



Institute For Theological Encounter With Science and Technology

Volume 39 - # 2

Spring 2008 Bulletin

Christ is Risen! Alleluia, Alleluia! We will also rise with Christ.

People often ask how we calculate the date for Easter. It is a moveable feast which falls on the first Sunday after the first full moon that follows the first day of spring in the northern hemisphere. Still confused? Blame the members of the first Nicene Council in 325 AD who set the method of determining the date.

This year, of course, Easter falls on March 23rd. In many parts of the world, snow still blankets the ground and strong, wet March winds play havoc with newly bought Easter finery and children's Easter egg hunts.

From my perch in my well-lighted yet slightly drafty office, as I shiver from the early March drafts creeping through the window, I sense that Easter is too early this year. At least it is for me! My evidence? The crocuses! Where are these welcome harbingers of spring with new tender shoots poking their heads through the still hardened soil? Their flowers that speak to me of resurrection, of life? Only an ice-encrusted ground resists the weight of a foot treading lightly on the "not-yet-mud" of the earth.

But who am I to say that Easter is too early? Christ comes when He will: in the chill of winter or the reborn green of Spring. All too often we miss Him because we are waiting for the "right time." In the beautiful recitative from Handel's *Messiah*, we hear St. Paul singing in Corinthians 15: "Behold I tell you a mystery; we shall not all sleep, but we shall all be changed in a moment, in the twinkling of an eye, at the last trumpet."

Let's welcome Him then, the risen and glorious Christ, in this Easter Season In time and out of time; in season and out of season. "Ready or not!" Not in our time but in His "time-less-ness." He will surely bring light to the darkness, warm to the chill and joy to the sorrowing..." in the twinkling of an eye..."

Meanwhile, I'll add a few words on the choice of articles and items in this bulletin. Plans for our anniversary celebration of ITEST's 40th year are going well. As Bob Brungs used to comment, with a twinkle in his eye, from time to time, "We have survived into existence." We have three noted speakers for our September, 2008 symposium. (see Page 2.) Then for a "taste" of our 2007 meeting on Astronomy/Cosmology Breakthroughs, we included a full article from Ben Abell on weather and the question of global climate change and an intervention from Greg Pouch on making science present in the Church. Also included, a Tom Sheahen review of Consolmagno's new book, *God's Mechanics* and an article by the project manager of *Exploring the World, Discovering God*, Evelyn Tucker, on the progress of that program as it moves into the final year of the three year phase. Finally, we are printing a rather lengthy letter from Father Robert Zinser containing criticism and analysis of most of the articles in the Winter, 2008, Bulletin, with response and rebuttal from Sister Carla Mae Streeter, OP and Dr. Tom Sheahen.

With hearts and minds raised to the Lord, have a Blessed Easter!

J. M. Postiglione, RSM
Marianne Postiglione, RSM
Acting Director: ITEST

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Announcements

1. **Mark your calendars for this special event!** The ITEST 40th anniversary celebration, September 19-21, 2008 at Our Lady of the Snows Conference Center, Belleville Illinois.

We are happy to announce that we have three very fine and outstanding presenters for this symposium, entitled; **Faith/Science/Culture: Converging or Diverging Realities** (a 4-decade retrospective and “prognosis” for the future)

Edmund D. Pellegrino, MD professor emeritus of Medicine and Medical Ethics at Georgetown University Medical Center, a Senior Research Scholar of the Kennedy Institute of Ethics and Adjunct Professor of Philosophy at Georgetown. He is the former Director of the Center for the Advanced Study of Ethics and founder of the Center for Clinical Bioethics at Georgetown University. He also served on the President’s Council on Bioethics.

Author of over 550 published items in medical science, philosophy and ethics and a member of numerous editorial boards, Pellegrino is a recipient of many honorary doctorates, in addition to other honors and awards. Dr. Pellegrino’s research interests include the history and philosophy of medicine, professional ethics, and the physician-patient relationship. .

Dr. Pellegrino is no stranger to ITEST: He attended the ITEST conference on *Secularism and Biblical Secularity* in 1994 as a responder to the formal essayists.

John F. (Jack) Haught, PhD is Landegger Distinguished Professor of Theology at Georgetown University. His area of specialization is systematic theology, with a particular interest in issues pertaining to science, cosmology, ecology and religion.

He has authored many books, among them, *God After Darwin: A Theology of Evolution*; *Science and Religion: From Conflict to Conversation* and his latest, *God and the New Atheism: A Critical Response to Dawkins, Harris, and Hitchens* (2007).

Haught lectures often on topics related to science, theology and ecology and within the past few years has established the Georgetown Center for the Study of Science and Religion. Married with two sons, he lives in Arlington, Virginia.

Carla Mae Streeter, OP, ThD is a Dominican of the Congregation of Catherine of Sienna in Racine, Wisconsin. She is currently associate professor of Systematic theology at Aquinas Institute of Theology, a graduate school sponsored by the Dominicans of the Central Province at St Louis University. Her experience includes eleven years of lay leadership training on the parish level. Using the resources of the Lonergan Research Institute in Toronto, she completed her doctoral studies at Regis College, theologate for the Upper Canadian Province of Jesuits at the Toronto School of Theology in 1986. She was co-recipient of the first Jean-Marc Laporte Scholarship Award for Academic Excellence and the first woman to be granted a theological doctorate from Regis College. Her special interest is the thought of the Canadian Jesuit, Bernard Lonergan, as that thought provides a framework for the dialogue between Christianity and other religious traditions.

Sister Carla Mae has many publications to her credit, among them is her book, *Seasons of the Soul: An Intimate God in Liturgical Time*.

Sister Carla Mae has agreed to do a paper on the cultural influences of *Gaudium et Spes*, (Pastoral Constitution on the Church in the Modern World) 43 years later.

In Memoriam

William Witherspoon, January 22, 2008, in St Louis, Missouri

Sister Antonia Maria Guerrieri, MM, MD, February 13, 2008 in Maryknoll, New York

We also ask your prayers for ITEST members who are ill. May they feel the restoring hand of the Lord.



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ITEST Bulletin - S. Marianne Postiglione, RSM, Editor
ISSN 1073-5976 • Copyright © 2008

Invitations and registration materials will be sent to all ITEST members soon.

Early registration: June 1 – September 1, 2008 \$75.00 (non-refundable). Balance due on September 19.

If you wish to register early, simply contact S. Marianne Postiglione, RSM by phone, “snail” mail or e-mail and your registration will be secure. We accept Visa and MasterCard only. We have 35 rooms at the hotel. Those who register early will qualify for a single room. The fee for the weekend, exclusive of meals, except for breakfast is \$225.00 for members; \$250.00 for non-members and \$140.00 for students. Scholarships will be available for those students who qualify. This year, because we are celebrating an anniversary, we will host a dinner on Saturday evening for all the attendees.

2. Father Brian Van Hove, SJ, will be the principal celebrant and homilist at a Mass offered in memory of Father Robert Brungs, SJ on the second anniversary of his death and rising to new life. The date and time: **May 8, Thursday at 7:00 pm.** Place: The chapel on the first floor of Heritage House, 2800 Olive Street, St Louis, Missouri 63103. Everyone is welcome at this Mass; if you need directions please call or e-mail Sister Marianne at the phone number and/or address listed on this bulletin.

3. More Good News – the reorganized and redesigned ITEST web site is on line and functioning well. All who receive the bulletin via e-mail have already heard the good news and had an opportunity to surf the new site at <http://www.faithscience.org>. We invite those who receive the bulletin via “snail” mail to access the site at your leisure. View our videos, books and articles by clicking on “Media” in the menu. Let us know of any links you may want to add to our site as well.

4. The book of proceedings from the September 21-23, 2007 ITEST symposium, *Astronomy/Cosmology Breakthroughs and the God Question*, is almost ready for the printer. All dues-paid members for calendar year 2007 and 2008 will receive a copy of the book. We are really pleased not only with the professional “look” of the book but of the content as well. It was a stimulating and challenging weekend as participants discussed the advances in cosmology and astronomy and their meaning for the Faith and for Christian culture. Leonard Buckley, the artist and designer of the cover managed to capture the abstract concepts and convert them to a concrete, creative design. Special thanks to Bill Herberholt, our web master, for the formatting and preparation of the manuscript for the printer.

Eric Seal

*Eric Seal, psychiatrist and co-founder of St Vincent's Bioethics Department at St Vincent's Hospital in Australia, was also a loyal member of ITEST for a number of years before his death in 1991. He and his wife, Joan, visited St Louis in the 1980's and toured the Arch, the Botanical Garden and other sites with Father Brungs and Sister Marianne as their guides. Although Eric was a man deeply involved in the scientific and technological world, he had the heart of a poet. A few years after he died, Joan sent Father Brungs a collection of poems, Eric's reflections on the scripture, entitled Songs of Hope, which he had penned over the years. We reprint here his poem on the Resurrection. (from **Songs of Hope: Collected Poems** by Eric Seal, The Seal Family Publishers, 1999. p. 74.)*

The Resurrection

By Sunday's early light they found the tomb
Empty. Now death had lost its sting and life
Had triumphed, as He said, despair and gloom
Yielding to hope. His rising, like a knife
Dissected light from dark, and on this morn
Christ salvaged faith, and here unfurled
The banner of salvation. In this dawn
The shadow of His cross eclipsed the world.

Henceforth His voice was heard, and He was seen
By many, sinners, skeptics, saints and others.
But scripture gives no hint, that we may glean,
Of purest joy that must have lit His mother's
Eyes, when she beheld His risen face;
For joy so pure our poor minds have no place.

- Eric Seal 1988

“...Other unique features of the Earth”

Professor Benjamin F. Abell

(The editors chose the following article, originally part of a discussion session at the September, 2007 ITEST symposium, on Astronomy/Cosmology Breakthroughs and the God Question, because it is an important document in itself and makes a significant contribution to the deeper understanding of climate and weather. Although this will appear in the proceedings as part of the discussion, the editors feel that the content is certainly worthy of a second printing.)

Two of the essayists briefly mentioned what a remarkable place this earth is. We have a temperature range from forty degrees below zero Celsius to about forty degrees above zero Celsius, but other unique features are present, and I would like to address them

First of all, when I refer to the earth-atmosphere system, I include the region from the earth to the top of the atmosphere. The rotation of the earth and the geometry of the earth's movement around the sun must also be considered. Radiative energy is both entering and exiting the atmosphere at the top of the earth-atmosphere system. There are other energy exchanges, but they are minute. Short wave solar radiation enters the atmosphere. Thirty percent is returned immediately to space as albedo (combination of reflected and back scattered solar radiation). The remainder heats the earth-atmosphere-system, which in turn radiates in the long wave-length spectrum determined by the temperature of the radiating material. This is an extremely complex problem which yields to a solution using the laws of physics and mathematics.

The earth's outgoing radiation is only about half the radiation absorbed by the earth...

There is an energy balance at the top of the earth's atmosphere where incoming solar radiation is nearly equal to the albedo plus returning terrestrial long wave radiation. This is not the case at the surface of the earth. Only about half of the incoming solar radiation is absorbed by the earth's surface. The remainder is depleted by the reflected and back scattered solar radiation as well as

absorption by atmospheric gases and clouds. The earth and atmosphere then reradiate in the long wave spectrum. Since the atmospheric gases reradiate in all directions, there is a radiative imbalance at the earth's surface. The earth's outgoing radiation is only about half the radiation absorbed by the earth, yet the energy exchange must be nearly equal.

Mixing in the atmosphere (turbulence) helps to maintain the energy balance, but the large contributor to the energy balance at the earth's surface is through the evaporation-condensation cycle. Water evaporated from the earth's surface (including the seas) carries heat away from the surface. This heat is released into the atmosphere when water vapor condenses to form clouds. Precipitation from clouds returns water to the earth. This mechanism is the great energy equalizer. It is enormous. Again, this demonstrates that the earth and its atmosphere are remarkable.

If you experiment with a cloud chamber where the air inside is mostly clear of impurities, condensation (cloud) will not form until the relative humidity approaches several hundred percent. The maximum value of relative humidity in the atmosphere is one hundred percent. However the real atmosphere is dirty. It contains a number of impurities on which water vapor condenses as the relative humidity approaches one hundred percent. The nuclei include salt mostly derived from the seas, earth particles raised by the wind, and pollutants from industry and combustion. These particles will moisten and become water droplets when

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He received his B.S degree in professional meteorology and an MS (Research) degree in meteorology and statistics from St Louis University. Professor Abell has worked for the National Weather Service at the Office of Climatology, Office of Meteorological Research and the analysis of forecast branch in Suitland, Maryland. He was an on-air weather forecaster for a number of radio stations for many years and has been active as a meteorological consultant to the Olin Corporation, Mobil Oil and the U.S. Air Force. He has designed courses in hydrology, air pollution and the meteorology of severe storms at St Louis University.

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air is cooled and/or existing water droplets advect into a region. The most efficient method for cooling air is rapid ascent. This may be accomplished by wind moving air over rising terrain, by frontal lifting and by other dynamic mechanisms. As these mechanisms continue, clouds develop, but clouds do not guarantee precipitation.

How many times have you observed clouds which do not precipitate? Something else is necessary. Once again nature provides us with answers to our problem. At temperatures less than freezing, cloud droplets and drops can exist in the liquid state. This is referred to as supercooled water. If an object such as an aircraft enters this environment, the air craft structures will immediately acquire an ice coating. If the environment remains undisturbed, there will be a mixture of water drops and ice crystals if temperatures are cool enough. The water drops evaporate and the additional vapor will crystallize on the existing ice crystals. The resulting snow crystals continue to grow until they fall through the rising air reaching the earth as snow or rain (melted snow) as they fall through warmer air.

Suppose the rising air is not cool enough to produce ice crystals? During World War II, aviators noticed rain falling from clouds where temperature throughout the clouds was greater than freezing. This is often the case in the tropics and even in middle latitudes and at times in polar latitudes in the warm seasons. In these situations, rising impurities of different sizes and weights rise at different speeds as water vapor condenses on them. Since the growing drops rise at different rates, slower drops and faster drops contact one another and coalesce becoming large enough to fall toward earth as rain. Again, our earth-atmosphere system is unique.

Let us briefly return to the energy balance. The remarks to this point refer to the balance averaged over many seasons and years over all latitudes. There is still a problem because tropical and subtropical regions would continue to warm while polar latitudes continue to cool producing a heat surplus in one area and a heat deficit in another. The answer to this problem is wind, which distributes warmer air poleward and cooler air equatorward. Moving high and

low pressure systems and their associated cold and warm fronts accomplish this. Another mechanism effective over large regions is the monsoon. The monsoon is a direct thermal circulation of a seasonal nature controlled by low pressure over middle and low latitudes in the warm season and by high pressure over middle and high latitudes in the cool season.

Eight thousand years ago, the earth was warmer than it is now. A cold period followed with renewed warming centered around 1000 A.D. This was

followed by the Little Ice Age (1430-1850) despite the emergence of the Industrial Revolution. Global climate change has existed throughout earth history and this will continue.

Northern Europeans colonized Iceland, Greenland, and the Canadian Maritimes during the warm period centered around 1000 A.D. Glaciers were retreating and Northern Hemisphere sea ice was greatly reduced. The Little Ice Age followed. Glaciers once again advanced and sea ice prevented ships from

supplying Greenland. The colony was lost, but Iceland survived because ships were able to reach its shores during the warm season.

Global change continues. I question the accuracy of the climatology particularly over Southern Hemisphere seas. Reliable remote sensing of temperature dates only to modern satellite technology. I do agree that the earth is currently warming. The Little Ice Age ended only one hundred fifty years ago. The temperature increase is caused both naturally and anthropogenically. The questions as to how much of the warming is due to nature and how much is human caused cannot be answered at this time. Obviously the increase in greenhouse gases will produce warming, but particulate pollution (smoke) counters some of the warming by raising the earth's albedo. Another factor is our variable star, the sun. Radiation from the sun increases and decreases in a series of interacting cycles ranging from one hundred thousand years to eleven years. There is much to be learned. In the meantime, one answer is stewardship and its resulting implications.

Yes, the earth is indeed a unique and precious place.

***Eight thousand years ago,
the earth was warmer
than it is now.***

***Global climate change has
existed throughout earth history
and this will continue.***

More from the September Symposium

(In response to a suggestion by Kevin Powell, MD that scientists should make themselves known better within their church congregations, Dr. Gregory Pouch, geologist and part-time faculty at Illinois Wesleyan University introduced an idea that hadn't surfaced during the weekend: the important contribution of Catholic hospitals to the "credibility" of the whole faith/science apostolate in the Christian churches.)

Pouch: I'd like to thank Kevin Powell for ending on the topic of making science present within the Church, because, in fact, that is one of the things I think we need to do with the faith/science apostolate. I'd like to thank Brother Guy for pointing out that conflict, independence, dialogue and integration (Ian Barbour's four models) might all occur between science and religion, and would even amplify this by pointing out that all four probably occur simultaneously, since science is large and involves many people doing many things, and religion is large and involves many people doing many things, and, not surprisingly, the interaction of two complex objects is complex indeed.

I'd like to discuss a number of our techniques for teaching about the relationship of science and faith, not so much to people who are firmly entrenched in one camp or another, but to those, often young, who haven't formed a steadfast view yet and might easily be led astray.

Even though they are true, we don't persuade by presenting historical arguments about the Galileo incident: how Galileo was not tortured, and that Galileo was treated gently compared to what might have happened to someone who did a lot of the stuff that he did in Renaissance Italy (worse things could happen to you than what Galileo endured: they didn't burn him or anything.) It's true, but that argument runs counter to what they've been taught since childhood and is often dismissed as historical revisionism trying to cover our tracks. What is persuasive, what does convince people that science and religion are not in opposition, is actions: actions speak louder than words.

Even though true, we will not persuade by pointing out how many clergy have done science over the years; it is simply dismissed with a claim that if you were educated, you were clergy so it's not really relevant (i.e., they weren't *really* clergy, only educated), nor is it wise to represent the Church as just the clergy, since the clergy are rather

a small portion of the Faithful Nor will we persuade by pointing out that there have been or are lots of Catholics who happen to be scientists and remain Catholic. From my own experience, this is dismissed with the comment that they were just raised Catholic and they never really drifted off. (That last part is usually phrased more hurtfully, but you get the gist.) It is fairly easy for doubters to write off historical arguments about faith-filled scientists as simply the product of their time or circumstances. We don't seem to persuade by showing that science education in Catholic institutions is done well: this is viewed as simply part of having educational institutions.

What does get us taken seriously – and what gets us a lot more credit than we give ourselves credit for – is that we have hospitals. The existence of Catholic hospitals means people take the Church seriously when we talk about health care. Part of this is that we can simply pick up our ball and our bat and go home. (i.e., our not cooperating could be problematic). The Catholic church, and some other churches as well, get taken very seriously on issues relating to health, not because we have a really strong persuasive argument about life-ethics and how this fits into our metaphysics, but because we take it seriously. We take it seriously enough to build hospitals and medical schools. We take it seriously enough to become doctors and nurses and medics. We take it seriously enough to *do* it, not just talk about it or against it.

We need to branch out even further from this, so that when people are thinking of issues of science, and they don't even think "warfare" between science and faith makes sense, anymore than they would think that there is "warfare" between science and driving a car or cooking. No one really worries about how science relates to cooking (OK, biochemists worry about this, and I suppose food engineers and agricultural engineers). We need to reach the point where people look as baffled and ask "Why would you think that Christian faith and science are contradictory?" as they would if they were told that plumbing and yellow are contradictory.

People won't often come to a correct understanding that faith and science are not enemies by deciding that they want to find out about "science's relationship to Catholic thinking" or "Catholic teaching on science" and conducting an internet search or seeking out a book and believing what they find; rather, it will happen as, when they are

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looking for information on black holes or meteorites, they find good material at the Vatican Observatory. The Vatican (Astronomical) Observatory is a good start. Fr. McNamara's work at the Manila Observatory in the Philippines is another good example of what we need: science done as part of our faith.

We need more examples that illustrate through action how science can serve faith, and how faith motivates much science, and how sometimes they're as independent as faith and plumbing. We need to emphasize that being a scientist can be a *way to put our faith into action*, that one correct way to integrate science and faith is to let Faith dictate the goals. It would help tremendously if the Church had more scientific institutions like a geological survey, an agricultural research service, an agricultural extension service, a public health service, a weather service, and so on, both "pure" and applied, as well as the ordinary

faithful *doing* science as an expression of their faith, like agricultural research to feed the hungry, and geological exploration for groundwater to give water to those who thirst; or studying how planets form to give greater glory to God.

The way for the Church to get out of this non-sense — about religion and science being locked in conflict, or science being the triumph of reason over superstition and religion, or religion being something that people who aren't smart enough to be Communists or other materialists believe in — isn't going to be by philosophical discourse, which puts many people off. It will be done by the faithful actually *being* out in the fields of science and engineering, by being *seen* out *working* in those fields. We teach better by doing than we do by talking. I think it was St Francis of Assisi who said "Preach the Gospel always; use words only if necessary."

God's Mechanics

By Brother Guy Consolmagno, S.J.

(© Jossey-Bass: 2007), 229 pages

Reviewed by Thomas P. Sheahan

What is it like to combine a technical career with a religious outlook on life? Based on media hype that promotes the idea of a war between science and religion, that might seem very hard to do. Guy Consolmagno demonstrates that it is actually possible.

The title *God's Mechanics* refers to "techies," meaning those who get things done using technology. Techies are very practically minded, and their criterion for excellence is "because it works." Consolmagno shows how a techie deals with philosophical and religious issues, and arrives at a coherent synthesis of a religious viewpoint with a scientific career. To a fellow techie who has followed a similar path, this book is both enlightening and supportive. To those outside the world of techies, it offers the reader an example of one way to make science and religion compatible.

Guy Consolmagno is an astronomer by profession, and is also a Brother within the religious community of the Jesuits. He is an associate curator of the Vatican Observatory, which brings him to their telescope in Arizona frequently. An American, Consolmagno's undergraduate education took

place at MIT. That educational experience comes through, and it helps create a rapport with readers of comparable background. He slips in some MIT-flavored phrases, such as "intuitively obvious to the casual observer," and this writing style makes you feel like you're on campus once again, listening to a fellow student. This goes beyond recalling "it really was like that." By explaining how his own thinking evolved, Consolmagno draws the reader into examining and comparing similar personal pathways.

God's Mechanics is divided into five sections, with headings like "Why would a techie believe in God?" and "What is the techie experience of religion?" Each section contains several chapters of around 15 pages or

so, which makes for easy reading. Obviously Consolmagno answers those questions.

In the first section, he focuses on three classic questions that concern everyone, which science does not answer: "Why is there something instead of nothing?" "What do I want, and why do I want it?" and "How do I make sense of my life?" In seeking answers to such enduring questions, the techie takes the pragmatic approach, demanding of any

Why would a techie believe in God?

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hypothesis or theory that its explanation must be consistent with observational data. Consolmagno explains that these are *transcendental* questions, and invites the reader to enter the world of the transcendental. (Many techies won't do that, insisting upon remaining aloof from questions that don't have a scientific answer.) Should you believe in the transcendental concept of God? Consolmagno leaves that decision to each person, and focuses on the questions themselves. He writes "I am not the least bit interested in trying to prove the existence of God. I am trying, instead, to explain the utility of such a belief to a believer. And one of the greatest utilities of believing in God is that it provides precisely this sense of logic, order and purpose." And subsequently: "...techies are not looking for proof. They're looking for confidence. And the more problems that a particular hypothesis can handle, the more confidence we have that there's truth to be found in it."

This sets the theme for the rest of the book. This techie outlook recurs again and again as Consolmagno moves forward and makes distinctions between science and philosophy, and then looks at organized religion. The non-scientific reader will find a unique scientific perspective on a number of issues.

For example, the engineering/mathematical term "underdetermined" (regarding the solution of a problem) is explained, and historical examples are given to illustrate how mixing philosophy and science caused diversions

down some incorrect paths. Science tends to correct itself over time, but slight changes in philosophical assumptions lead to radically different conclusions. The key feature of the engineer's outlook is knowing when to say "close enough."

The techie carries this outlook into the evaluation of organized religion. "Once we know what religion in general is supposed to do, we can have some basis for deciding how well any particular religion performs that function..." Consolmagno stresses the similarities between science and religion: "... the techie case for organized religion closely parallels the techie experience of organized science."

Consolmagno describes the typical techie's response to religion, which stresses functionality, just as everything else in a techie's life. "Oneself, one's institutions, and indeed all of one's experiences are defined for a techie in terms of what is done and how it happens." The techie is susceptible to religious diversions and errors, but for totally different reasons from those of non-tech people. On matters of religion, *Gnosticism* (the claimed access to secret knowledge) is an easy pitfall for the techie, who uses highly specialized knowledge every day.

Nearly every technically-oriented reader, religious or not, will resonate with one part or another of Consolmagno's chapters about organized religion.

The third section of *God's Mechanics* can best be termed "data collection." In the custom of science, Consolmagno makes observations, by talking to various people about their experience of religion. This data serves to support Consolmagno's hypotheses about techies. Unfortunately, this section is weakened by its geographic specificity – his interviewees are primarily from the San Francisco area. Religion-wise, this set of people is not representative of the techies found far from there.

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Dr. Thomas Sheahen attended M.I.T. and received BS (1962) and PhD (1966) degrees in physics. He is a registered Professional Engineer in Maryland. His professional career in research includes time with AT&T Bell Labs, the National Bureau of Standards, U.S. Department of Energy, Argonne National Lab, and most recently National Renewable Energy Lab; he has worked in the private sector as well, and has his own independent consulting firm. His work has been primarily in energy sciences, especially about ways to use energy efficiently. Dr. Sheahen is the author of the textbook Introduction to High Temperature Superconductivity. He has also taught physics at both the college level and in high school. With Fr. Ernie Spittler, SJ, he co-taught "Issues in Religion and Science" at John Carroll University in 1999. Sheahen currently serves as Vice-Director of ITEST.

I see a Creator who puts a high value on elegance and beauty.

"Why would a techie be a Christian?" is the next topic he tackles. This is the most powerful section of the book, because here Consolmagno gives his personal testimony about the merits of Christianity; and when it comes to religion, personal witness is always more engaging than abstract explanations. "I see a Creator who puts a high value

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on elegance and beauty.” Consolmagno cautions against the god of the gaps, and rejects the god of the Deists (the clockmaker who just lets it run) with this memorable line: “What do you call a father like that? God is no deadbeat dad !”

Consolmagno does not water down Christianity, but forthrightly acknowledges its claims. Here he resembles C.S. Lewis in the previous century¹. He adds this personal reflection:

“Before I became a Jesuit, my experience of God – like that, I expect, of most techies – had mostly been with God the Creator. I didn’t have a “personal relationship” with Jesus. I felt called by God, not called by Jesus. I felt close to God, not to Jesus. When I prayed, I prayed to God, not to Jesus. Jesus did not feel like a brother but more like a distant cousin whom I’ve heard some nice things about and maybe might like to meet some day.”

At last we know something of the man Guy Consolmagno, rather than merely the narrator about the techie personality. We are listening to a friend talk – the friend in the adjacent dorm room at college, the co-worker in a relaxed setting outside the business meeting. He says “I think my views are pretty typical for a Christian techie.” Now I *care* what happens to Guy, because he’s like me. I’m a scientist, and the same questions capture my attention, so I want to see where he is going.

After reflection upon the Gospels, Consolmagno makes the transition every Christian techie strives toward:

“And so if through the created universe I see God the Creator, then perhaps through the human universe I can see God the human, who is Jesus. Somehow, in some way that keeps flickering in and out of clarity, in a way that I can only intuit and can’t put into words, Jesus dances before me in the lives of the people around me.”

The *supernatural* is explained on the basis that man is more than the body alone. Consolmagno recalls the ancient Greek dichotomy of *body* and *soul*, mentions the medieval scholastics’ understanding of *soul* as intellect plus free will, and then goes on to present a modern-day analogy of body and soul to computer hardware and software.

In another remarkable analogy, Consolmagno compares the *iPod*[®] to the Trinity. It’s that kind of refreshing and creative thinking that makes *God’s Mechanics* a very different book from anything else written about science and religion.

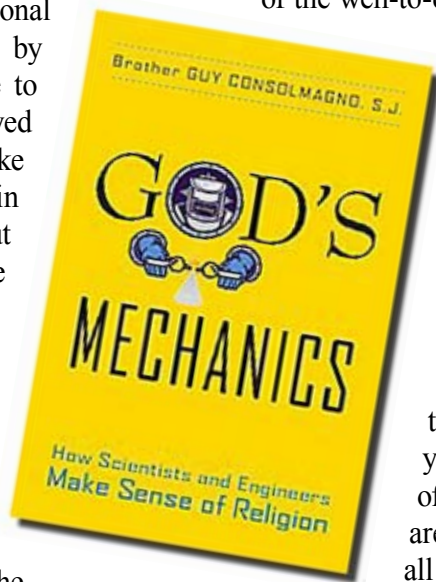
Occasional witticisms are sprinkled throughout the book. Describing people who worship in the “church of Elvis,” they wind up still feeling “lonesome tonight.” In another section “I am a material guy (or girl) living in a material world (even cheesy pop singers can sometimes stumble onto real insights.)” And elsewhere: “Atheism is a luxury of the well-to-do; it goes hand in hand with flush toilets.”

These add a feeling of camaraderie.

The concluding section, “Confessions of a Vatican Techie,” brings all the pieces together and presents Consolmagno’s reasons for remaining a Catholic. He begins with a four-page disclaimer, saying things like “What follows comes with no warranty. And not only may your mileage vary; it absolutely, with certainty, will vary from mine.” He states “... this book [is not] trying to convince you that I’m right and you’re wrong.” With another quip straight out of the MIT culture, he adds “I am, and you aren’t, but that’s a different book.” Hopefully, all readers will discern the intended humor there.

One of Consolmagno’s essential characteristics is “It’s having to admit, and live with, the fact that I am not perfect.” His bottom line is “the ultimate reason why I stay a Catholic is because it works.” Of course, as he explained near the beginning, this is what drives most choices made by techies.

In the final chapter, recognizing that techies are strongly inclined to dismiss pious traditions, Consolmagno discusses some issues about Catholicism. Resisting the easy path of ducking tough questions, he is straightforward in discussing the Catholic doctrine of original sin, and portrays the concept of evil as the absence of good. Another techie analogy serves well here: the motion of electrons and holes in semiconductors. Maintaining the techie flavor, he invokes the *Mean Value Theorem* to say there must have been a *first* human being sometime. About the doctrine of original sin, he says “I don’t know. But it doesn’t bother me that I don’t know.” By no means is this



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a flippant answer. Consolmagno explains why accepting a limited understanding is the best we can do.

“Meanwhile – and here’s the real techie attitude coming through – I have confidence that if I live my life and make my choices as if the traditional “sin of Adam” explanation solved everything, I won’t go far wrong. Functionally speaking, the old explanation is sufficient for the job it is supposed to do, just as I can use ‘obsolete’ Newtonian physics to solve most terrestrial engineering problems.”

Consolmagno uses a nifty analogy with the rules of basketball to discuss infallibility. He also confronts the techie objection to the Sacraments, and says that techies overlook the value in rites and ceremonies. He argues that techies are insecure², which leads to cynicism.

In the final four pages, Consolmagno explains why he loves the Catholic Church. Here once again we find personal testimony. At the end, I can say I know Guy Consolmagno a lot better. In addition to regarding him as a kindred spirit, a buddy in the techie world, I admire and thank him for telling us his story.

Who should read *God’s Mechanics*? First, scientists and engineers who think about how religion fits into their lives. One subcategory of this set is technically trained Catholics who seek an example of how it all fits together. Second,

those outside of technical fields who wonder what makes techies the kind of people they are. One subcategory of that set is people who perceive that science is trying to undermine their religion. It’s not so, and Consolmagno shows why.

A third category is college students who are puzzling about those big three questions stated at the outset. This means students in any field, not just those in a technical curriculum. Consolmagno’s account of journeying through those questions (and beyond) is an example of what everyone wants to do sooner or later. Collegians will have the additional enjoyment of “getting” Consolmagno’s many subtle references to music and pop culture.

God’s Mechanics is an engaging and very readable presentation of the lifelong task of finding coherent unity between faith and science. I recommend it strongly.

Endnotes:

1. C.S. Lewis, *Mere Christianity*
2. To this reviewer, it seemed he was talking directly to me with: “Nearly all students at MIT seem to be convinced that they got in by mistake because they can’t possibly be as smart as all the other students they see around them.”

The Seamless Garment: Faith/Science in the Classroom

Evelyn P. Tucker, Project Manager,
Exploring the World, Discovering God

What was *conceived* as a brilliant idea in the mind of Father Brungs, *fleshed* out by Father Brungs, Marie Sherman, Sister Virginia Kampwerth, and Sister Marianne Postiglione, *developed* into pen on paper faith/science interface modules by Evelyn P. Tucker and the Creative Teacher Think Tank Participants, *nourished* into growth by the *Exploring the World, Discovering God* Advisory Council was *born into life* in the classrooms by our Pilot Teachers.

The Pilot Schools are: Assumption PSR in St. Louis County, Christ Light of the Nations School (Spanish Lake, MO), St. Ann’s Home School (Benton Harbor, MI), Hendrick Home School (Grand Rapids, MI), Immaculate Heart of Mary School (City of St. Louis),

Our Lady of Perpetual Help School (Selma, TX), Pinkowski Home School (Baroda, MI), St. Ann’s School

(Prairie Village, KS), St. Anthony School (High Ridge, MO), St. Cecilia School (City of St. Louis), St. Dominic Savio School (Affton, MO), St. Joan of Arc School (City of St. Louis), and St. Paul School (Fenton, MO). Our project stretches from Michigan to Texas right through the Heartland of America.

I have been privileged to witness in classroom after classroom the seamless garment of science and faith being shown to and experienced by our young students. The skill of the teachers is of the highest quality and the students accept the interfacing of science and faith as the usual way to learn! Excellent! That is exactly what the project is trying to achieve: a way of looking at reality that allows them to pull together every bit of information and belief to aid in their understanding and then in their decision making.

How this was done varies in each classroom. For example,

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at St. Joan of Arc School in the City of St. Louis, I observed a second grade class learning about magnets and our pull toward God. In this class the teacher used a magnet and a variety of objects to demonstrate the properties of magnets. Then she used paperclips to show how we are attracted to God. She then labeled the magnet with the title "GOD" and gave each student a paper clip. She built a chain of paper clips by letting each student call the student next to them to draw near to God. Evangelizing 101? In the next classroom of first and second graders, I observed the teacher recalling the magnet lesson with the students and using a magnet to aid their memories. She also gave each student a magnet and then each one walked up to her, allowed the magnet to be pulled to the "God" Magnet and then joined the group of students who had been "pulled" to God. Both teachers played the "telephone game" of having a student chosen to be God. The students were elated to be "God" and had God whisper a secret message to the first student who whispered it to the next student and so on to the last student who revealed the secret. In the second grade room it worked well. In fact, one student had a brief conversation with "God" as he went back to his seat. It went something like this: *Student*: "Hi! God!" *God*: "Hi! Good to see you!" *Student*: "Did you have a nice weekend?" About that time, the teacher motioned for them to take their seats. In the first-second grade room, the telephone message didn't work (either time it was tried) but the students got the message that God depends on them to spread His word. So you can see that the same basic lesson can be taught in several ways. I have discovered that for all we talk about student Learning Styles, each teacher has his/her own Teacher Teaching Style as well. I guess that's what makes teaching an art and not a strict science.

At Our Lady of Perpetual Help School in Selma, Texas in January – wonderful to be in Southern Texas in January instead of cold Missouri – I observed the two second grade

teachers combine the second graders in one room and team teach the religion and science lessons as one large lesson. It was done very effectively and the students were able to articulate how faith and science were able to work together.

At that same school, I saw a teacher effectively use the overhead projector and create quite a stir of interest by showing the yearly phases of the moon. The children wanted to find their birthday to see on what phase of moon their birthday would fall during the year. The teacher used the overhead projector in her teaching style and just adapted the module to fit that style. Again, I was privileged to observe an excellent lesson and excellent learning.

I observed two Kindergarten classes thousands of miles apart drawing students to the learning rug, telling a story, using objects to demonstrate the lesson, and doing an exercise. One class even planted seeds on a rainy day. They managed to plant seeds in cups and dirt without covering the classroom floor and put the plantings outside to get a drink! Brave Teacher indeed! The other teacher had the Kindergarten think of ways to sort objects by their properties. Yes, Kindergarten students! They were great. They sorted by color, shape, length, use, and size. Then they wrote in their Science Journals. It was amazing

the spelling and writing skills of these young students.

I observed a teacher who really had to get creative because on the day she was going to teach about how the sun affects objects – there was no sunshine! So no melting crayons, no discolored construction paper, and no discernible temperature increases! Horrors! So she punted! She talked about the changes and then began to pull objects from her bulletin board and header boards so show the effects sunshine had already done. They will go back on a sunny day to melt crayons and heat water and soil. Sometimes the lesson goes on whether the conditions are favorable



Photos from classrooms at Our Lady of Perpetual Help School in Selma, Texas



or not! Good creative teaching. To connect with the faith lesson, she talked about how prayer turns us to God to get a “tan” –filled with God’s presence and how we are warmer in God’s heat and can see better to walk our life in His light. Great!

A teacher at Christ Light of the Nations School had to “punt” when the electronic equipment failed at the last minute after all her work in preparing a Power Point presentation complete with pictures of natural resources. Ever have that happen to you? If so, you know the frustration level of this 4th grade teacher especially since she knew I was coming to observe the lesson. So she scrounged up pictures of natural resources, mounted them on paper, stuck them to her board. On the other half of the board she created two spaces: renewable and non-renewable resources. After reading and discussing the definitions, she had the fourth graders play a “game” in which one by one they selected a natural resource picture and had to place it under renewable or non-renewable. After all the pictures were positioned, they went back and discussed if they were in the correct group. The teacher neatly worked in how we as stewards of the earth since Adam and Eve’s time need to conserve our resources.

I observed a third grade class at Immaculate Heart of Mary School in St. Louis continuing their faith/science lesson on discovering that all living things grow and change. They had made charts on large file folders which were hanging in the corridor. The charts showed the growth and development of a human being. Under the physical growth, they had written the names of the sacraments they had received. In this class they added to their science journal notes on the growth and development of chickens by drawing the growth and development of a plant and then opened the science book to the lesson on the growth and development of a butterfly. After adding that to their journal, they colored four pictures of that growth and added sentences to the papers. (Penmanship, Grammar, Science) and then they talked about the other sacraments which they had not yet received and wrote them under the growth and development chart of a human person – adding Confirmation under teenager, Marriage and Holy Orders under adult, and writing Anointing of the Sick under all of the categories since you can receive that sacrament anytime that you need it after Baptism.

I observed a second grade teacher and students learn about pitch and volume. The volume part was easy and lots of fun. They sang “Happy Birthday” with the teacher’s hand

being the volume control. Soft, LOUD, soft, medium, and at the very end VERY, VERY LOUD! Then they constructed shoe box guitars with rubber bands to discover pitch. Then Sister Bridget got out her guitar and showed them how the various strings produced low and high pitch.

As I walked the halls of the various schools, I saw parts of various activities from the modules on display! Not only are those students learning, but everyone who passes by had to take a look!

My observation notebook is jammed full of terrific lessons. What I hear from the teachers is that they are adjusting how they think about science and faith as complementary and once they start thinking that way, it is easy to fall into the methodology. I am having a wonderful time observing the teaching and learning! It is a privilege to see the idea come alive as *Exploring the World, Discovering God* is taught.



The web-site (Creation Lens) is being prepared and should be on-line by late summer or early autumn. This will enable teachers throughout the world to use the modules. The web site should contain 98 modules. We will be inviting users to submit their own ideas for additional activities or resources for existing modules or to submit their own complete module. If suitable, we will place these new modules and/or activities and resources on the web site. The Creation Lens web site will be linked to the ITEST web-site.

The observations will continue throughout the spring. Pilot Schools will return the module notebooks which contain the teacher’s notes and evaluations, photographs of a lesson, and a video of one lesson. This summer will be spent examining those evaluations and notes, viewing the photographs and videos and revising the pilot modules for the Advisory Council to review and finally, putting them on the web-site. It is an exciting journey to look through the lens of creation to discover more and more about the Creator.

Letter to the Editor and Responses

Father Robert Zinser, priest of the Archdiocese of St Louis and ITEST member, submitted a rather lengthy letter containing commentary and critique on articles from the Winter Bulletin, Volume 39, No. 1. The editors asked Sister Carla Mae Streeter, OP, associate professor of systematic theology at Aquinas Institute, in St Louis and Thomas P. Sheahen, PhD, physicist, employed at the National Renewable Energy Lab in Washington, DC., to respond in writing. Each responder commented on the letter from her and his area of expertise: Sister Carla Mae, theology and Dr. Sheahen, science. If you would like to add your part to this "trialogue" please feel free to jump into the fray. We welcome your input.

Fr. Zinser: I received, as you did, gentle reader, the Winter 2008 ITEST Bulletin. The whole purpose of the organization is to deal with issues of faith and science. What follows are some reactions to the articles.

Fr. Brungs' opening message sets the tone when he says that, "we confess first and foremost that Jesus Christ is Lord and then look at the implications, say, of evolution. We do not treat it the other way around." In my admittedly few conversations with Fr. Brungs, he was true to this approach. However, I do not believe that a rigid application of this principle is always helpful. Our faith may be based on Revelation and, hopefully, our own personal experience of the presence of God, but it has been explained over the centuries in human language and concepts, philosophical, social and scientific, with the usual danger of error. Fr. Brungs admits that, "this position rests entirely on faith suppositions." He says that, "we cannot build a theology nor an expression of our faith on science." However, that is just what we have done. Our understanding of how God relates to the motions of the "heavenly bodies" had God, or at least God's angels, moving the celestial spheres. That speaks of a certain characteristic of God which we do not find in modern astronomy. Our concept of how God created came to be expressed as "with a word" and the object or even a whole species came immediately into being. This is not our concept of how God may have gone about the business of creation. Indeed, the concept of God as a creator was and is just presumed (or supposed in Fr. Brungs terminology), taking off from what humans have assumed from before history.

I am not recommending that we take some scientific theory and spin a theology from it. Fr. Brungs is correct

that this is not prudent since scientific theories must change. I am recommending that we not presuppose that our faith assumptions are the final word. Case in point, when I broached the possibility that God did not create the universe to Fr. Brungs, and to a few others in the ITEST group, the response I received was that I could not possibly be right since that is not what the Church believes. Is the current understanding of what it means to say that God is a creator, based as it is on human culture as well as revelation, the final word that will ever be said on the subject? Or will the findings of modern science help us to formulate our explanation of the faith in another, and probably deeper, way? This will not happen as long as we label our "faith suppositions" as "certainties for all time."

Sr. Streeter Responds: Fr. Brungs and Fr. Zinser begin in different places; one with faith and the other with reason. The search can validly begin either place, but cannot continue without the other. Our movement into future understanding cannot afford to make exclusionary statements (God did not create the universe) for example, without qualifying the statement carefully: E.G. God did not directly create the universe but employed the use of significant instrumental causes in doing so. Fr. Zinser tends to make "Bald" statement, thus causing careful thinkers to dismiss him as careless in his efforts to do theological/scientific dialogue.

Fr. Zinser: Interestingly, in his article, "*Life on Mars,*" Brungs disputes that finding evidence of extra-terrestrial life would be a blow to the faith. He admits that, "Christianity, as a religion, might have to rethink some of its scriptural interpretation to an extent." He includes in the article a quote from Augustine, "whatever they [here, scientist, etc.] can really demonstrate to be true of physical nature, let us show to be capable of reconciliation with our Scriptures (*brackets his*)." Here, it seems to me, Brungs is willing to accept legitimate science first and then allow it to determine how we interpret the faith, even to the point of rethinking the scriptures. That seems honest to me. He then concludes the article with, "all of that information (*from scientific publications*) in time is to (*be*) incorporated into a Christian understanding... (*italics mine*)" Unfortunately, this is an "understanding" of God as the creator, something that he says we can never allow ourselves to forget. If the scientific evidence is increasingly

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that there is no evidence for and no need of a creator, at what point do we rethink the faith?

Sr. Streeter Responds: Once again, Fr. Zinser is not making careful distinctions, thus putting Faith (God created the Heavens and the earth) at odds with science (Where is the proof?) Either/Or cannot be used unless the dialectic is a true dialectic (Sin vs. Grace). In a supposed dialectic, the careful thinker distinguishes how both perspectives might hold truth from different angles. Fr. Zinser doesn't seem able to do this well.

Fr. Zinser: In another article titled, "*Praise*" Brungs brings up an interesting point about why Christian's praise of God the creator is not as lyrical as the Old Testament Psalmists. He identifies one possible explanation as being, "the notion that long ago came into theological currency that there was a 'pure' nature that subsequently fell and needed redemption." Therefore, he opines, there is more attention paid to our redeemer than our creator. He may be right. My point is that he seems willing to do away with the notion that there was a literal "Garden of Eden" time in human history, which is certainly something that would some years ago have been regarded as bedrock to the faith, but has been reinterpreted because of scientific findings on human evolution. Why are some articles of the faith not open to reassessment and others are?

Sr. Streeter Responds: Again, this is oppositional language: Either/Or. If truth be one then science expands the meaning of Faith rather than tossing it out for a new model. Expansion means there was initial truth and now we know more, rather than we were wrong and now we know better. The Galileo case was a matter of error in belief, not Faith. The distinction is important. Faith is adherence to God; belief is how I explain this to myself and others. Belief constantly changes. I can continue to believe in angels and completely change my understanding that they have wings and long sausage curls... Those who do not make this distinction will think their faith is being compromised when their beliefs change.

Fr. Zinser: Still, true to his principles, he seems unwilling to accept what science has pointed out, that we are not at the physical center of the universe (any more than any other site in the universe is at the center). "Revelation," he says, "has disclosed that in the new creation in Christ we are at the center of God's will for creation." Surely if we did encounter extra-terrestrial intelligent life and found that they, too, had experienced

God incarnating God-self in their flesh, we would have to reinterpret our own understanding.

Sr. Streeter Responds: Yes, our own belief...not our faith...

Fr. Zinser: I tend to agree with Brungs who concludes his article by saying, "Every year I more fully realize that it's always dangerous to say what God can or cannot do." I would add that it is equally dangerous to say that we understand fully who and what God is.

In the same issue of the bulletin, Kenneth R. Miller has an article entitled, "*Darwin, Design and the Catholic Faith*." Professor Miller rightly dismisses the view from Cardinal Schonborn which seems to ally the Catholic Church with the Intelligent Designer movement. He espouses the view that, "true contingency in the created order is not incompatible with a purposeful divine providence." This is the idea that God did indeed design the universe and consequently human life, but that God did so through the mechanism of evolution. While it is true that honest science cannot say whether there was purpose or not, honest theology must admit that its only reason for claiming God's involvement in the universe is the experience of the faithful, not some philosophical or theological evidence.

Sr. Streeter Responds: We can fool some of the people some of the time, but not all of the people all of the time. A two thousand-year history of communal understanding is not easily dismissed.

Fr. Zinser: If someone finds it a little difficult to swallow that God would have a plan for creating through evolution an intelligent and conscious species, that God would choose to do so through a means which did not do so for some 13 billion years, probably would not do so again if it had to start over, and seems on the verge of destroying that species in a short time, I think we must appreciate their point. If, as is my hypothesis, God did not have such a plan in mind, had nothing to do with the emergence of this or any other universe, but having "found" us delights in communicating with us, we do not need to take such a tenuous position in order to take science into account.

Sr. Streeter Responds: And where is the history and human witness to support Fr. Zinser's position? Or is Fr. Zinser insisting that revelation be collapsed into science? This would seem to disrespect both faith and science and

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ask of them what is beyond the truth telling which each announces to us.

Fr. Zinser: While I appreciate Professor Miller’s article, I do not understand why the article by Fritz Wenisch, “...*In His Creating Hands*,” was included. He speaks of theistic evolution” such as Pope John Paul may have had in mind when he insisted that evolution affects only a material side of humans but that, “the spiritual soul is immediately created by God.” Such “theistic evolutionists” he claims, “consider mere chance as insufficient to account for the coming about of various species of living things.”

Setting aside any argument with the Pope about evidence for a spiritual side of humans, which of course is completely lacking, Wenisch is firmly in the camp of the Intelligent Design folks. Indeed, he says that, “the mutations of the genetic codes are not subject to mere randomness, but the process must be intelligently guided.” He tries to wiggle out of being lumped with them by claiming that God’s intervention was not ongoing but was built in at the beginning of the universe. It doesn’t save him. He has nothing to say that most scientists will listen to, nor will I.

Sr. Streeter Responds: Both Fr. Zinser and Dr. Wenisch neglect the operations of the thinker/believer. This neglect opens inquiry to bias which is selective truth telling. The only person that I know of who has addressed this critical Problem of an epistemology that is grounded in an empirical cognitional. Theology is Bernard Lonergan, SJ. Again, Fr. Zinser is content to offer a dogmatic realism... ”He has nothing to say...” rather than a critical realism which carefully distinguishes and explains one’s position in a posture of openness and honesty.

Fr. Zinser: Very similar is Don Sparling’s article, “*Becoming One From Two*.” The telling phrase is, “the more that I study life in its complexity and diversity the more I come to believe the universe and what it contains could not have occurred from chaos or randomness.” He even throws in the line that, “it seems impossible to me.” Well, it does not seem impossible to most scientists and I don’t believe he will get a hearing with that attitude. Then he brings up the Anthropic Principle which has famously not convinced most scientists, nor most theologians for that matter. He says that he realizes that there are limits to human comprehension and that is where faith takes over. All well and good, but don’t label it “Reason” when you admit you don’t understand it.

Sr. Streeter Responds: Fr. Zinser is quick to recognize inadequate explanation in Dr. Sparling, but unfortunately not in himself; it would have been helpful, e.g., to clarify that faith does not take over when reason meets its limits. Faith is present to egg on reason in its search for meaning. Reason remains present too when the content matter of Divine Mystery invites reason to “take its shoes off” before the burning bush.

(The following is a response and rebuttal from Tom Sheahen, PhD, Vice-Director of ITEST)

I have read with interest the letter from Fr. Zinser raising a number of issues derived from a previous ITEST bulletin. It’s nice to know that some readers give extra thought to the ITEST Bulletin. Here I would like to add my comments to the continuing discussion.

I think the foremost problem, which is all-too-human an error, is to regard time as superior to God. Human experience just naturally leads us to believe that time is “absolute,” as Isaac Newton postulated, but perhaps (as St. Augustine said 1600 years ago), time is a creation of God. Augustine said that God created space and time together. This was part of Augustine’s discussion of how it is meaningless to inquire what God was doing “before” he created the universe. I would adapt that slightly to the language of contemporary mathematics and say that God first created the coordinate system. Trouble is, most humans just take the coordinate system for granted, and assume God must exist within that; hence, God is subordinate to time and space.

That is the basic problem that leads to Fr. Zinser’s limited perception of God. The “13-billion years for evolution” comment is a familiar criticism, and has convinced both atheists and young-earth creationists that any such god would be weak. But that comes from the mistake of considering time absolute. For God to have “found” us and chose to communicate with us, would imply that God is subordinate to the time and space in which he was looking around. On the other hand, once God is accepted as superior to space-time, the span of however many years or miles becomes irrelevant.

Fr. Zinser’s remarks about the Kenneth Miller article overlook one *a priori* aspect: Cardinal Schoenborn was writing in opposition to an early NYTimes op-ed piece by the devout atheist Lawrence Krauss, who had blasted creationists. In a column of limited word count, Schoenborn was trying to distance Catholicism from

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Krauss. Miller didn't understand that purpose when he wrote opposing Intelligent Design Theory and Shoenborn as well. However, both Miller and Schoenborn would agree with the document "Communion and Stewardship" by the International Theological Commission, whose chairman in 2002 was a Cardinal named Ratzinger. A key point therein is that God can use randomness ("contingency") as a means of creating. From that document, Miller quoted the line "true contingency in the created order is not incompatible with a purposeful divine providence." For God to start with very few laws of physics (maybe only one that we haven't discovered yet) and then utilize randomness in the ensuing process, not only makes sense; it is downright elegant – as long as you don't get concerned about it "taking too long."

In another section of his letter, Fr. Zinser dislikes the phrase "...the spiritual soul is immediately created by God." The adverb "immediately" has an unfortunate connotation with time, leading people to glance at their watches. (The abortion industry has driven a truck through the loophole of nobody knowing "when the soul enters the body.") Again, such erroneous ideas are rooted in a notion of subordination to time. If one accepts that humans have a component that is *independent* of space and time, then God's creation of that component is likewise independent of space and time, and the connotation of "immediately" fades away. It is not "wiggling out" of anything when Fritz Wenisch attributes God's intervention to being built-in at the beginning of the universe. Rather, Wenisch is acknowledging that God can act in ways that surpass human understanding. For those of us who dwell in the realm of human understanding, our first step should be to recognize our limitations, which surely includes the tendency to perceive time as absolute.

Near the end of Fr. Zinser's letter, he says "...don't label it 'Reason' when you admit you don't understand it." That's an overstatement. We use reason all the time when applying mathematics to physics, even though we don't understand a phenomenon well; subsequently, our understanding improves because the selected mathematics turned out to be helpful in modeling the physics of the topic. The role of mathematical *chaos* in so many physical processes was only discerned about 25 years ago, but we certainly applied mathematical reasoning prior to that time. If we look historically at the pattern of growth in understanding, we see that barriers to knowledge have fallen when people finally recognized some implicit

assumption, something "taken for granted" in their thought processes. For example, Euclidean geometry was not challenged until the 18th century. It is perfectly okay to use reason to advance from one partial level of understanding to another, even though full understanding is not achieved. When discussing matters relating to God, it's a good precaution to accept that our understanding will continue to be only partial.

One point about scientific evidence: Fr. Zinser includes the sentence "If the scientific evidence is increasingly that there is no evidence for and no need of a creator, at what point do we rethink the faith?" Assorted strident atheists have *asserted* such a claim, but they are mistaken; equally eminent scientists find the evidence compelling. Stephen Hawking's book *Brief History of Time* ends chapter 8 with the ringing question "what need, then, for a Creator?" but that was a mistake, which I explained at length in an ITEST Bulletin article some years ago: briefly, Hawking conflated space-like variables with time-like variables, and then used time-related terminology ("after, before") to discuss a space-like variable; which led him to an erroneous conclusion.

On the contrary, the scientific evidence embodied in the "Anthropic coincidences" is nothing short of stunning. At the September 2007 ITEST symposium, Stephen Barr said that at first it seems "a slam dunk" that the universe was created by an intelligent being; from there Barr went on to explain the "Multiverse" hypothesis as an alternative way to explain the Anthropic coincidences. However, as stated in another article I wrote for ITEST, the "Multiverse" hypothesis violates a fundamental canon of science (Ockham's Razor), by festooning a theory with things that are *in principle* unobservable. Now it is widely accepted that science arose because of the early Christian belief that God made the world intelligible, a view opposing the capriciousness of Greek and Roman gods. Even centuries after Christianity has been pushed aside, the belief in intelligibility still helps to advance science. To clutter a theory with unobservables is such a blatant deviation that it disqualifies a person as a scientist. The result is that adherents of the "Multiverse" hypothesis are caught in an incoherent position.

Meanwhile, Christians – either those scientists who accept the "slam dunk" evidence, or those who humbly defer to the wisdom of God without knowing many details – enjoy the advantage of coherence, uniting both faith and reason as they strive toward God.