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Remembering Father Donald J. Keefe, SJ - (1924-2018)

by Sister Marianne Postiglione, RSM, Editor

How does one portray a “wisdom figure?”; for that is what Fr. Donald Keefe, SJ was to the members of ITEST. He might have scoffed at that title, but wisdom figure he was. It may be all too easy simply to list all Father Keefe’s monumental contributions to dogmatic theology, especially his all-encompassing two-volume work, *Covenantal Theology: The Eucharistic Order of History*. (We leave that to Father Keefe’s former graduate students who will undoubtedly one day compile a Festschrift of his work). Yet his work was not all there was to this man, a dedicated searcher of the truth with a giving heart that reached out in compassion to anyone in need, especially his students.



I first met Don in the middle 80s during an ITEST conference in St. Louis. He was an impressive man who carried himself well. My first impression of Don was that he did not suffer fools gladly; he was a bit intimidating with a seeming gruff exterior which cloaked his more hidden warm interior. Yet, as I grew to know him over the years, I found a man dedicated to his priesthood, to the Church, to his students and to the Truth of God’s Word which he brilliantly formulated in his theology. He was a good friend and colleague of Father Robert Brungs, our founder and director. Together over several beers they spent many an hour during the evening breaks at the twice yearly ITEST conferences and workshops discussing the sometimes complex ideas in theology or simply just reminiscing about “the old days” and their lives as Jesuits.



We can read a dry listing of all Father Keefe’s accomplishments but those that follow, detailed by Father Brungs in 2001, depict those works of Father Keefe that stand as a lasting contribution to the development of covenantal theology.

Father Donald J. Keefe, SJ, was Professor of Dogmatic Theology at St. Joseph’s Seminary, Dunwoodie, New York from 1994- 2001. Prior to his Dunwoodie position, he served as theologian for the Archbishop of the Denver Archdiocese. Father Keefe taught dogmatic theology at Canisius College in Buffalo, Saint Louis University and Marquette University. After serving in the U.S. Navy in World War II, he earned his J.D. at Georgetown University Law School before entering the Society of Jesus in 1953. Following his priestly formation period, he was ordained a priest in 1962. Father Keefe was a member of the Bar of the District of Columbia, of the State of New York and the Supreme Court of the U.S. He wrote several books on theology and theological method, notably, *Thomism and the Ontological Theology of Paul Tillich* and the two-volume work, *Covenantal Theology: The Eucharistic Order of History*. This latter volume has been summarized in a one-volume work. Father Keefe was the author of more than thirty articles on theology. Rest in Peace, Don.

In This Issue...

Announcements	2
<i>Vanishing Young Catholics: Direct Feedback Supports National Surveys</i> by Patrick Panozzo	3
<i>Catholic Education Meets Virtual Reality: A New Horizon for Faith-Based Teaching</i> by Sebastian Mahfood, Ph.D., Bryan T. Froehle, Ph.D., and Wanjiru M. Gitau, Ph.D.,	6
<i>Brain, Mind and Form</i> by Reverend Joseph Lee, SDB	9
<i>The Omega Point Through Eucharistic Eyes: Teilhard de Chardin, Pope Francis, and a World Transformed</i> by Reverend D. Bruce Nieli, C.S.P.	12
<i>HELL: The Natural Result of Staying Completely Within Human Limits</i> by Thomas P. Sheahen, PhD	14

Announcements

ITEST Fall Conference St. Louis November 18, 2018

We have engaged our main speaker for this conference treating in particular the “tilma” of Our Lady of Guadalupe. Father Bruce Nieli, CSP is a Paulist Priest stationed in Austin Texas. Ordained in 1973, Nieli is past director of evangelization for the United States Conference of Catholic Bishops. Currently he leads parish missions and retreats and speaks at a variety of diocesan and regional conferences. Fully bi-lingual he has given presentations on evangelization and other topics in both English and Spanish. One of his interests is exploring the cultural aspects of Our Lady of Guadalupe and their influence on the development of spirituality in the Americas.

News From The Magis Center

We received word recently that Father Robert Spitzer, SJ, who has long suffered from retinitis pigmentosa, is in line for a clinical trial that is being undertaken by The University of Iowa’s Institute for Vision Research. In Father’s case they are taking stem cells from the skin of his arm and using induced pluripotent stem cell (iPSC) technology to create transplantable cells that will develop into the surface layer of the retina (containing the rods and cones – photoreceptor cells). By using Father’s own cells they are creating a perfect immunologic match and avoiding (or at least greatly minimizing) the need for significant long-term immunosuppression.

In the new cells they will correct the genetic defect that caused his RP (retinitis pigmentosa) by using CRISPR/Cas9 technology. After several months of growth the new retinal layer will be mounted on tiny polymer based scaffolds that have been produced by a photonic professional 3-D laser printer. The scaffold-mounted retinal layer will then be implanted in place of Father’s damaged retinas. The polymers are dissolvable, so when they are implanted behind the vitreous

humor, they will dissolve and allow the intact retinal layer to unite with the healthy cells on his retina. If all goes well his vision will be restored to approximately 60-80% of its original power.

Though there is much research to be done, stem cell research is already stretching the limits of possibility. With such newfound abilities, scientist are taking a huge leap forward in helping humanity – but only if all of humanity is respected.

As far as stem cells are concerned, the Church is not opposed to most avenues of research. A statement from the USCCB claimed, “Because the Church opposes deliberately destroying innocent human life at any stage, for research or any other purpose, it opposes embryonic stem cell research as currently conducted. However, when scientists proposed avenues for possibly obtaining embryonic stem cells or their pluripotent equivalent without creating or harming embryos, Catholic leaders were among the first to welcome this idea.” Adult stem cells, as well as those extracted from umbilical cords and even those from fetuses who have died of natural causes, are approved by the Church.

Supper and Spirituality – Scientists Speak of Their Faith

In April we held the first of our seven parish events “Scientists Speak of Their Faith: A Model for Parish Discussion”, at Ascension Parish in Creve Coeur, Missouri and co-sponsored by the Our Sunday Visitor Institute and ITEST. More than 200 parishioners attended the presentation. Under the able leadership of Adult Formation Director, Chris Foeldi, the people were fed physically with pizza and spiritually with the inspiring reflections of the panelists: a theologian, a neurosurgeon and a physicist. St. Joseph Parish in Imperial, Missouri will hold the next event at the end of April.



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Vanishing Young Catholics: Direct Feedback Supports National Surveys

by Patrick Panozzo

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ITEST Board Member

One of the more serious challenges facing the Church in the United States today is finding suitable and effective ways of keeping young people from leaving the Church, the unmistakable trend for more than a decade now. The 2007 Pew Research Center polling data revealed a discernable upswing in the number of Americans no longer identifying with any particular religion, and also a greater number no longer confirming a belief in God. The 2014 Pew survey showed these and other related metrics demonstrating less religious belief, less practice within faith traditions, and fewer people affiliating with a particular church. These trends are common throughout many demographics, but most obvious among the young, particularly 18-24 year olds.

How the Church chooses to reach and evangelize American youth moving forward depends to a large degree on a proper analysis and interpretation of the root causes underlying the decline in these religious attitudes and behaviors. What are the root causes of these trends (perceptions of conflict between science and religion are cited most often)? What do they reveal about the state of evangelization today? How are we to best address the various concerns of young people and remain faithful to our mission of bringing all into relationship with Christ and his Body, the Church? These are complex and difficult questions with few obvious answers. What follows is merely an attempt to lay out some of the issues in order for the analysis to find its proper context. Only then will we be able to find the prudence to move forward with courage and faith.

The first wave of research to indicate decline, or at least the decline that was to come was made by the sociologist Christian Smith, presently at the University of Notre Dame. He published (along with Melinda Lundquist Denton) a revealing look at adolescent faith in 2005 titled, *Soul Searching: The Religious and Spiritual Lives of American Teenagers*. The principle conclusion drawn from hundreds of lengthy interviews with adolescents across the country was that the dominant religion of American youth at that time was “Moralistic Therapeutic Deism.” Smith defines Moralistic Therapeutic Deism as having five main beliefs; one, a God exists who created and orders the world and watches over human life on earth; two, God wants people to be good, nice, and

fair to each other, as taught in the Bible and by most world religions; three, the central goal of life is to be happy and to feel good about oneself; four, God does not need to be particularly involved in one’s life except when he is needed to resolve a problem; and five, good people go to heaven when they die. Smith’s analysis suggested that much of Moralistic Therapeutic Deism was a hybrid found within each religious tradition to varying degrees that was a watered down version, not particularly interested in orthodoxy. Young people, but also their parents to a large degree, were prone to these religious beliefs in order to better get along in a pluralistic culture that values tolerance and acceptance above almost every other thing. Religion then becomes increasingly privatized and primarily about personally feeling good and being happy. It is within these waters more than a decade ago that the latest trends of abandoning more traditional religious and spiritual practices altogether have now accelerated.

Christian Smith does not attempt to offer strategies or solutions that address the weakening of traditional forms of religious identification and behavior. He does, however, provide a great service to evangelizers by identifying the cultural shifts and the potential problems that could and have resulted from these shifts. The Pew surveys on religion (both 2007 and 2014) confirmed many of the trends Smith uncovered in *Soul Searching*. Now a new work of sociology has entered the conversation revealing even deeper fissures in the religious faith and practices of the next generation. In late 2017 Jean M. Twenge published, *iGen: Why Today’s Super-connected Kids Are Growing Up Less Rebellious, More Tolerant, Less Happy – and Completely Unprepared for Adulthood and What That Means for the Rest of Us*. Similar to Christian Smith’s work, this book is the product of hours and hours of interviews coupled with extensive surveys focused on the thoughts and behaviors of youth in America. Chapter 5 titled: “Irreligious: Losing My Religion (and Spirituality)” most closely corresponds to Christian Smith’s earlier work. The most extraordinary discovery uncovered by Twenge in this chapter claims that not only has there been continuous movement away from identifying with a particular religion, but there now grows an increasing number of young people who have no religious background or connection to a re-

Continues on page 4

ligious tradition at all. In other words, the next generation are not even saying they are “spiritual” only uncomfortable with organized religion. This had been the popular theory for explaining the original spike in those responding “none” to their religion of choice in earlier surveys. It appears ever more likely now that young people have left the Church, organized religion broadly, but also spirituality and religious identification of any kind as well.

Twenge analyzes what she calls “iGen,” the generation that follows the “millennial” generation (born 1980-1994). iGen was born between 1995 and 2012 and Twenge concludes they are the least religious generation in American history. The chapter on religion produces eleven different charts showing trends and comparisons along with dozens of revealing statistics. Young people have always been less religious on average than people as they grow older (religious being defined by belief in God, church membership, frequency of attending religious services, frequency of prayer, and a slew of other measures). But Twenge shows how today’s iGen generation is even less religious than the Millennials, Generation X, or Baby Boomers at the same age (numbers do not exist or are unreliable for generations prior). One example, 40 % of 12th graders in 1976 attended church services once a week, while only 28% of 12th graders attended church services once a week. 22% said they “never” attend church services. She goes on to cite multiple aspects of spirituality not dependent upon religious affiliation that have noticeably declined, most rather significantly when compared to prior generations at the same age. Twenge concludes, “It’s not age, because Boomers and GenX’ers were perfectly happy to be religious when they were young; iGen is less religious even in beliefs that don’t require religious institutions; fewer Americans now believe in God or pray; fewer, not more, young adults are spiritual; the number who do not participate in religion has doubled.”

From the ongoing trend of declining religious identification and practice, coupled with the advent of lessening spirituality among young people, Twenge moves on to identify three main causes or reasons most often given for the current attitudes of American youth concerning religion. The first reason frequently cited is that religion has too many rules. Americans today, particularly youth, believe in individual choice and self-expression. Implied with that is an almost radical “non-judgmental” position that religion seems inherently at odds with. Religion carries the perception of restricting personal freedom thereby stifling the individual pursuit of self-identification and happiness (values con-

sidered as important as any for iGen). The second reason is what Bishop Robert Barron and others has termed “scientism,” characterized primarily by the claim that the only legitimate or reliable source of knowledge is that acquired through science or the scientific method. Since at least the Enlightenment, and perhaps even before, the perception of religion and science being in conflict has been a great challenge to promoting the legitimacy of faith. More than ever before young people today perceive faith and reason to be incompatible, and very often at odds. The third issue most mentioned as contributing to a decline in youth religiosity is LGBTQ issues. Twenge cites a 2012 survey of 18 to 24 year olds where 64% said they believe Christianity is antigay and 58% believe it is hypocritical. Of those who already identify as “nonreligious” 79% believe Christianity is antigay. If the number citing a hypocritical Christianity is not immediately clear, it likely references the perceived failure of religious people and/or churches to “accept” people no matter what they do, but especially for *who they are*. Young people today are likely to find the phrase, “hate the sin, but love the sinner” as either inherently hypocritical, or altogether unintelligible, particularly when it comes to sexual identity.

Being aware of the trends cited by Christian Smith back in 2005 added on to the most recent findings of Jean Twenge, it seems critical for teachers and evangelizers to know their own students when it comes to religion and faith. I have taught theology in an all-girl Catholic high school for sixteen years now and have witnessed many of these trends first hand. This past January (2018) I decided to survey the 77 sophomores (aged 15-16) I teach right now using the National Catholic Education Association’s assessment tool for theological instruction and religious practice. Essentially a standardized test, the survey is called the “Assessment of Catechesis and Religious Education” or ACRE. It has two parts, the first measures religious knowledge and the second is titled, “Personal Beliefs, Attitudes, Practices and Perceptions.” My school gives the religious knowledge test to 9th and 12th graders annually, but I gave my students only Part 2 of the test which asks for 46 different responses concerning personal beliefs, attitudes, practices, and perceptions.

All responses were given anonymously and I have no reason to think anyone answered with less than complete honesty. It is perhaps worth noting that demographically my students are right about 90% white (non-Hispanic), on average live in households that are above the median income with many from upper middle-class homes. Divorced parents are not

Continues on page 5

uncommon, though my students mostly live in households with both parents at home and married to each other. The first response that drew my attention was seeing that 70% of my students either agree or strongly agree with the statement “I believe Jesus cured the blind and raised the dead,” while only 16% responded “disagree” or “strongly disagree” (14% answered “not sure”). A strict scientism would reject the miracles of Jesus and his bodily Resurrection, or at least attempt to reduce them into a purely metaphorical understanding. I cannot be certain how my students interpreted the statement, but a willingness for even 70% to affirm the healings of Jesus and his Resurrection suggests to me that a scientific reductionism of religion is not the greatest obstacle to faith for this group.

Moving to religious practice, I was encouraged that 66% of my students agreed or strongly agreed that they “belong to an excellent parish,” whereas only 25% disagreed or strongly disagreed. However, only 43% of students said they attend Sunday Mass regularly and 50% said they do not. However, it seems belonging to an excellent parish does not translate into regular Mass attendance for at least one-quarter of my students. Another critical question, particularly when it comes to teaching theology or encouraging faith development and participation in the Church is how they responded to “Being a Catholic is important to me. 17% strongly agreed, 35% agreed (combined 52%), while 21% disagreed and another 12% strongly disagreed (16% answered “not sure/no opinion”). Only 42% said “One way God speaks to me is through the Bible,” while 45% said that does not happen. Another telling number showed that 43% of my students disagreed with the statement “My family prays together at home.” These are households that have made it a priority to send their daughters to a Catholic high school with all that that implies, including a curriculum with a four-year theology requirement and graduation requirements that include retreats and four years of service. It is probably fair to assume that broadly speaking these students are “above the norm” for religious commitment and practice when compared with Catholic high school students attending public schools (a number that far exceeds those attending Catholic schools).

Finally, the most alarming number that came out of the survey of my own students, but one that is consistent with Jean Twenge’s iGen conclusions is the response I received to the statement “It is alright to live together before getting married.” Only one student out of 77 disagreed and 90% either agreed or strongly agreed (8% said “not sure/no opinion”).

This number reflects the generational trend showing widespread cohabitation, delayed marriage, the foregoing of marriage altogether, fewer children, but higher rates of children born out of wedlock. The commonly held belief that young people will return to the Church when they get married and start families of their own is wishful thinking not supported by the data.

There is clarity in much of this data, some remains open to interpretation, but what to do next with it is far from clear. The newly elected chairman of the USCCB’s committee on Evangelization and Catechesis is the Auxiliary Bishop of Los Angeles, Robert Barron. He is also the founder of *Word On Fire Ministries* and may be the person most on the cutting edge of evangelizing the culture (youth and otherwise). Bishop Barron is well aware of the latest sociology and has begun to address the concerns in several important ways. He delivered the “Erasmus Lecture” in October 2017 for *First Things* with the title “Evangelizing the Nones.” In that lecture and elsewhere Barron takes a clear-eyed approach, particularly on the concern that science refutes religion as most often mentioned by young people for their loss of belief in God and/or decline in religiosity. He suggests there are at least two important initial steps the Church can take to evangelize in this area more effectively.

The first step for the Church is to stop “dumbing down” the faith. By this he means we have been too tentative and unsure of ourselves when making the intellectual arguments for faith. Science is the far more rigorous academic subject in our schools (at every level) and after several generations of serious science learning while being left unchallenged in theology, what should we expect young people to conclude? Barron recalls a memory of the late Francis Cardinal George showing him his 4th grade religion book from the 1940s. He was shocked by the complexity, intellectual rigor, and technical vocabulary in it that were far superior to anything his generation (or since) was expected to engage. He concludes that this dumbing down of the faith has had disastrous pastoral results, particularly for a time when scientific rigor has been heightened. Further, the attractiveness of science and the aversion to religion has not been the result of personal embrace or warm acceptance, rather they have been argued into atheism. Evangelization calls for arguing them back into the fold using reason that will win over the intellect. In other words, a restoration of serious apologetics that confronts the arguments against faith in the modern world.

The second move recommended by Bishop Barron in reach-

Continues on page 6

ing out to iGen is to bring science and faith more into conversation with each other. Rarely do young people learn, because they are not taught, that the Church has long been a patron of science and scientific discovery. Many great scientists of the past, responsible for great discoveries and cutting-edge advancements, were Catholic clerics or devout members of the laity. Today it is equally important to raise the awareness of faith and reason working happily together within the scientist as well as the believer.

Evangelization today requires men and women of faith who work in scientific fields to witness to the compatibility of science and faith, personally and professionally. In the other direction, theology and ministry should actively engage science as a means to understanding God and creation in a positive manner. To this point, Jean Twenge cited religion's unwillingness to engage with science. Half of 13 to 17 year olds say they want to pursue a science-related career, yet only 1% of youth pastors say they have addressed any subject related to science in the past year. Similarly, the USCCB

Curriculum guide for high school theology makes only three references to science over the course of a four-year theology program. The aforementioned ACRE standardized test for high school theology published by the National Catholic Education Association asks only two questions out of 63 given to 11th and 12th graders in the academic theology portion that could even remotely relate to science (one on nature, the other regards Scripture). The same test never asks about science or reason in the "personal beliefs and perceptions" portion. This is insufficient. The curriculum needs to give "science and reason/faith" higher priority and that means more time and effort across the four-year program.

As stated at the outset, the priority here is to unveil some of the data and place it in its proper context. The Church needs to evangelize in a new way that better addresses the concerns of the next generation. This can be done with fidelity to the Gospel and the Church's collected wisdom, but creativity and hard work will be necessary.

Catholic Education Meets Virtual Reality: A New Horizon for Faith-Based Teaching

by Sebastian Mahfood, Ph.D., Holy Apostles, Cromwell, CT, ITEST Board Member
and Bryan T. Froehle, Ph.D., and Wanjiru M. Gitau, Ph.D.,
St. Thomas University School of Theology and Ministry, Miami, FL

The Local Context:

Faith and Science Teaching in the United States

A few years ago, the John Templeton Foundation, working through Doris Donnelly at John Carroll University, provided grant funding to professors who would develop courses in faith and science aimed at collegians and pre-theologians.¹ ITEST Board member Dr. Stacy Trasancos received one such grant to develop a course at Holy Apostles in Cromwell, CT, entitled "Science in the Light of Faith," which was aimed at teaching students at this level "the scientific method and how to read scientific literature on subjects including cosmology, genetics, and evolution."²

The reasoning behind the grant initiative, which went into a second round this past year, was to strengthen awareness of how faith is understood in relation to the empirical sciences given that only about 8% of newly ordained priests have a strong background in the sciences.³ Collegians and pre-theologians are drawn from a variety of places, and one way to

ensure that they have been exposed to an understanding of the relationship between faith and science prior to their entering seminary is to intentionally provide such an education to them in the primary and secondary schools.

This is one reason for ITEST's work in its Creation Lens modules and in its community outreach within the Catholic and other faith-based school systems. ITEST believes that as students grow in their understanding of the articles of their faith and of the mechanics by which the world that God created works, society will better flourish, especially when it has well-formed and well-informed its future Catholic leaders.

Formation Programs in Catholic Education

One significant way in which faith-based education is different from secular education lies in that very idea of formation. In Catholic education, we do not simply educate students in the fundamentals of the material and spiritual worlds, but we

Continues on page 7

form them in the mind of the Church regarding how these worlds cooperate and strengthen one another. A student in a secular school may learn a great deal about the empirical sciences and be left wondering whether there is anything beyond the efficient and material causes in nature. A student in a Catholic school, however, is taught not only the what and the why but also the Who behind all of creation, and that is the principle that guides our work in intellectual formation. Beyond intellectual formation, we Catholics also engage in two other important areas of formation, the human and the spiritual. We understand that human formation concerns character development through the cultivation of a moral and ethical code of conduct and that spiritual formation concerns the cultivation of a prayer life grounded in the Eucharist, which is the source and summit of Christian life. We have many examples of exemplary teaching practices that bring together in an integral way all three of these dimensions of formation.

The New Technology of Virtual Reality

As new technologies develop to assist us in our work as teachers, then, we who are engaged in the work of formation on the level of the Catholic school necessarily endeavor to approach them in an integral way; that is, in a way that enables us to engage student learning within all three dimensions of formation. Distributed forms of education, for instance, that make use of learning management systems, video conferencing software, and various other tools are brought together in what is called a “teaching and learning environment” that should be developed for use with students who are not in physical proximity to one another or their teacher in a way that conforms to the standards of such environments in which students are in physical proximity with one another and their teacher. This basic principle holds true for the use of all new technologies that enable teachers to engage their students and students to engage one another and their teachers.

In the same way that that virtual media technologies have advanced teaching and learning over the past couple of decades, virtual reality (VR) technology is beginning to do likewise in bringing together multimedia software and various wearable technologies to build new worlds for human interaction and engagement. VR brings together hardware, software, and creative content in such a way that the user experiences “being there” within a fully virtual, three-dimensional spatial world. In short, VR provides a new form of story-telling involving the development of a synthetic world that a user enters via an integrated system that is physically

immersive and interactive.⁴ This synthetic world tells stories in new, profound ways that engage the whole person, body and mind, through sensory feedback.

Can Catholic Educators Use This New Technology?

The short answer is that we suspect so, but we need a school community in which to test the hypothesis.

As a preliminary activity to testing the technology in a school, Dr. Bryan Froehle, professor of practical theology at the School of Theology and Ministry at St. Thomas University, Miami, Florida, served as principal investigator for a Templeton World Charity Foundation grant-funded experiment in Latin America in June of 2017. Together with the assistance of Dr. Sebastian Mahfood, OP, who serves as the associate treasurer of ITEST and is on the ITEST board, Dr. Froehle assessed the response of a hundred and fifty of the onsite conference participants to a few short VR films. Concerning the content of these films, the first experience, theBlu, illustrates the power of VR to place a person in the midst of an otherwise inaccessible experience of the natural world.⁵ The second experience, Gnomes and Goblins, allows a user to enter a fantasy world in which he or she can interact with the virtual environment and manipulate objects toward predetermined outcomes.⁶ The third, Notes on Blindness, is about empathetically entering the experience of another.⁷

Some questions this kind of experiment prompted include the following: Can VR be used to illustrate deep spiritual truths? Can VR help us explore the science of the natural world and enable us to better understand its Creator? Can VR assist us to investigate human purpose? One way it can do these things is through its ability to tell totally immersive stories in very specific ways. Specifically, VR technology is extraordinarily effective in doing the following.

- Establish presence
- Increase perspective
- Engage empathy
- Enhance spiritual imagination
- Create a sense of awe, humility, and thanksgiving

Given these outcomes, we can say that VR offers an opportunity to tell stories of spiritual progress in a compelling way, helping the human mind enter spaces otherwise impossible to enter.

A Follow-Up Project: Distribution of Masks to Opinion Leaders

As more people experience the transformative storytell-

Continues on page 8

ing power of VR, recognition of this potential will increase measurably, which is why the follow-up to the project involved the dissemination of 100 virtual reality masks to as many opinion leaders in VR, media, and/or theology with an emphasis on those who were favorably disposed to inter-religious dialogue – in short, bridge-builders. Persons selected to participate in the sample agreed to the terms of the experiment, which included viewing at least two apps and one VR movie using the device into which their smart phone would be installed, and filling out a Post-test survey. The device itself is a UMIDIGI VR Headset with 3D virtual video glasses that use a spherical lens to enable 3D cinema with 360 degree full view tracking. Sample participants received an email with directions to open it with their Apple or Android phone and download two apps and one video on YouTube. The two apps were selected for their range of insight into VR. One was a moonwalk from the perspective of an astronaut standing on the moon looking out into space. The participant, by turning 360 degrees and looking up toward the sky and down toward the ground, sees an earth rise, the international space station, the moon's surface and space. The apps were located for both kinds of device at

iPhone - <https://itunes.apple.com/us/app/virtual-reality-moon-for-google-cardboard-vr/id1119018463?mt=8>

Android - https://play.google.com/store/apps/details?id=com.zabuzalabs.vr_moon_mission

The other app provided in this follow-up study was a sky-diving experience in which the participant engages with the thrill-seeking looks of pre-recorded persons as they prepare to jump from a plane and finds him or herself also floating downward after a virtual jump. The experience of falling is provided not only by a sense of the ground's coming closer but also by the sense of rushing wind pushing against the participant's virtual colleagues as evidenced by their uneven falling patterns. The apps were located for both kinds of device at

iPhone - <https://itunes.apple.com/hn/app/vr-skydiving-simulator-flight-diving-in-sky/id1195468578?l=en&mt=8>

Android - <https://play.google.com/store/apps/details?id=com.linkapps.vrskydivingvideos>

Finally, the participants were given a link to a YouTube VR movie simulating an undersea diving experience. The single link, which transported the participants to an undersea world, works with both the Android and iPhone and may be found at <https://youtu.be/K6xyPOttq7o>

Of the three experiences, the participants within the sample who provided feedback declared the YouTube VR movie to be the best indicating that the apps, with their various difficulties in terms of pop-up ads, screen shut-downs, etc., were not quite in the same league. The email with the links included an invitation for the participants to download other game simulations and to explore other YouTube 3D VR movies so that they could see how widespread these apps and movies really are and experience their varying quality. A Facebook page was created at <https://www.facebook.com/virtualrealityonline2018> to maintain momentum for those who wanted to continue to engage the progress on this kind of a project.

Three Directions for Future Research

This study suggests three directions for future research in general on Virtual Reality:

- First, neurological research through the development of the “cognitive functions” of machines that make VR possible
- Second, shared scientific understanding through stories that help train and prepare precise technical work
- Third, creation of tools to deepen moral development, help form ethical decision-makers, and enhance spiritual progress. Some questions that scholars in these fields might explore include as follows:
 - o What possibilities exist for theological, religions and spiritual research related to VR?
 - o Could VR be used to reinforce religious community in the face of membership dispersion?
 - o Could VR be used to reinforce/deepen particular religious teachings, e.g. Golden Rule, who is my neighbor?
 - o Could VR be used to enhance liturgical experience?
 - o Could VR be used to provide virtual tours of the Holy Lands, of Rome, and of various religious sites and shrines?⁸

Other questions abound, especially for the value that VR technologies can bring to our Catholic formation environments, but it is this third question with its myriad of follow-up questions that interests us as Catholic educators responsible for an integral approach to our three dimensions of formation – the intellectual, the human and the spiritual. A next step would be to pilot this work with additional grant funding within a Catholic school. The authors of this article are interested in working with any Catholic school interested in advancing such an effort.

Continues on page 8

End Notes

- 1 For the ongoing progress concerning the work, see John Carroll University’s “Science and Faith in Seminary Formation for College and Pre-Theology Programs” located at <http://sites.jcu.edu/sem-science/>
- 2 This course description was highlighted on Templeton’s website at <https://www.templeton.org/discoveries/expanding-scientific-training-for-religious-leaders>
- 3 Ibid.
- 4 See William R. Sherman and Alan B. Craig, *Understanding Virtual Reality: Interface, Application, and Design* (San Francisco: Morgan Kaufmann Publishers, 2003), 6–7. For some practical examples of how VR is being used in various industries, see Rena Rodriguez’s “Could virtual reality change Miami’s real estate industry?” (*Miami Herald*, March 30, 2018); available online at <http://www.miami-herald.com/news/business/real-estate-news/article207348989.html>, and Apple’s latest patent for VR in self-driving cars at <http://flip.it/drJdPE>.
- 5 A variety of descriptions of this VR experience are available. They illustrate why theBlu was selected as the lead experience. See, for example, <https://venturebeat.com/2016/03/28/wevrs-theblu-delivers-a-mesmerizing-deep-sea-experience-in-vr/>. For a link to the homepage of the VR experience, see <http://www.tinyurl.com/bluseason1>
- 6 For a description of this experience, see <http://www.madisonwells-media.com/realityone/gnomes-goblins/>. See also <http://variety.com/2016/digital/reviews/vr-review-jon-favreaus-gnomes-goblins-1201858143/>. For a link to the homepage of the VR experience, see <http://www.tinyurl.com/gnomes-goblins>
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Brain, Mind and Form

by Reverend Joseph Lee, SDB

Some think metaphysics is pure scholasticism and they claim that mind is forever beyond our understanding.¹ In reality, the history of ideas is filled with notions of body and soul,² and an openness to what science cannot apprehend let alone comprehend. We recognize the integrity of mind and the value of past philosophical thought about the mental. Our article considers the classical concept of form, and a contemporary account of form by Eleonore Stump,³ Professor of Philosophy at Saint Louis University. Stump’s contemporary notion of form is applied to the mind and

brain in three perspectives, illustrating the relationship of the mental and neural.

Classical Form

In Aristotle the soul is not attached to the body but is the “form” of the body, somewhat as the power of sight stands to the eye. There is unity of end, matter and means. While science deals with efficient causes, e.g., forces or agents producing changes, instead substantial form acts as a formal cause in determining possibility-of-being to exist as one type of substance or another.⁴ The common example is a lump of clay gradually shaped into a sphere. The clay has the possibility of becoming a sphere and becomes actually spherical when it attains a particular shape. Or according to Aristotle, it is unnecessary to ask if the wax and shape are one.

If the eye were an animal, Aristotle explains, sight would be its soul. Sight is the substance of the eye, and the eye is merely the matter of seeing. The soul is an “actuality of the first kind of a natural organized body” (*De anima* 2,1,412^{b5}). This concept of organization is a valuable one, implying configuration, shape and integration.

Contemporary Form

More recently Stump explains how “form” or the soul

Continues on page 10

Father Joseph Lee SDB
Brief Biography

Father Lee is a member of the Salesians of Don Bosco. His doctorate is from Flinders University, Adelaide (Australia), exploring the Catholic Church’s teaching on the human soul within the contexts of the neurosciences, psychology, philosophy, and spirituality. He is also interested in clinical ethics, disability studies, and philosophical and ethical implications of artificial intelligence.

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configures matter, by using a unique example. She discusses a protein called CAT/Enhancer-Binding Protein (C/EBP), a molecule which in its active form consists of an alpha helix coil and a dimer. It is a rather complex case in biochemistry involving cells, proteins and genes, and a process called transcription.

Then using physics, Stump explains how form goes all the way down to protons which make up atoms; and quarks or subatomic particles which make up the protons. The configuration and combination between protons and quarks is the form of protons. Thus the form organizes the matter physically in space and time. This means, “to be is to be configured or to have a form, and everything is what it is in virtue of a form”⁵ That is, configuration or organization is necessary for anything to exist; lacking form, nothing is actual.

Perhaps we can demonstrate Stump’s thinking by using air: a mixture in the atmosphere including nitrogen, oxygen, carbon dioxide, as well as water vapor, and pollutants such as methane, and exhaust fumes. Thus the form of the air, what makes air to be air, is its components and their proportions. Then, air is what makes wind, i.e., moving air. Rapidly moving air shaped in a funnel is the chief component of tornadoes. Tornadoes are part of weather patterns or climate. Following Stump, the form of the air is its mostly gaseous composition; yet air itself is the form or configuring aspect of something greater, namely moving air or wind. No moving air, no wind. The same analysis can be extended upwards so that at all levels, what exists has form.

Form and Mind

Stump’s ideas on form can be applied to the mind and brain in light of psychology and neuroscience. Her thinking can be encapsulated in a dictum so to speak, quoted above: “to be is to be configured.

Scientists characteristically think of mind (conscious, subconscious, and non-conscious),⁶ as something which emerges from brain activity. Intangible thought comes from biology. Other concepts of mind are mentality, ego, self, soul, psyche, cognition, consciousness, awareness, and sentience.⁷ Traditionally, cognitive psychology is the study of thought at the level of the mind.⁸ Defining the mind is regarded by others as an unachievable goal, that it is a process of the brain analogous to rotations being a feature of wheels.⁹ Nevertheless, our view of mind is that it is recognizable and real, and is related to our brains. Here are three perspectives to think about.

Configuration of Mind

Initially, the more obvious configuring of mind is that by the physical state of the brain. It is true that, “If you damage the brain you damage consciousness.”¹⁰ Or take brain stimulation through electromagnetic and other methods, e.g., biochemical, have the potential to change people’s minds, which has legal and philosophical implications, and there are even calls for legal protection of mental phenomena.¹¹ One method is deep brain stimulation, a technology used to treat psychiatric disorders and diseases of the mind by directly altering the brain’s functioning which carries risks of accusations of “mind control”¹² Here, mind control means altering the patient’s behavior in an observable way without the patient’s consent and it is enacted for that purpose, not an unintended side effect. The definition of mind control is practical, behavioral and legal, without making a judgement on metaphysical questions about the mind.

A nonphysical way to configure the mind is in the working concept of mind. Philosophically, defining the mind is important when looking at human civilization. It has been suggested that if the mind can know, and know itself, then we gather more data, and richer data about it from the ages of history and from all cultures, and also from each act of introspection and deep awareness of the self. In this way, controlling the definition of mind controls how humankind, culture, and history are defined.¹³ Questions can be posed which change reality, what human beings are as individuals and what categories are applied to them. What we recognize as mind is configured by what we think is mind.

The Mind Configures

Apart from being configured, the mind itself acts to configure other entities. People use their minds to change their brains. Brain training involves a specific program or activity which aims to enhance a cognitive skill or general cognitive ability through repetition over a demarcated timeframe.¹⁴ This really is cognitive enhancement, the improvement of mental skills through programs which are also called “brain-training” interventions.¹⁵ Intelligence is required to understand and train the brain via mind “exercises,” though the brain has no muscles. It is akin to how one uses intelligence and will to achieve behavioral goals like improving physical fitness or overcoming an addiction.

For these reasons, mind can be interpreted as the configuration of the brain, implying that a nonphysical entity can be the form of a physical entity. A person’s private thoughts,

Continues on page 11

intentions and goal-directed behavior shapes the brain due to neuroplasticity.

Mind/Brain Mutual Interactions

A third perspective on how form can be used to grasp mind and brain is seen in areas of joint activities, such as configuration of mind and how mind configures. The pharmacological and psychological approaches both can shape mental states and minds. Drugs such MDMA (ecstasy) affect social cognition and face recognition. On the other hand, psychotherapy is used to reduce symptoms of specific phobias, demonstrating potential to alter the dysfunctional neural circuitry associated with anxiety disorders such as spider phobia.¹⁶ Psychotherapeutic changes made at the mind level are able to functionally “rewire” the brain.¹⁷

The mutual interactions shows the close connections between brain and mind. Although nowadays, the trend is towards using drugs to alter the brain chemistry so as to alter the mind, e.g. the chief medical way of treating depression is through drugs: antidepressants can relieve the symptoms of depression. Vice-versa, depression can also be treated psychologically. However, in psychology and psychotherapy, and to some extent within psychiatry, there was thriving research and theorizing into the biopsychosocial, but now these are marginalized by commercial, psychiatric and medical psychopharmaceuticals.¹⁸

Unity of the Person

The human being is a whole, though we can think of persons physically, mentally, spiritually, and emotionally, and who have freedom to be responsible. To understand ourselves as having a brain and a mind is not to divide the self but to appreciate more the wonders of the human being created in the image of God (Genesis 1:26-27) and destined for eternal life (John 3:16).

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From an interview with Archbishop Charles Chaput on CNA/EWTN on the Encyclical Fides et Ratio. February 24, 2018.

(Interviewer) Why do you think these problems of faith and reason are so recurring in our time?

(Chaput) “Science and technology can seem—but only seem—to make the supernatural and sacramental implausible. The language of faith can start to sound alien and irrelevant. This is why we lose so many young people before they even consider religious belief. They’re catechized every day by a stream of materialist distractions that don’t disprove God, but create an indifference to him.”

The Omega Point Through Eucharistic Eyes: Teilhard de Chardin, Pope Francis, and a World Transformed

by Reverend D. Bruce Nieli, C.S.P.

“Because it contains and engenders consciousness, space-time is necessarily of a convergence nature. Accordingly its enormous layers, followed in the right direction, must somewhere ahead become involuted to a point we might call Omega, which fuses and consummates them integrally in itself.”

Pierre Teilhard de Chardin, S.J., *The Phenomenon of Man*, Harper Torchbooks, the Cloister Library, Harper and Row Publishers, 1961, p. 259

I have long been both inspired and fascinated by Pierre Teilhard de Chardin, the iconic Jesuit paleontologist and spiritual writer. During my Paulist seminary days in the exciting, highly activist 1960's, he, like Thomas Merton, provided a much needed spiritual base for my activism.

Yet of late, in the polarized and often disconnected times in which we live, I have been drawn to the divine unification concept of his Omega Point. In my perhaps over-reliance on the social media for connectedness with my relationships, I find a deeper connectedness with the “space-time” that is “necessarily of a convergence nature.” It's even better than Facebook and WhatsApp?!

In two recent movies I sensed this space-time connectedness. *Star Wars: The Last Jedi* communicated inter-connectedness of persons across space, as did all the previous *Star Wars* films. *Coco*, about a young Mexican boy, Miguel, who reconciles his deceased great, great grandfather with his living daughter, Coco, (Miguel's very elderly great-grandmother), creatively communicated interconnectedness among persons across time.

But in a paragraph from Pope Francis' beautiful Encyclical *Laudato Si: On Care for Our Common Home*, I felt an even deeper inter-connectedness:

“It is in the Eucharist that all that has been created finds its greatest exaltation...In the Eucharist, fullness is already achieved; it is the living center of the universe, the overflowing core of love and of inexhaustible life. Joined to the Incarnate Son, present in the Eucharist, the whole cosmos gives thanks to God. Indeed the Eucharist is itself an act of cosmic love. ‘Yes, cosmic! Because even when it is celebrated on the humble altar of a country church, the Eucharist is always in some way celebrated

on the altar of the world.’ (John Paul II, Encyclical ‘Ecclesia de Eucharistia,’ 17 April 2003, 8: AAS 95, 2003, 438). The Eucharist joins heaven and earth; it embraces and penetrates all creation. The world which came forth from God's hands returns to him in blessed and undivided adoration...Thus the Eucharist is itself a source of light and motivation for our concerns for the environment, directing us to be stewards of all creation.” (Pope Francis, Encyclical Letter ‘Laudato Si: On Care for Our Common Home,’ United States Conference of Catholic Bishops, Washington, D.C., June 2015).

What a magnificent passage! “Living center of the universe;” “act of cosmic love.” Is this not the Omega Point?!

Of course The Prologue of *The Gospel According to John* speaks similar sentiments referring to the Word (Christ): “*All things came into being through him*” (1:3) (NRSV). *The Letter of Paul to the Colossians*, also referring to Christ, further proclaims “*In him all things in heaven and on earth were created...In him all the fullness of God was pleased to dwell, and through him God was pleased to reconcile to himself all things...*” (1:16, 19-20) (NRSV). But the above passage from *Laudato Si* gives a particularly Eucharistic focus to the principle of divine unification.

This space-time inter-connectedness present in the Eucharist I intimately discerned in two very powerful religious experiences. Coming home to the United States from Kolkata, India, after teaching a course on evangelization and the letters of St. Paul in the continuing formation program of the Missionaries of Charity, I found myself all alone, spending all of Holy Thursday in the coach section of an airplane. In the midst of feeling sorry for myself on the anniversary of the Eucharist and on a day especially devoted to praying for priests, the Holy Spirit prompted me to envision Jesus washing the feet of my fellow passengers, brothers and sisters to me, primarily if not exclusively Hindu, Sikh, Buddhist, and Muslim, and celebrating Holy Thursday Mass on my tray with my missal and plate of bread and cup of wine. Priests have celebrated Mass in concentration camp bunkers. Why can't I celebrate on an airplane?! I literally bathed in “cosmic love”! As in *Star Wars*, I experienced universal inter-connectedness in space!

Continues on page 13

The other experience occurred years before, in the city where I presently live and work—Austin, Texas. I was asked to celebrate a memorial Mass for four teenage girls who had been brutally raped and shot to death while working in a yogurt shop. While pronouncing the words of consecration, I had a profound sense of the presence of the four deceased girls celebrating with me right there at the table altar. Jesus, the “Bread come down from heaven,” does not come to earth alone. He comes with the communion of saints. In this greatest of prayers, his kingdom comes “on earth as it is in heaven.” I shared this with all those present at the Mass. The grieving father of two of the girls, who had been away from church for many years, told me he had the same sense at Mass of his daughters’ presence. He would later wind up a Eucharistic minister at a Eucharistic Congress! In that memorial Mass, I felt that it was indeed true—“The Eucharist joins heaven and earth.” As in *Coco*, I experienced universal inter-connectedness in time!

Pierre Teilhard de Chardin writes about a similar religious, even mystical experience, in his book *Hymn of the Universe*, published by Harper & Row in 1961. In Chapter One of the book, which he entitles “The Mass on the World,” he writes:

“Since once again, Lord—though this time not in the forests of the Aisne but in the steppes of Asia—I have neither bread, nor wine, nor altar, I will raise myself beyond these symbols, up to the pure majesty of the real itself; I, your priest, will make the whole earth my altar and on it will offer you all the labors and sufferings of the world... My paten and my chalice are the depths of a soul laid widely open to all the forces which in a moment will rise up from every corner of the earth and converge upon the Spirit. Grant me the remembrance and the mystic presence of all those whom the light is now awakening to the new day.

Pope Benedict XVI compared this magnificent Teilhardian vision with that of St. Paul in the *Letter to the Romans*, of the world becoming a form of living worship, during a July 24, 2009, vespers service in the Cathedral of Aosta in Northern Italy:

“It’s the great vision that later Teilhard de Chardin also had: At the end we will have a true cosmic liturgy, where the cosmos becomes a living host. Let’s pray to the Lord that he help us to be priests in this sense, to help in the transformation of the world in adoration of God, beginning with ourselves.” (See John L. Allen, Jr., “Pope Cites Teilhardian Vision of the Cosmos as a ‘Living Host,’” *National Catholic Reporter*, July 28, 2009.)

In the Eucharist, we behold “the fruit of the earth” transformed by the Spirit into the “Bread come down from heaven.” Can we not, in the light of the Spirit through the grace of Eucharistic eyes, behold an earth correspondingly transformed to be closer to heaven, into a unity of time and eternity?!

St. Francis of Assisi, the author of the original *Laudato Si* (*The Canticle of the Creatures*), was able to see God in Brother Sun and Sister Moon, in Brother Wolf, in the lepers and other outcasts of his time, in a supposed enemy he would embrace as a friend, Malik Al-Kamil, the Sultan of Egypt and Muslim leader during the Crusades. His power came from regularly beholding the Lamb of God in every Eucharistic chapel he came across, proclaiming from his heart: “We adore you, O Christ, here and in all your churches throughout the world, and we bless you, because by your Holy Cross you have redeemed the world.” In Francis’ simple way, he was able to transform much of Western Civilization.

In modern times both Saint Teresa of Kolkata and Servant of God Dorothy Day would make similar connections between beholding the Lamb of God in Eucharistic Adoration and beholding him in the poorest of the poor.

It is through Eucharistic eyes, the eyes of the soul, that we perceive the image and likeness of God in the homeless, in the immigrant and refugee yearning to breathe free, in the sick and the imprisoned, in the unborn child. If we can see heaven in what the secular world sees as a piece of earthly bread, then we can see God everywhere.

In a period not unlike ours of bitter division among people, Dr. Martin Luther King, Jr., had the great vision and dream of the whole of America gathered around the table of brotherhood and sisterhood, all singing “free at last!” Let us pray and work so that someday that table may be the Table of the Eucharist, around which we can all sing and dance to the music and freedom of the Holy Spirit. And then, in a Eucharistic America and a Eucharistic world, Jesus will indeed be adored and celebrated as both the Alpha and the Omega (*Revelations 1: 8*).

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HELL: The Natural Result of Staying Completely Within Human Limits

by Thomas P. Sheahan, PhD

Recently, an atheist Italian newspaperman who had interviewed Pope Francis took the occasion of Holy Week to assert that the Pope told him Hell does not exist. The Vatican quickly refuted that, with examples of the way the Pope had treated the topic previously. Probably he asked the Pope "Where is Hell?" and the Pope answered that it's not a place ... which the newspaperman interpreted as "nowhere" and hence "non-existent." But perhaps the notion of "cessation of existence" has some merit in a discussion of Hell.

1. BACKGROUND

Among scientists, one conventional viewpoint is to insist upon being very empirical-minded, attending only to the realm of space and time as science experiences it. Consequently, such a person sees in death only the decaying body, and draws the hasty conclusion that there is no "eternal life." I want that individual to re-examine the very limited set of facts and premises which led him/her to that view. To encourage that, here I try to show where that line of thinking leads: to a terminal state, a dead end called "Hell".

An interesting anecdote about St. Thomas Aquinas has it that at age 48, he saw a vision of heaven. He was so impressed by this that he stopped writing, and said some vulgar and very disparaging things about the volumes of his own writings, the totality of his life's work. He must have been *really* impressed. Unfortunately, he died three months later, so the only thing we can be sure about is that words failed him. Perhaps St. Thomas found out something about how vastly smarter God is than us.

Fortunately, my topic here is hell, not heaven, and this is a far easier topic to treat. My working hypothesis is that hell is what you get when you don't reach beyond customary human experience, when you only believe what you can see, when you stick entirely within the framework of space and time that we are all so familiar with. Because we know quite a bit about the way nature works, it ought to be possible to construct a description of such a state.

2. SPACE AND TIME

Years ago I offered the notion that at death there is a transformation into a new form of life, a new "space," a new relationship with God that is totally disconnected from the space and time that we live in now. In that new state, the individual interacts with God (and possibly with others) in a way that defies description in conventional language. There is no "passage of time," nor is anything "statically frozen in time." The entire system is simply unrelated to

time, *orthogonal* to our customary framework of space and time. Since language is fashioned within the customary framework, language is unable to describe it.

Hell, by contrast, is the condition of remaining firmly entrenched within space and time, with **no** escape from it. Hell is the full, lingering experience of cessation of being, permanently and irretrievably.

At death, if you watch your consciousness go away, experience the dismantling of thought and feeling, that's hell. In hell, one is conscious only of the fact that consciousness is disappearing, never to return. Moreover, one is also aware that it didn't have to be that way, that there *was* an alternative, now closed off forever.

Because of the unique way humans experience time, Hell lasts "forever"; it is eternal; it is unlike the escape from the constraints and inexorability of time that heaven provides; it is the fulfillment of the natural process that occurs in a domain where time is immutable and supreme.

To make sense out of this, it is necessary to understand the meaning of the phenomenon of *time dilation*. To explain this concept, a digression is necessary:

Xeno's Paradox: the Rabbit and the Turtle:

Recall the ancient story of the race between the rabbit and the turtle, widely known as *Xeno's paradox*. The turtle gets a head start, and the rabbit tries to pass him. The Greek philosophers focused on the point where the rabbit has almost overtaken the turtle, and paused to think about their relative positions. In the next moment the rabbit closed half the distance; in the following moment, half again of the remaining distance; and shortly after, half of what little remained. The philosophers continued to focus in on finer and finer details, and pronounced that the rabbit would never pass the turtle, because it would at all consecutive moments close up only half the remaining distance.

Baloney!

Continues on page 15

This tale has often been recited by engineers to humorously underline the difference between engineers and scientists; but actually scientists and engineers agree on the outcome: the rabbit wins the race. Xeno and his fellow Greek philosophers are watching the race from within a different coordinate system, one that is zooming away from the scene at nearly the speed of light, so that *information* from the scene of the race doesn't reach them until much later. In Xeno's reference frame the arrival of information is severely delayed. In that peculiar reference frame, the rabbit "never" catches the turtle. In *our* reference frame, Xeno simply never finds out about it. By choosing a reference frame with dilated time, the Greek philosophers cut off the flow of information.

The "paradox" comes about when we remember both Xeno speeding away *and* observers still present at the race. We wonder how *both* could think themselves correct. Notice that we don't actually *observe* Xeno; we only *remember* that he left! All we *see* is the light arriving from the comparatively nearby point where Xeno's spaceship was several moments ago.

The paradox is unresolved only so long as we fail to apply Einstein's reasoning about traveling near the speed of light, and the *time dilation* which accompanies such motion. Of course, before Einstein, all observers failed thus, and hence the paradox persisted for centuries.

3. REFERENCES FRAMES AND DEATH

Think about Xeno's excursion away from the scene of the action. Imagine how tedious it would be to have nothing whatsoever to do, truly forever, except verify repeatedly that according to the latest information, the rabbit had not yet caught the turtle. I think something akin to that takes place.

At death, the body starts a process of decay. The central characteristic of this process is that the information-handling ability of the brain slows down drastically. Everything in our ordinary-life experience is keyed to a certain familiarity with time, and that breaks down. Indeed, it shuts off entirely eventually, and the body ultimately returns to dust.

We observers see this taking place on a time scale in the "laboratory reference frame." The elapsed time may seem quite short by our clock; the flat EEG in the hospital room may appear very quickly on the monitor. A fatal heart attack or stroke produces "brain death" very rapidly, and the brain stops giving off EEG signals about 4 to 6 minutes after the supply of oxygen ceases. Sometimes other bodily functions

continue, despite the apparent total disconnection of the brain from the outside world. Hence the people in *Persistent Vegetative State* or irreversible coma raise the difficult question of whether they are dead or not.

However, no one has yet asked what death looks like in the reference frame of the one to whom it is happening. Not having "been there" yet, I can't say, of course. The slowing down of the brain's ability to perceive inputs, to process information, will create a backlog of yet-to-be-processed information waiting in line for neurons and synapses to function. However, these functions are grinding to a halt, and their processes only get slower and slower. As the information-processing capability fades away, the time scale will become elongated, and the perception of the passage of time will thus be stretched out to infinity. It's analogous to Xeno's peculiar choice of reference frames. The stretching out of the time dimension makes it last "forever" in the brain's own time frame, even though the external observer sees it all happen in a finite number of seconds.

Meanwhile, for the person who at death transforms to a totally different kind of life, not associated with time and space, this entire process becomes irrelevant.

4. HELLFIRE

The authors of Scripture always spoke in terms of hell as "fire. I observe only that the process described here is one in which oxidation takes place. and of course fire is one form of oxidation. Perhaps the awareness of the oxidation of the brain, when the time frame is greatly elongated, is somehow similar to the perception of burning. Perhaps since burning seems a particularly slow and painful way to die (to those of us in the "laboratory reference frame"), the mention of "fire" was the prophets' best way to convey "slow and painful". I don't know. But then, the ancient writers were constrained by their milieu to communicate what they had to say in terms their audience could grasp.

The notion of being aware of, and participating fully in, the total decay and loss of one's personhood is bad enough, but we are taught (by Scripture & church tradition) that those in hell are *aware* of their separation from God. So it must be that one component of hell is the realization that it didn't *have* to end this way.

A plausible reading of Scripture says that at death a new way of life begins -- and a scientist familiar with relativity might add that this new life is dissociated from space and time. Those who have explicitly chosen the opposite path,

Continues on page 16

saying there is no such new life, have locked themselves into space and time permanently. They have elevated space and time above God. Accordingly, they get to experience the ultimate that space and time have to offer: death, including the time dilation that makes disintegration into nothingness last *forever*; accompanied by an awareness of that decay every step of the way.

5. CAUTIONS

It is important not to draw hasty conclusions from this description. We all like to speculate on who populates hell -- Dante's *Inferno* has been a source of entertainment for centuries. Most people's list begins with Stalin, Hitler, and then diverges into something reminiscent of *The Mikado* by Gilbert & Sullivan.

Also, it would be wrong to infer that those who regard space and time as immutable are headed for hell. Prior to Einstein in 1905 (and for most people even now), everybody believed that time was an absolute. Surely there are lots of souls in heaven who showed up there with the expectation of sitting on a cloud strumming a harp. Lack of scientific knowledge certainly doesn't obstruct sharing in the love of God.

The basic theme in all that I have to say is that God is a lot smarter than us, which must never be confused with "I am almost as smart as God." The thoughts offered here are only one possible scenario, constructed by requiring that hell have certain characteristics of space and time. At best this can be called preliminary thinking; in the years ahead, as we learn more about the mind-body connection, a *much* more sophisticated understanding of death is sure to arise from new discoveries in biological science. This picture is emphatically subject to change.

6. SUMMARY

Throughout history, God has repeatedly offered mankind the freedom to make choices. God presents lots of options. We're free to choose to remain entirely confined to the world of space and time as we know it. I don't want to make that choice, even if many other scientists do. When I pursue the logical conclusion of a living system confined entirely within the boundaries of space and time, I give the name "hell" to what I see.

The one scientific element that I bring to the topic here is that of *time dilation*, which provides an explanation of how different observers can see the same thing happening over short or long periods of time. In this picture, there is no way to get death over with in a hurry; the only "way out" is to

transform to an entirely new kind of life. Moreover, this model is silent on the terribly important question about what criteria decide whether that transformation takes place, or the interminable decay is fully experienced.

This version of hell has some remarkable similarities to the hell familiar from Scripture. It also has some differences; they may be due to language constraints in olden days, or they may be because I'm just plain wrong. Either way, I think most religious people would agree that heaven is beyond our imagination, while hell is just what we ought naturally to expect, without any relationship with God.

My contention is that our scientific knowledge leads us only so far, and when we look over the edge beyond science, we should not assume that everything out there is going to be covered by tomorrow's science. If it were, it would be hell.



My Reminiscence of Father Donald Keefe, SJ

Thomas P. Sheahen, PhD

Other than Father Brungs, Fr. Don Keefe was the first member of ITEST I met. At the time I was working at Argonne National Lab near Chicago, and was traveling to attend an ITEST conference at Fordyce House, in south St Louis sometime in late 1989 or early 1990. I drove southward on I-55 on Friday afternoon, arriving in mid-dinner Friday night. I sat down at a table next to, it turned out, Fr. Don Keefe. We had a very animated discussion on some point of quantum mechanics, which was an excellent way to start off my affiliation with ITEST.