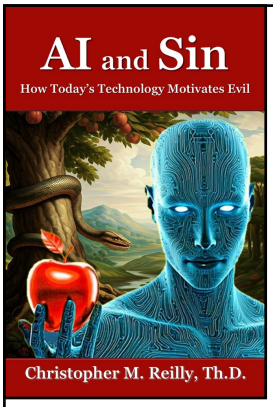
document about the role of AI as an influence on our understanding of just what a person is. It gets to the heart of the anthropological question and provides some answers in its well-considered and generally accessible description of human intelligence. Such a focus, rather than an emphasis on the laundry list of societal effects of AI, seems to be the most important approach for the Church in utilizing the development of AI as a "teaching moment" for Christians and the broader society.

I am concerned that the document's characterization of AI processes and capabilities is much too narrow and simplistic. The growth in capabilities of AI models, particularly those that are classified as generative AI, is extremely rapid and shows a remarkable potential for implementing some reasoning tasks. If generative AI is, at some time, merged with the more deductive capabilities of symbolic AI, we might see applications that reliably (but also inherently fallibly) approximate reasoning operations and have great utility in some activities. There are important efforts to merge machine operations with organic beings, exponentially multiply calculative power with quantum computing, store and retrieve data in DNA, etc. It would then be wise not to define AI in an overly restrictive or time-bound manner, for the lessons of *Antiqua et Nova* regarding human uniqueness are timeless, and such documents should have a long-term relevance.

I also wonder if the close relationship between human intelligence and the essence of human nature can be over-emphasized in such teachings. While the definition of intelligence may be rhetorically expanded to include loving, desiring, and willing in order to counter the very restrictive, functional definition of intelligence utilized by computer scientists (and many philosophers), we may thereby risk undermining the very careful theories of human nature developed in the Church that distinguish between intellect, will, and the passions. We also risk the ironic effect of providing support to some neuroscientists, computer scientists, and others who try to build upon AI's imitation of human intelligence to also replicate human emotions, wisdom, moral reasoning, and aesthetic sensibilities (if intelligence can be copied by machines, why not emotions and morality?). The Church will want to stand firmly against every reductionist view of human nature, not only the reduction of intelligence. ■

[1] https://www.vatican.va/roman_curia/congregations/cfaith/documents/rc_ddf_doc_20250128_antiqua-et-nova_en.html

Christopher Reilly is the author of the new book, *AI and Sin: How Today's Technologies Motivate Evil*



New Book

AI and Sin: How Today's Technology Motivates Evil

By Christopher Reilly, ThD

Artificial intelligence technology (AI) motivates persons' engagement in sin. With this startling argument drawn from Catholic theology and technological insight, Christopher M. Reilly, Th.D. takes on both critics and proponents of AI who see it as essentially a neutral tool that can be used with good or bad intentions. More specifically, Reilly demonstrates that AI strongly encourages the vice of instrumental rationality, which in turn leads the developers, producers, and users of AI and its machines toward acedia, one of the "seven deadly sins." The third section of the book offers a comprehensive survey and analysis of the many moral problems caused by AI. It concludes with recommendations for overcoming the 21st century scourge of AI-induced acedia.

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