



Institute For Theological Encounter With Science and Technology

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Opening Message

*(We have engaged a guest writer from the past for this first issue of our 40th anniversary year!
The editors could not imagine a better message for the New Year)*

ITEST has now been in existence for almost 40 years. It seems as if we now have some experience with science and faith work – or maybe I might call it faith and science work. There is indeed a difference. And it may be well to point out what the difference is.

How can it matter which of the two words we put first? Maybe I am making too much of the order of those two words, but it would seem that which is first should indicate a sense of priority. And it seems to me that the priority is on faith, not science. I say this as one trained in science (maybe even as one born and bred to the scientific mentality). Nonetheless, I see faith in Jesus Christ as the basis of our life. In other words, I am a Christian before I am a scientist.

In our approach to the faith/science apostolate it is my experience that the order of the words makes a clear distinction about which is the more important aspect. But it is equally clear that science is also necessary to the apostolate. This work must be grounded on the dogma of the Church; the Creed is more important to us than the Big Bang, General Relativity or evolution. 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. It is more important to us to believe in God than to believe in the Heisenberg Uncertainty Principle.

Now indeed, we can accept both the creation of the universe by God and evolution. There is no real problem with this, even though true and complete Darwinians proclaim there is a problem. What is a contradiction to them is not a contradiction to us. It is merely the working out of the universe according to God’s will – in freedom

This position rests entirely on faith suppositions. As soon as we mention God we are acting in faith. God is paramount in our approach to science. As Christians we cannot build a theology nor an expression of our faith on science. What would have happened to our “scientific theology” if we had based it on a Laplacian view of the universe? Would we be in the slightest vogue nowadays? Would anyone believe us – religionist or scientist? Or what if we had constructed a science based on the existence of the aether?

In ITEST’s faith/science work God is the primary reality – both physically and spiritually. Our task as we envision it is based on the four simple principles expressed in the little brochure that we send out. We presume that both faith and science rightly exist and we too believe there is no contradiction between faith in God and good science. Science is not a philosophy; it is science. It is all those studies that use the scientific method to isolate and experiment with objects. In truth science does not deal with the world; it deals with small parts of the world. Scientific philosophy might deal with the world; science does not.

In truth, ITEST does not deal so much with the philosophy of science as with science itself. We take scientific discovery quite seriously and praise God for it. We try to learn what science discovers and apply it as best we can to the faith. But faith is the final judge. It may be that some scientific date may cause some trouble with our interpretation of the faith. But only with our interpretations. It will not contradict the faith; of that we are certain.

Fr. Robert Brungs, SJ (2002)
Director: ITEST 1968 - 2006

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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 presently negotiating to engage Edmund D. Pellegrino, MD, for one of our speakers. Pellegrino, professor emeritus of Medicine and Medical Ethics at Georgetown University Medical Center also served on the President's Council on Bioethics. Dr. Pellegrino attended the ITEST conference on *Secularism and Biblical Secularity* in 1994 as a responder to the formal essayists. The second speaker we are hoping to engage is the noted Dr. (Jack) John F. Haught also of Georgetown University and Landegger Distinguished Professor of Theology at the University. He has authored *God After Darwin: A Theology of Evolution* (2000), *Science and Religion: From Conflict to Conversation* (1995) and other books and articles.

Our September meeting will be one of celebration and thanksgiving to God for having sustained our mission and ministry for lo these 40 years, and as our beloved Fr. Brungs often said, "We have survived into existence."



2. Coming soon! Our newly designed and re-organized web site should be on-line by late January. The site will be located at our current web address www.faithscience.org. See additional information on page 16.

3. Books received: (a) *Logical Faith: Introducing a Scientific View of Spirituality and Religion* by Joseph P. Provenzano and Richard W. Kropf. New York: iUniverse Inc., 2007, pp. 96. Provenzano, a long-time ITEST member, holds an MS degree in physics from Louisiana State University. He is currently a project manager at the California Institute of Technology's Jet Propulsion Laboratory in Pasadena, California. Richard W. Kropf specialized in philosophical and systematic theology, earning doctorates from the University of Ottawa in the Université Saint-Paul in Ottawa, Canada. If anyone would like to review this book, let us know and we will send the hard copy.

4. Opportunity to blog: Mr. Robert Wolfersteig (nephew of the late Fr. Bob Brungs, SJ) would like to engage in discussion on the topic he is researching for his Master thesis: "shifting the question concerning whether God exists or not from biology to physics." He invites, scientists, philosophers, theologians and all those who are interested, to view his web site at www.A-Singularity.blogspot.com On that site you will find a list of subjects explored, among them, Big Bang, Cosmology, Infinity, God, Physics (quantum, relativistic,) and others.

5. Update on our faith/science education project: Look for news of the project, in its third and final year of funding, in the spring issue of the Bulletin. Schools in the Midwest, San Antonio and Prairie Village, Kansas are testing the program (K – 4th grade) now and the project manager, Evelyn Tucker, has already visited a few schools for assessment and evaluation of the program materials, methods and so on. We are exploring funding possibilities for continuing this project through the fifth and eighth grades. If you are aware of any funding, private or public, in this area, please let us know and we will pursue the possibility.



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Life on Mars

Fr. Robert Brungs, SJ

(Written in the middle 90's in response to a report received from a group investigating the possibility of life on Mars, this article not only calls to mind our September 2007 symposium on Astronomy/Cosmology Breakthroughs and the God Question but it clearly predicts the "faith-full" response of Christian Churches in the 21st century to the incremental uncovering of the "mysteries" of the universe.)

Early in 1994 I received (unsolicited) a copy of *The McDaniel Report* on the Failure of Executive, Congressional, and Scientific Responsibility in Investigating Possible Evidence of Artificial Structures on the Surface of Mars and Setting Mission Priorities for NASA's Mars Exploration Program. This report was published in 1993 by the North Atlantic Books, Berkeley, California.

I do not intend to discuss the merits or demerits of the Report or the arguments about whether or not there is an artifact on Mars. I will simply mention enough background to locate this present essay. Let me quote from the "Executive Summary" (p. xix) of the Report:

Since 1979, a number of highly qualified independent investigators have engaged in an extensive analysis of photographs taken by the 1976 Viking Mars mission. These photographs appear to be evidence that some landforms in the Martian region called Cydonia may be artificial.

The McDaniel Report is concerned with an examination of two photographic frames from the Viking probe and with NASA's plans and methods for further mapping of the Martian surface. It also has a section (Chapter Nine) on "The Ethical Question: Public Responsibility." In that chapter we find the following:

In 1960, a report titled *Proposed Studies on the Implications of Peaceful Space Activities for Human Affairs* was delivered to the Chairman of NASA's Committee on Long-Range Studies. The report, prepared by the Brookings Institution, Washington, D.C., under contract to NASA, was also delivered to the 87th Congress. In a section on "The Implications of a Discovery of Extraterrestrial Life," the report acknowledges the

possibility that "artifacts left at some point in time" by intelligent life forms might be "discovered through our space activities on the Moon, Mars, or Venus." (p. 167)

The Brookings report directly questions the view that the discovery of extraterrestrial intelligence (ETI) would necessarily lead to an all-out space effort. Instead, the report notes the possibility that society might "disintegrate," or survive only to "paying the price of changes of values, attitudes, and behavior."

In particular, the reactions of politically influential religious groups, including "fundamentalists," antiscience sects," and "Buddhists," were a matter for concern. Noting that "Buddhist priests are heavily politically engaged in Ceylon," the report considered the potential reaction of such groups as an unknown factor that should be researched, in order to weigh the possible social consequences of their actions should an ETI discovery be announced.

In April, 1994 I received a call from Dr. McDaniel asking for a comment on the notion that Christians "would panic" in the face of a discovery of artifact on Mars. The following is my response:

Comments on "Artificial Origin at Cydonia!"

First, let me issue the usual caveats. I cannot speak to religions other than Roman Catholicism. I do not know enough about Islam, Buddhism or the other great religions to comment on how they would react to the discovery of an artifact on Mars. I cannot even predict how some sections of the Christian community would react. As stated, I am speaking only about Roman Catholicism; I am not, however in a position to speak for Roman Catholicism.

Also, my PhD is in physics, not theology. Nonetheless, I am reasonably well acquainted with the Catholic Faith Tradition. It is out of that context, rather than any theological school, that I write this brief reflection.

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I think that the best way to approach the reaction of the Catholic Church to “a possible artifact on Mars” is to look at the Church’s reaction to other events in her history. Within twenty years of the death of Christ, the Church in Jerusalem faced an issue of enormous importance, namely, whether or not to preach the Good News of Christ to the pagans. I doubt that we can begin to understand now what a wrenching question this was. The Church was still young and humanly speaking fragile. Nonetheless, under the guidance of the Holy Spirit the leaders decided that the pagans were indeed called to Christ equally with the Jews. That was a critical decision, certainly of the order of the possibility of our now finding evidence that there was a line of “humans” before us “out there.”

Other “paradigm shattering” discoveries (religious, political, scientific, intellectual, and so on) have occurred since the first century. I’d just mention the “Christianization” of the Roman Empire and its later collapse, the non-occurrence of the “end-time” at the beginning of this millenium, the Black Death, the “discovery” of the New World, the Copernican model of the solar system, the Reformation, the Enlightenment, two World Wars, etc. In none of the events was there religious panic. I would not expect any now.

The central truth of Christianity --- that which must be preserved at any and all cost --- is that God in the Second Person of the Trinity became man on earth. That we are “alone in the universe” is not a doctrine of faith. Some individuals might experience spiritual turmoil in the face of “proof” that we are not alone or that there was a race of intelligent beings in the universe before us. Christianity, as a religion, might have to rethink some of its scriptural interpretation to an extent. But the situation, were such a “proof” to be discovered, is certainly analogous to the realization that God was calling the pagans to share in the promises made to the Jews in Abraham. It is not as unique a “paradigm-shatterer” as we moderns might think.

In fact, I find it curious that “the government” would be worried about the effect of the discovery of an “artifact” on Mars on religious people. They certainly don’t seem to be worried about such an effect on any other level. This leads me to conclude that it is a contrived excuse.

I would suggest that the “Establishment” is far more worried about the possibility of our “not being alone” than religious people are. I would think that serious Christians would look on such a discovery as evidence of a far wider evangelical mission than we had yet imagined. Already, there are many theologians who are convinced of the existence of other intelligent beings (more or less like us) in the universe. I am not one of them since I know of no data that suggests such beings ---beyond statistical arguments. Also, I remain quite skeptical about the Mars “artifacts.” That does not mean, however, that I reject the *possibility* of such a thing. Nor does it suggest that I think we ought not research it further. Christianity, contrary to popular mythology, is not an a priori faith.

It is based on what God has done, not on what we think He might (or ought to) do. It is emphatically not a surprise-free religion. God does what God wants to do --- almost always without our advice or consent.

We have to be careful not to extrapolate beyond the evidence. It is essential to remember that all the real data we have is two camera frames. Any talk of a “super-race that made these things” is at best premature and even misleading. As a civilization, we could erect such “monuments” if we had a reason to do so. I strongly urge that we treat the Mars “artifact” in a truly scientific manner, not interpreting the situation beyond the data. I would hope that the “Establishment” would have learned something from the Galileo case --- the truth cannot successfully be suppressed. Let’s try to find what the truth is here, regardless of its immediate effects.

The same is true of the “life in the rocks of Mars” that was hyped in the newspapers in the past year. There may have been at least primitive life on Mars --- and again there may not. In summary, I would simply recall a statement of St. Augustine from the early fifth century: “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.” (*De Genesi ad litteram*, 1b, 1c, 2, 1, no.4., 1) If scientists *demonstrate* that there are artifacts on Mars, our duty is reconciling our Scriptures, not panicking or rioting. We need not worry about the future of Christianity --- if that was a worry in this case.

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The above response sent to Dr. McDaniel stresses the need for Christians to live in the *real world*. This may seem somewhat strange to those who are used to the abstractions of some theologies. Nonetheless, it is true. God became one of us in our world --- the only world there is. He came to lead us to our liberation from sin, not our liberation from the physical, material universe. He came to make possible the transformation of “this world” into his final Kingdom. He did not come to make us angels but to fulfill our destiny as human beings. He did not come as an angel; he came as a human being.

More importantly for us, in his Ascension into heaven Christ remained bodied. His heavenly body is a sign and pledge of our physical resurrection into him. Heaven is a physical reality --- it is not a “spiritual” existence, if by “spiritual” we mean nonmaterial. True, we do not know what form this “physicality” takes in heaven, but we do know that it does not mean that we will be separated from our bodies nor from the physical creation.

Furthermore, we have no reason to fear any real evidence of extra-terrestrial intelligence or any artifacts we might discover “out there.” One thing we can never allow ourselves to forget is that God created the universe and that its destiny lies in him. With that faith we shall never “panic” in the face of any real evidence that is discovered by science or by anything else. We must remember, though, that data always has to be interpreted; the interpretation may or may not be adequate.

Science and technology are presenting us with new data and a better understanding of physical systems, including our bodies. I am amazed at the amount of scientific data as I page through publications like *Science*. All of that information in time is to be incorporated into a Christian understanding of both creation and of God’s will for us and for that creation. We cannot allow ourselves not to know the world we live in. We cannot allow ourselves not to appreciate and love that world, since it is destined for glory in God. The real world is the only one we have; here we encounter Christ; here we serve and worship God.

Praise

Fr. Robert Brungs, SJ

(In this article the author wonders why, with the beauty and majesty of the heavens becoming more and more “available” to us, we don’t break out in praise of the Creator. Where are the Psalmists of the 21st century?)

I do not usually spend much time thinking about the quality of our praise of God. I don’t suppose that a lot of us do. Recently, however, several things have come together which have led me to wonder why, with all the sophistication we have acquired (or think we’ve acquired), our praise in word and song is no better than the Psalmist’s. The Psalms, written as long as three millennia ago, surpass our poetic sense of the marvels we have received from God’s hand. I have been wondering about that now for some time.

One possible reason for this is that we no longer find awe in the heavens. Perhaps we think that, because we can predict some heavenly phenomena with great precision - things like the appearance of comets and eclipses or the crash of a comet into Jupiter - there is no mystery left in the heavens. Perhaps we are imbued with the

notion that, if we can hang a name on something, it is somehow under our control. Yet to give the name pulsar, or quasar, or black hole or brown dwarf or whatever, to something out there does not give us any control at all. The Psalmist could look to the heavens and see the

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handiwork of God. What do we and our culture see there?

Today, we can see far beyond the ability of the Psalmist. With the invention of the telescope in all its forms we have expanded our sensorium beyond anything that could have been imagined even three hundred years ago, much less three thousand years ago. But even

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with our expanded sight and our discovery of galaxies, neutron stars, binary stars and things we can't name or understand, we have not poured out such praise of their Maker as did the Psalmist. Our physical vision has expanded by many orders of magnitude, but our praise has not. This is only one area where science has provided us with an awareness of both the delicacy, complexity and awesomeness of physical systems.

As the Psalmist could look out and see the macro-world, we can now, with our array of various kinds of microscopes, behold a micro-world just as beautiful as the heavens. It is as complex a world with a delicacy of structure that we do not observe in the heavens. Yet, even with this much greater ability to see the handiwork of God that was hidden to the Psalmist, we have not surpassed the ancients in our praise of the Creator.

We now know, for instance, that all living systems are unified at the level of the amino acids. Still, our praise of the Creator has grown neither in its quantity nor quality. We are well aware now - another gift of the life scientists - that women as well as men contribute to the genetic makeup of their children. Yet, even after some hundreds of years, not all of our theology nor our liturgy has sufficiently incorporated that now rather basic notion.

In a certain sense, we can call the historical influence that science has had on our self-understanding, and on our understanding of the immense cosmos about us, a kind of demythologizing. We have become, and continue to become, aware of both our limits and our inter-connectedness with the rest of creation. We have learned from Copernicus, Galileo and Newton that the heavens and the earth follow the same physical laws, that there is a physical unity throughout the universe. We have learned from Darwin that there is a unity of all living systems at the level of the species. The work with recombinant DNA has deepened our understanding of the unity of all living systems at the level of the amino acids, the basic building blocks of those systems according to our present understanding. Why doesn't this new awareness inspire our praise of God?

Can it be that Christianity itself has downplayed the poetic quality of our praise? Is it more difficult to be in awe of a God who is immanent in the cosmos and immanent in us - in Our Lord Jesus? Is it easier to praise a

purely transcendent God who thunders on us exclusively from on high, who continually erupts in a completely unpredictable way into our history? The theory has a certain plausibility about it, doesn't it? What's the old saying about familiarity breeding contempt? God is so much easier to domesticate to our desires and horizons now that he has pitched his tent among us. I believe that we all do this and maybe none more than the highly educated and putatively sophisticated.

Both St. Paul and St. John teach us that creation is in Christ. The hymn Paul quotes in Colossians is clear evidence of creation in Christ. The Council of Chalcedon defined that Christ the Son of God is one and the same as Christ the son of Mary of Nazareth. Creation in Jesus Christ is creation in the incarnate God. Our wonder should be greater, not less. Part of the Christian problem may well be the notion that long ago came into theological currency that there was a "pure" nature that subsequently fell and needed redemption.

In such a theological understanding, creation is of less interest than redemption and we fall into the trap of some kind of "spiritual" Christianity that sees little value in the creation, in the material reality all about us. This, I would expect, would dampen our praise for God's handiwork as evident in all the beauty that surrounds us, from the unimaginably big to the imperceptibly small. One of the European cardinals asked the German theologian, Karl Rahner, not long after Vatican Council II, why devotion to Mary had declined. Rahner replied that many theologians had made Christ into an abstraction and abstractions had no need of mothers. In our own hearts we must catch the "adventure of specifics" that Christianity really is if we hope to have it on our lips and in our song.

While the scientific understanding of the past few centuries has diminished our stature as being at the physical center of the universe and being a species totally set apart from the other species, still it has enhanced our dignity as the people and the world to which Christ came and as the species into which he became incarnate. We know from revelation that our world is the center of the created universe in the order of salvation and the order of the final Kingdom of God. We know also that the human species is the one which God chose to enter physically. We know that in Christ

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we can master our drives and finally become integral and integrated persons - Freud notwithstanding.

Science has displaced our ideas that we are at the physical center of things; revelation has disclosed that in the new creation in Christ we are at the center of God's will for creation. Unfortunately, little of this information has penetrated into the consciousness or work of the ecclesial/theological community, especially, it seems, of those who specialize in creating or maintaining our liturgical praise of God.

This is not to place excessive blame on the magisterium or the theologians or even the liturgists. A share of the culpability can be laid upon the occupant of many a chair of humanities studies as well. This, of course, does not disqualify them from membership in the human race. If it did, the planet would practically be uninhabited. It does, however, harm the Church and limit the praise due to God. It stifles both the poetic and theological imagination of the Church. In short, it inhibits any real growth in our appreciation of the creation God has given us. Scientists are also to blame for the lack of praise we give. Indeed, there's plenty of blame to go around.

It is quite possible the whole course of the intellectual history of the world plays a part in our lack of wonder and our voiceless praise. I may be way off base in what follows; it's really little more than a reflection out loud. It does seem to me, however, that as we grow deeper in our learning and in our science and in our understanding we tend to become more general and our thinking and expression becomes more abstract. The more sophisticated we become, the more abstruse we seem. It is possible that that may be the normal course for humans in a fallen world (I don't pretend to know whether such a way of thinking is a relic of original sin). But I think the observation is accurate. We tend to get more abstract in our thinking as we learn more and think we understand more. We also tend to look down on our predecessors who were far more specific in their dealings with each other and with God. I know people (maybe I'm one myself) who believe that something must be brilliant since they don't understand it.

Love, however, seems quite the opposite. The more deeply we love something, the more our attention is focused on specifics. We are more concerned with the shape of the nose, for example, the color of the hair than

with some generalized form. St. Paul assures us that it's love, not knowledge, that makes the building grow. We say in our culture that love makes the world go around.

From all we know from Revelation, God is a God of specificities, not generalities. He doesn't need universal concepts to understand himself, us or all the mysterious creatures of the universe. Every year I more fully realize that it's always dangerous to say what God can or cannot do. But as far as we can tell, God doesn't work or know or love in general.

We have to reclaim our religious understanding from generality and from abstraction. Our creator is specific. Our savior is specific. Our King is specific. The Church is historical, therefore, specific. We are specific. Each of us is unique, without real human copies. This must be the wellspring of our love. And it is out of this love that our praise will mount to the heavens. Praise cannot be the property of only the untutored and unlettered. The educated, the sophisticated, the cultured must praise God as well.

***Why doesn't the Church attract
the poet, the musician, the painter
as it once did?***

Why doesn't the Church attract the poet, the musician, the painter as it once did? This, I realize, is a tangled question since it deals with human motivation which is as tangled as anything in the universe. But if we love, we praise. It's as simple as that. And if we can bring to our love the vast repertory of our knowledge (accompanied by a realization of the greatness of our ignorance) we can praise God for those extraordinary and mysterious gifts he has scattered for us throughout the universe. Cannot we come to love and praise as greatly as the Psalmist did three thousand years ago?

Christ welcomed the little children and said: "Let the children come to me. Of such is the Kingdom of Heaven." Children are often extravagant in their praise of something that catches their imagination and fills their heart. So should we sober adults and scientists be, at least at times. What better place is there than Christian prayers for the "child-like" the whimsical, the artistic and the beautiful?

Darwin, Design and the Catholic Faith

Kenneth R. Miller

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Words matter, and they matter most of all in the context in which they are to be read and understood. On July 7, 2005, the *New York Times* published an opinion piece, “Finding Design in Nature,” purporting to offer “The official Catholic stance on evolution.” The author of that piece, my fellow Catholic Christoph Cardinal Schönborn, got the theology exactly right, but erred dramatically in his take on the science and the politics of the “design” movement as it exists in the United States. Knowing how the good Cardinal’s words will be misused by the enemies of science in our country, it is important to set the record straight.

As Cardinal Schönborn quite properly points out, the Catholic Church is staunchly opposed to any view of life that would exclude the notion of Divine purpose and meaning. In the new century, as he puts it, the Church will “defend human reason by proclaiming that the immanent design evident in nature is real.” In response I would echo the words of the Catechism that scientific studies of “the age and development of the cosmos, the development of life-forms and the appearance of man . . . invite us to even greater admiration for the greatness of the Creator.” Indeed they do.

But the Cardinal is wrong in asserting that the neo-Darwinian theory of evolution is inherently atheistic. Neo-Darwinism, he tells us, is an ideology proposing that an “unguided, unplanned process of random variation and natural selection” gave rise to all life on earth, including our own species. To be sure, many evolutionists have made such assertions in their popular writings on the “meaning” on evolutionary theory. But are such assertions truly part of evolution as it is understood by the “mainstream biologists” of which the Cardinal speaks?

Not at all. Consider these words from George Gaylord Simpson, widely recognized as one of the principal architects of the neo-Darwinian synthesis: “The process [of evolution] is wholly natural in its operation. This

natural process achieves the aspect of purpose without the intervention of a purposer; and it has produced a vast plan without the concurrent action of a planner. It may be that the initiation of the process and the physical laws under which it functions had a purpose and that this mechanistic way of achieving a plan is the instrument of a Planner – of this still deeper problem the scientist, as scientist, cannot speak.”

Science is, just as John Paul II said, silent on the issue of ultimate purpose, an issue that lies outside the realm of scientific inquiry.

Exactly. Science is, just as John Paul II said, silent on the issue of ultimate purpose, an issue that lies outside the realm of scientific inquiry. This means that biological evolution, correctly understood, does not make the claim of purposelessness. It does not address what Simpson called the “deeper problem,” leaving that problem, quite properly, to the realm of faith.

Cardinal Schönborn also errs in his implicit support of the “intelligent design” movement in the United States. The neo-creationists of intelligent design, unlike Popes Benedict and John Paul, argue against evolution on every level, claiming that a “designer” has repeatedly intervened to directly produce the complex forms of living things. This view stands in sharp contradiction to the words of a 2004 International Theological Commission document cited by the Cardinal. In reality, this document carries a ringing endorsement of the “widely accepted scientific account” of life’s emergence and evolution, describes the descent of all forms of life from a common ancestor as “virtually certain,” and echoes John Paul II’s observation of the “mounting support” for evolution from many fields of study.

More important, the same document makes a critical statement on how we should interpret scientific studies of the complexity of life: “whether the available data support inferences of design or chance . . . cannot be settled by theology. But it is important to note that, according

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to the Catholic understanding of divine causality, true contingency in the created order is not incompatible with a purposeful divine providence.”

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Right there, in plain view, is the essence of compatibility between evolution and Catholic theology. “Contingency in the created order,” the very essence of evolution, is not at all incompatible with the will of God. The official Church document reemphasizes this point by stating that “even the outcome of a truly contingent natural process can nonetheless fall within God’s providential plan for creation.” And evolution, as Stephen Jay Gould emphasized brilliantly in his writing, is truly a contingent natural process.

The concerns of Pope Benedict, as expressed in his earlier writings and in his coronation homily, are not

with evolution per se, but with how evolution is to be understood in our modern world. Biological evolution fits neatly into a traditional Catholic understanding of how contingent natural processes can be seen as part of God’s plan, while “evolutionist” philosophies that deny the Divine do not. Three Popes, beginning with Pius XII, have made this abundantly clear.

John Paul II’s 1996 letter to the Pontifical Academy of Sciences, which Cardinal Schönborn curiously regards as “unimportant,” bore the magnificent title of “Truth cannot contradict Truth.” In that letter the late Pope, writing in the tradition of Augustine and Aquinas, affirmed the Church’s twin commitments to scientific rationality and to an overarching spiritual view of the ultimate meaning and purpose of life. Like many other scientists who hold the Catholic faith, I see the Creator’s plan and purpose fulfilled in our universe. I see a planet bursting with evolutionary possibilities, a continuing creation in which the Divine providence is manifest in every living thing. I see a science that tells us there is indeed a design to life. And the name of that design is evolution.

“...In His Creating Hands”

Fritz Wenisch

In a 1996 address to the Pontifical Academy of Sciences, Pope John Paul II called the theory of evolution “more than a hypothesis.” Naturally, he did not intend to endorse secular Darwinism; rather, he had in mind what is often referred to as theistic evolution.

Like its secular counterpart, it includes “common descent,” the view that all currently existing species developed from one or perhaps a few primitive life forms.

Contrary to secular Darwinism, though, which explains humans entirely in terms of evolution, the Pope

emphasized that common descent applies only to our physical side; “the spiritual soul is immediately created by God.” Theistic evolution also takes exception to Darwinian randomness. Darwin held that small changes from one generation to the next often continued to be passed on by heredity. Offspring affected by advantageous changes survived more readily than the unaffected individuals; the latter ones died out. Over time, changes accumulated and new species significantly different from earlier ones evolved. All of the individual changes were due to blind chance. In contrast, theistic evolutionists consider mere chance as insufficient to account for the coming about of various species of living beings.

Interestingly, present-day genetics supports common descent (going into details as to *how* would be a subject for a different column), but throws a monkey wrench into the sufficiency of random changes. At Darwin’s time,

Dr. Fritz Wenisch

Dr. Wenisch is professor of philosophy at the University of Rhode Island and a Eucharistic minister at St. Thomas More Parish in Narragansett

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nothing was known about cells or the chromosomes in the cell's nucleus – the structures containing DNA, the hereditary material.

Think of an animal's fertilized ovum – the single cell at the start of a new life. The DNA in that cell can be likened to a blueprint of the individual, as a set of instructions for the development of the new being. For a new animal of the parent species to come about, the entire DNA set must faithfully be copied from one generation to the next. The copying mechanism works almost flawlessly. On occasion, though, genetic "typos" do occur. On the average, about 60 genetic "letters" per generation are misspelled – about 60 out of billions. Many of these misspellings have no bearing on the offspring. Others are detrimental, leading to genetic defects. Some of these changes – occurring randomly according to contemporary Darwinists – are beneficial; they alter the instructions so that new features develop in subsequent generations, which cumulatively and over time will lead to a new species. That's at least how simple it is supposed to be.

Well, let me rain a bit on the parade of random changes:

Imagine that you buy a new piece of furniture – the "some assembly required" type. At home, you notice that the instruction booklet is missing. You call the store and are promised an e-mail containing the text. The person charged with copying the information does not know English, though, and is very careless – he makes innumerable typos. When you look at what he sent, you realize that the instructions do not concern furniture; rather, he typed guidelines for installing an internet connection for your computer.

What are the odds that a careless typist's random mistakes will turn furniture assembly instructions into a guide for installing a computer internet connection? I know that you are tempted to exclaim "Zilch"; but a mathematician might, with some additional information, compute the odds for you. Saying that they are infinitesimal is the understatement of the century. Compared to the instruction booklets in my analogy, a living being's genetic code is significantly more complex – more like an entire library rather than a short instruction manual. The odds that random changes to

one such code will lead to another usable code defining a different species are much smaller than the odds in my instruction manual example – and that is another understatement of the millennium.

Secular Darwinists want me to believe, however, that those insurmountable odds have been beaten numerous times! Well, my reason protests: Holding mere chance responsible for the evolutionary changes in the genetic codes flies in the face of common sense. It seems that we must look for an explanation other than randomness. Had I formulated the previous sentence as a biology teacher in one of our public schools, my job would be in jeopardy: Merely mentioning that reason suggests random changes to be insufficient for evolution is a cardinal sin at one of these bastions of tolerance – although all I am appealing to is science, mathematics, and common sense. At the *Rhode Island Catholic*, though, I am even free to go beyond what the natural sciences and mathematics can contribute:

The mutations of the genetic codes are not subject to mere randomness, but the process must be intelligently guided. Based on my faith, I add: The guiding hand of God manifests itself in the changes of the hereditary material. This does not mean continued divine intervention; rather, when establishing the laws of nature and creation matter, an almighty and omniscience God can make sure in advance that what is needed will come to be present at the right time and in the right manner. This includes galaxies, stars, and planets, but also the most minute details, including timely and proper modifications of genes.

What does that mean for the "big bang?" Did God throw a set of loaded dice? Well, if you express it that way, I will not give you an argument. I prefer to remember, though, that God is outside of time; that consequently, nothing was "thrown," for he keeps on "holding the world and its wonders in his creating hands."

(Reprinted with permission of the author and the Rhode Island Catholic, the weekly newspaper of the Diocese of Providence, Thursday, October 11, 2007)

Becoming One From Two

Don Sparling, PhD

How difficult is it for a person who has functioned as a scientist all of his adult life to become not only someone who believes in things unseen but who willingly takes on the obligation of leading others to a deeper sense of faith in their own lives? What adjustments in mind and attitude are required for a person to function as a research biologist in a secular environment most of the week and as an ordained minister on weekends? Scientists are required by their profession and, in most cases, compelled by their nature, to question everything, take nothing at face value and to try to solve apparent contradictions. For the scientist few if any things are True in the absolute sense and those concepts that are conventionally accepted as approaching Truth are constantly being tested in the hopes of finding weaknesses or exceptions. Belief in the transcendental or metaphysical, however, demands that some things must be accepted without the ability to measure or quantify them or even to be able to sense them in any physical manner. Belief in an overlying, pervasive, unquestionable Truth requires faith, the state of being open to the unexplainable. Thus, the thought processes of a scientist and of a Believer seem to be diametrically opposed. Is it even possible for a single person to fully incorporate both ideologies without being somehow hypocritical to one or the other?

The answer to this last question is ‘apparently so’ for there are many examples of men and women who seem to have been able to reconcile this contradiction in their lives. Examples of scientists who have more or less successfully found solutions to this paradox include Collins¹, Behe², and Miller³.

I cannot speak for these other scientists other than from what I have read. I have no idea how or if they

struggled with what I see as a dichotomy of thought. Some have spoken that they did have difficulties early in their lives. Collins¹, for example, admits that he was at best an agnostic as a college student. Sagan⁴ apparently was never able to reconcile his pursuit of science with a coherent theology.

What I can speak of, however, is my own experience. For over 20 years as an undergraduate, then a graduate student and ultimately as a professional researcher and teacher I was a serious follower of the sciences and only a lukewarm adherent to my faith. When contradictory issues would arise such as the literalness of the Bible and the theories of science I would invariably side with science, believing that Scripture really had little value compared to science and technology. Darwin and then the sociobiologists such as Richard Dawkins, E.O. Wilson and Stephen Jay Gould seemed to have all the right answers. Behavioral ecology for animals and sociobiology for humans addressed many of the questions I had in compact, testable fashions which appealed to my growing scientific interests. At that time I did not realize that these scientist, and I, weren’t asking some of the most important questions. Like many scientists, we were raising questions of how and what but not of why. During my undergraduate years I was an off and on, mostly off church goer. I lightly dabbled in ‘alternative’ religions such as various forms of Protestantism, Buddhism, and Bah’ai but I was never really serious about any of these. Immediately after receiving my bachelor’s in science degree my wife and I married. She was a more devout Catholic than I, so I started going to church on a regular basis under her influence. However, I was marginally involved and often bored by the ritual and homilies. I failed to see a relevance for religion in my life and I certainly did not see any real connection between church and my budding career.

Then around 1985 something remarkable happened. I remember being in church and perceiving what best can be described as a calling. It was part feeling, part words but the message was “I have given you all that you need, it is now time to give back what you have received.” And the accompanying message was that I

Don Sparling, PhD

The author is Associate Director of the Cooperative Wildlife Research Laboratory at Southern Illinois University, Carbondale, Illinois and a Deacon in the Diocese of Belleville, Illinois. The editors thought that the ITEST membership would enjoy hearing from someone in science who also participates in the vital life of worship within the faith community as an ordained deacon.

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should become a deacon. At that time we were living in North Dakota, I was working as a statistician for the U.S. Fish and Wildlife Service in a job I was not particularly enamored about, and we had two small children. This message became persistent both in and out of church until I finally prayed that I felt I needed to be a father to my children first and could not respond to this calling right now. To this day I am not even sure if the diocese in which we lived had a permanent diaconate. About 18 months later we moved to Hawaii and ultimately ended up in Maryland where I continued working for the Department of Interior. About 12 years after this initial experience the message came back much more strongly. I recall sitting in church listening to the priest talk about our baptismal obligations or some such stuff and feeling a very deep sense of remorse that I wasn't doing my part. To make a long story short, as they say, I was able to dump some mental baggage and in March 1995 applied for the diaconate program in the Archdiocese of Washington DC. Much to my surprise I was one of 20 men among more than 70 applicants who were accepted into the program.

Very early in the diaconate formation process I knew I had to come to terms with what I perceived as the science/theology dichotomy. I became aware that my life was becoming seriously compartmentalized. As an employee at a federal research center I was acutely aware of the separation of church and state. As a result, I diligently avoided talking about the diaconal side of my life to all but my closest associates and I seldom talked about faith issues. In contrast, I was going to formation classes twice a week where it was expected that we talk about faith issues and my professional career didn't really matter. I have the bad habit of overthinking pressing issues and the question of whether a man of science can become a man of the cloth weighed heavy on my mind. It didn't help that I had a pastor who was non-supportive and I questioned whether I should even be in the program. As it sometimes happens, I received an answer to my question in a rather direct and dramatic way. Less than a year into our formation the class of permanent deacons before us was going to be ordained. Somehow, I failed to get the location of the ordination correct and ended up at a deacon ordination for Dominicans. In his homily the presiding priest spoke directly to my heart when he said in effect that 'we will not be known for our degrees, our PhDs or

master's degrees. We would not be known for the paper hanging on our walls. We would not be recognized so much for what we know as what we believe.' This was an affirmation that my beliefs were at least as important as my knowledge and I began to search for a way of merging both into a cohesive entity, to make one out of two. One of the first things I did was to start a small Bible study group during lunchtime at work. We were composed of three Catholics, a fundamentalist Christian, and a Christadelphian. The interchange of theological interpretations was extremely stimulating.

Over the years I have developed an understanding of the relation between belief and scientific inquiry, what I sometimes refer to as Reason. In my quest I have only been able to scratch the surface of this relationship and I do not have any hope of penetrating to the bottom depths of it in this life. Nevertheless, I have developed a paradigm that works for me. It may not work for everyone. 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. From such mundane matters as the Krebs Citric Acid cycle to the multitude of similar biochemical systems within a single-celled organism, from the zygote to the billions of cells that are contained in a new born infant life speaks of the miraculous to me. Even over the theorized two or so billion years since living organisms came into being it seems impossible to me that the intricate balance that is multicellular life could have occurred independently of outside forces. Added to that, living organisms are connected in multitudes of ways with the biological and inorganic environments in which they live. Ecological processes add layers of seemingly incomprehensible (but certainly capable of being studied) complexity onto the already incredible mystery of living organisms. The anthropic principle provides a similar set of unanswered questions to the existence of earth itself and to the universe that surrounds it. While I no longer believe that these physical entities could occur on their own without some external factor, I revel in the idea that the same factor gave humans a curiosity and an ability to study these entities in the hopes of understanding them better and in the process understand something about the factor itself why it has done what it has. For a lack of a better word, this creative factor can be called 'God', 'Yahweh', 'Allah' or 'I am'.

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At the present time I am an associate professor in zoology and wildlife at a state university. I teach courses in Conservation Ethics, animal behavior and wildlife administration. The animal behavior class incorporates evolutionary concepts which I don't have any problems with. At the present time I am trying to comprehend Teilhard de Chardin's writings. While I don't proselytize at work, I make it known that I am an ordained minister and am available if students wish to talk. I have had several who have come to my office to talk about a variety of issues bothering them.

At various times in my life I have had serious doubts of the existence of God and certainly I have had difficulties in resolving a scientific mind set with an openness to belief in what cannot be perceived except through the lens of faith. While many of my earlier concerns have been answered, there are still some questions that remain. Although I have received both a Ph.D. in biology and ordination to the permanent diaconate in the Catholic Church I still struggle with issues such as the immediacy as well as the transcendency of God. In practical terms, does God really answer prayers? How can we have

freewill at the same time that God knows what will happen before it even occurs? Why did the Creator of all deign to become as insignificant as a man or even be that concerned for one of his created beings? What I have come to accept, however, is that for me, reason and faith are

***Why did the Creator of all deign
to become as insignificant as
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one of his created beings?***

both required. I have to be able to reason things out intellectually to be able to accept them. Yet I realize that there is a limit to my capability to understand. It is then that faith takes over. For me Reason leads to the doorstep but Faith takes me through into Belief.

Footnotes

1. Collins, F. 2006. *The Language of God: A Scientist Presents Evidence for Belief*. Simon and Schuster, NY.
2. Behe, M. 1996. *Darwin's Black Box: The Biochemical Challenge to Evolution*. Free Press, NY.
3. Miller, K.R. 1999. *Finding Darwin's God: A Scientists Search for Common Ground and Evolution*. Harper-Collins, NY
4. Sagan, C. 2006. *The Varieties of Scientific Experience: A Personal View of the Search for God*. Druyan, A (Ed). Penguin Books, NY

Prodigal Love

Fr. John Kavanaugh, SJ

(Reprinted with the permission of the author.)

Fr. John Kavanaugh, SJ

Father John Kavanaugh, SJ is Director of the Ethics Across the Curriculum Program at St Louis University. Ordained a priest in 1971, he obtained a doctorate in Social Philosophy from Washington University in St Louis. He has frequently published on issues of consumerism, intrinsic value, and ethics of life. He is the author of *Human Realization: An Introduction to the Philosophy of Man* (1970), *Following Christ in a Consumer Society* (1981), *Faces of Poverty, Faces of Christ* (1991), and others. A regular columnist for *America* magazine, he is also an award winning syndicated columnist. (from St Louis University web site)

(Based on the readings for the 24th Sunday in Ordinary Time, the following reflection on prodigal love and forgiveness could form the basis for new year's resolutions extending through the whole year and indeed throughout our whole life.)

“He welcomes sinners.”

The first directed retreat I ever gave was a harrowing experience. An older Jesuit had invited me to be on a team that was to direct thirty monks at a secluded monastery. I first begged off, saying I had never given a retreat before. He replied, “With that excuse you'll successfully avoid ever giving one.” Then I told him that giving a retreat to holy monks would be like

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teaching Pavarotti to sing. He didn't think that was very funny, though it did display a little pride masked as humility. Finally I said I was too young. He said that was balderdash.

As it turned out, I was right, at least on the third count. One of my retreatants, so old I'm sure he's now in heaven, announced to me on the fifth day of the retreat that he could never open his soul to me, so young and hippie-looking. What's more, from day one he had been disappointed that he had not been given a more mature religious as director. What distracted me from my ego's wounds were the marvels of the spiritual lives of these men (including my reluctant retreatant). And still vital, after almost twenty-five years, is the memory of one monk who spent a whole day wrestling with the parable of the prodigal son. "I've prayed and prayed about this, and I've found out who's really at fault in this story." I couldn't wait to hear.

"The father! He's the problem. Why didn't he ever tell the good son he was doing a good job? Why didn't he put on a lavish banquet for him? Why did he make such a commotion over a ne'er-do-well who squandered half the fortune and now will probably get another half of what rightly belonged to the first?" He had a point.

I'll certainly have a few memories to heal in heaven if I find out that some profligate or oppressor was forgiven and even given a higher place than mine. I gag at the thought that Hitler might be there. And what a surprise if Nietzsche, that inveterate atheist, like a lost and recovered sheep, shows up at the banquet. What will I do if the Marquis de Sade, a bad penny if there ever was one, is found up there like a prized lost coin?

The whole thing is disconcerting. So it must have been to those priests and writers, the Pharisees and scribes, who murmured when tax collectors and sinners -- of all people -- were gathering around to hear Jesus. "This man welcomes sinners and eats with them." Harrumph. Then he regales us with stories of a lost penitent, more celebrated than 99 of us righteous, and a recovered coin more pleasing to the angels than nine coins never lost. As a final insult, Jesus caps off his sermon with the story of that spoiled kid.

If one of my siblings returned from a wild and woolly time, I probably would have sulked and stayed away from the party too. I would have made it quite clear that

I was not enjoying the music and dance. And I wonder: Would I also refuse to join the joy, even if my father pleaded with me? Would I listen to this words? "My son, you are with me always, and everything I have is yours." Would he have to remind me of my own blindness? Of my squandering of life? Of my reluctance to celebrate the good? Of my own sinfulness?

One need not be St. Paul, once a blasphemer, a persecutor, a man filled with arrogance, to thank God for being treated mercifully in this life and hereafter. One need not be as derelict or depraved as Moses' stiff-necked bunch worshipping a molten calf, to appreciate God's forgiveness. High in grace or sunk in sin, we all know the kind of favor Jesus granted in overflowing measure. "You can depend on this as worthy of full acceptance: that Christ Jesus came into the world to save sinners."

***Each of us, in little and large ways,
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love and leave the accounting to God.***

Each of us, in little and large ways, ought to be thankful for unmerited love and leave the accounting to God. There is something good in the worst of us and something bad in the best of us, my own father used to say. He too had a point. Perhaps that is why repentance is always the start of good news. Perhaps that is why our song of God's glory so aptly follows the confession of our sins.

Glorying in God's loving forgiveness calls forth a third son or daughter in us. This would be the one who, after a life of bright fidelity, generous sacrifice, and courage in the face of great odds, comes to the heavenly banquet and sees a spectrum of other children there. Some of them have had a far easier time of it on earth. Others seem surprised at being there themselves. A few (many? all?) really didn't even deserve to be there. To each God says, "Welcome, dear and precious one; all I have is yours."

Upon being asked whether the rewards are unfair or whether she would have lived her life differently, this third child says, "No. I would do it all over again for such a God, who has such love in such bounty and beauty."

Father Brungs' Work Takes Science, Faith Seriously

Review of *You See Lights Breaking Upon Us*, pub. 1989 by the ITEST Faith/Science Press
St Louis Review, September 7, 1990

Fr. John F. Kavanaugh, SJ

(Although this review will appear in the book we are compiling and editing from letters, lectures and articles written by Father Brungs, the editors chose to print the review in this issue of the Bulletin. Commenting on the book published in 1989, Father Kavanaugh's review could just as easily have been written today in the 21st century. There is very little "dated" material either in the book or in the review.)

It seems to me that one of the major problems of contemporary life is fragmentation. It occurs at most levels of our experience: the splits between faith and action, between holiness and justice, between our private and social lives.

The splitting occurs even in the individual man or woman. We seem to have partitioned our lives, some of us concentrating on one dimension, others concentrating on the opposite. Thus it is difficult to find a person of both intelligence and passion, of both spiritual and practical wisdom, of both high technique and high emotion. It is an uncommon person whose heart soars as highly as the mind.

One of these rare people is Jesuit Father Robert Brungs, who with his team of associates, has founded and sustained the Institute for Theological Encounter with Science and Technology. ITEST is committed to overcoming the false divisions in human consciousness, by its publications and in its yearly meetings of scientists, philosophers and theologians. Such integration is mirrored in Father Brungs' own life and body. A big and impressive man who is sensitive of soul and vulnerable in health, he has worked in both theology and physics, produced two videos, and frequently written on the confluence of science and faith.

Father Brungs' most recently finished labor is *You See Lights Breaking Upon Us*, an innovative integration of bioethics and theology.

The bioethics discussion ranges issues of biotechnology, including cloning, neuroscience and especially *in-vitro* fertilization.

The sweep of theology is equally broad, from a dogma-based reflection on the Trinity and covenant to a highly focused Mariology and what might even be called mystical theology.

The book also is marked by a strong philosophy of the human person as neither totally "icon" (immutable image of God) not totally "artifact" (a wholly self-creative and self-productive being), but rather an embodied image of the covenantal God, endowed with wondrous capacities to cooperate in human development -- all as a response to the reign of God within us.

What is particularly uncommon about this book is its integrative power and inclusiveness. Where else can you find an almost devotional attention to Mary, a scientific awe before the cosmos and creation, a traditional theology of the human body and sexuality, and an acute sense of our social and political realities? The book has a reach that can only be extended through a lifetime

***...and it almost reads as a
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– which is Father Brungs' – and it almost reads as a manifesto, challenging intelligent believers who wish to encounter science as seriously as they encounter faith.

To read *You See Lights Breaking Upon Us* is indeed to be challenged: not only by the scan of many recent scientific advances, but also by the startling mix of styles in thought and discourse. Those who find the scientific

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reflections enjoyable may be troubled by the discussions of “Our Lady and His” or the theology of the human body. Those who are moved by the intense Mariology may be puzzled by its connections to bioscience.

And yet, no matter what one’s particular reservations may be about the unique integration of material or choice of traditions, it is the integration itself which is so telling and so valuable.

In knowing Father Brungs and in reading his work, which appeared for many years in the Review, I have often been reminded of the brilliant neurologist, Oliver Sacks, and his call for a “romantic science,” – a science that has rigor and scholarly power, but at the same time is marked by a compassion and wonder when presented with the mystery of even the most wounded human persons.

I think Father Brungs is a romantic scientist, in the best sense of both words.

I think Father Brungs is a romantic scientist, in the best sense of both words. His science is more rigorous than Carl Sagan’s. His theology is more mystical than Father Matthew Fox’s. The reason: he takes science and faith both so seriously and so radically and so united.

What Father Robert Brungs is reaching for is a mystical biology – a life dream quite appropriate for a passionate thinker so devoted to the word made flesh and that word’s mystical body.

You See Lights Breaking Upon Us: Doctrinal Perspectives on Biological Advance. Still available for purchase from ITEST.

ITEST Web Site Update

The newly designed ITEST web site should be on-line by late January. The site which will be located at our current web address www.faithscience.org has been totally reworked and reorganized. The site overviews the various elements of ITEST.

Bill Herberholt of Graphic Masters in St. Louis, organized, updated, and created the PDF’s and the new web pages.

The largest section of the site is Media. This section categorizes the variety of information available from ITEST. This information was gathered over a period of 40 years at ITEST and is organized into a logical, easy-to-follow list of categories. Much of this information will be available as Acrobat PDF downloads.

The available information includes:

- (a) Over 60 articles including abstracts in PDF format. These articles were previously published in the ITEST quarterly bulletins and are available for download.
- (b) A listing and description of the ITEST Books. These books of proceedings are available for purchase. Also available will be three out-of-print books in their entirety on the web.

The Vineyard: Scientists in the Church co-authored by Father Brungs, SJ and physicist Sister Eva-Maria Amrhein;

Readings II in Faith and Science

Transfiguration: Elements of Science and Christian Faith

- (c) A List of DVD’s: The three-time award-winning *Lights Breaking: A Journey Down the Byways of Genetic Engineering (1985)* and *Decision: Scientists in the Church (1987)* and the 1990 interview with Father Brungs, SJ, *Faith/Science: Conflict or Confluence.*

We are in the final stages of completing the site and will be updating the reference links on our site. If you have suggestions for a link relating to science/technology and religion/faith, or if you have a web site of your own, please send us the URL and we will consider adding it to the list.

Special thanks to three of our pioneer web masters: Ted Stahl, of St Louis University, who guided us in our infant days, Jeff Geerling, a seminarian at Kenrick, in St Louis, who gave us a new look and Dr. Greg Pouch who took us to a new level. They all contributed something special and important to the developing web site culminating in the professional skill and proficiency demonstrated by Bill Herberholt, our present web designer.