



Institute For Theological Encounter With Science and Technology

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The Extraordinary Dwells In The Ordinary

Once again the liturgical calendar reminds us that we are back in Ordinary Time. It's a time to step down from the "high" of Easter and Pentecost into the pattern of the ordinary, everyday even humdrum rhythm of life. Yet extraordinary events do happen during this "off season."



Recently I had the rare privilege of accompanying a close friend and colleague on the last stage of his life on this earth as he journeyed to his resurrected life in Heaven. Diagnosed with esophageal cancer two years ago, Robert Greenley, long time ITEST Board member and officer of the corporation, fought with extraordinary strength and vigor through two years of chemo therapy designed to halt the advance of the disease. In the spring Bob called with the good news that the latest tests showed him to be cancer free. However, the treatments took a toll on his body and after a period of slow decline, Bob died at home in hospice care on July 21 at 12:45 PM.

Extraordinary! Certainly! Our late director, Fr. Brungs, often said that Bob and Judy Greenley, witnessed through their marriage the truth of the "two in one flesh" — symbolizing the love of Christ for his Bride, the Church. To see them together — yes, after more than 50 years of marriage — was a lesson in the give and take of living as husband and wife, raising three children, Leslie, Chris and Peter and coming through it stronger, wiser and still with humor. The mutual strength that joined them together was evident during the last two years of Bob's life. But mostly Judy was there — a truly valiant woman—especially during the last trying and heart wrenching days. As she watched her husband grow weaker and weaker, she seemed to gain a strength that simply sang the Gospel passage, "...I am with you all days..." "My strength is sufficient for thee..." And God did strengthen her. Very simply: Love does such things!

During the ITEST 40th anniversary conference, 10 months before his death, Bob, a scientist with a deep living faith, nonetheless posed a complex question at one of the discussion sessions. "As one begins to mature, one wonders what's next. And we all know somewhere down the line, something is 'next'." He mused, "Where is this place we are going — Heaven." "My question is," he continued, "can a soul exist without a material chalice to hold it? In other words, can a soul exist without a body? What is the life of the soul after its original 'chalice' disappears from the earth?" How many philosophers, theologians, scientists and others have asked that same question through the long history of the human race? Yet, the question still hangs there waiting for a resolution. Eye has not seen nor ear heard what awaits us in the resurrected life. C. S. Lewis was fond of saying, "It is not a lack of faith (in the resurrected life of Heaven) it is a lack of imagination."

Citing Fr. Brungs again! The words he wrote to a woman whose husband had died apply very appropriately to Bob and Judy Greenley. "The love you had for each other and the great care and delicacy you showed each other was a superb gift to those who were privileged to view it." An extraordinary blessing! Bob has responded with joy to these familiar words, "Come, Bob, blessed of my Father, enter into the joy of Heaven"

"And the people that were in the depths arise from the dead and announce to all the hosts of heaven: 'The thronging choir from earth is coming home.'" (Hippolytus of Rome) Rest in the peace of the Lord --- In the Resurrection and the Life—An extraordinary blessing in ordinary time!

Sister Marianne Postiglione, RSM,
Editor: ITEST Bulletin

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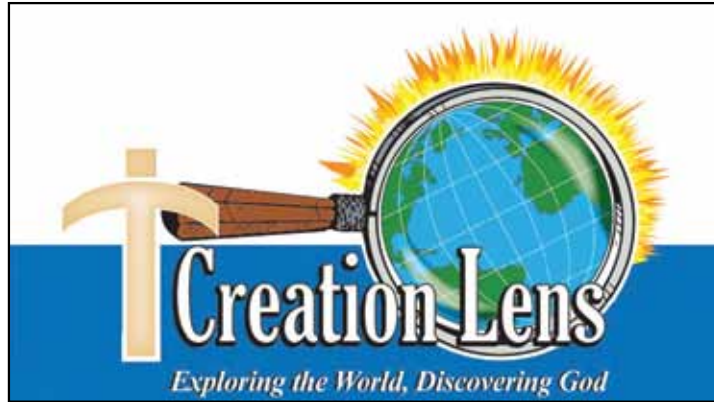
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Announcements

Good News From Our Sunday Visitor Institute

Rejoice With Us!

In a letter dated August 2, 2009 and signed by Jerome Kearns, Executive Director of OSV Institute, ITEST learned the good news that we would be receiving a check in the amount of \$125,000 to fund the first year of the second level of our project, *Exploring the World, Discovering God* (EWDG), faith/science interfacing modules for Grade 5 through Grade 8. We have experienced marked success in promoting the lessons from the first level: K-4th grade on our web site, www.creationlens.org with a tally of close to 100,000 actual lessons downloaded from English speaking countries around the world.



perhaps a school in your parish or city who would benefit from this program, would be a prime candidate.

As you recall, this was the dream and vision of our late founder and director Father Brungs, SJ. Reflecting on the history and accomplishments of ITEST over the years wrote in 2005 “Even

though ITEST has been successful in meeting the goal of helping to inform the churches about what is going on in the laboratories around the world, it now seems to meet only a small part of the need. The real need is *evangelization* and everything that that implies, especially educating for our laity (starting with the youngest among us) in things concerning science *and* faith.



We want you to become more actively involved in this most important project: educating young people in “solid” science and in the truths of the faith by recommending home schools, private, parish and parochial schools (Christian/Catholic) whose faculty would participate in our Creative Teacher Think Tanks (CTTT) conducted in regions around the country and becoming pilot schools to test the lessons created by the teachers. Contact us with your suggestions—

We can’t start too early to teach children that God loves them and to let them know that God’s creation is the only tool at God’s disposal to interrelate with us. Creation is the thread that binds us to God and God to us.”

One year later, with words breaking into a lyrical song of



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God's creation: "We can sing to the children of the gifts God has given them and us in the stars, the galaxies and all the celestial inhabitants. We can sing of the fury of their being and of their orderly procession through the heavens. We can look within and see the almost infinite delicacy of our bodies. We can relate these gifts of God to the imagination of the young. We can express a little of the love which God has bestowed on them in creation and in redemption. If we can get children interested in God's beauty and in



God's concern for them and *all* of creation, we should have 'captured' them for life."

We are including some of the photo "memorabilia" we've collected during the past three years of the program as it was tested in St Louis, Missouri, San Antonio, Texas, Lowell, Michigan and Prairie Village, Kansas. We have confidence that we will be expanding our library as we expand our reach to include a wider range of schools from regions of the east and west coast as well.

Technology – Old But Still Alive And Kicking

S. Marianne Postiglione, RSM

During summer vacation a few months ago, I was transported or rather "catapulted" to the early 20th century, 1904 to be exact. No, I wasn't abducted by "mad scientists," as C.S. Lewis describes in volume one of his space trilogy, *Out of the Silent Planet*. Rather, I found myself in a "museum" housing close to 30 phonographs of all sizes and shapes along with hundreds of recordings spanning the time of Thomas Edison's wax cylinder recordings to the advanced technology of the 1990's. Sorry, no iPod yet resides in this museum. Since ITEST encounters science AND technology, it is fitting to recount my unique experience with the marvels of early 20th century technology.

Many years ago my first teaching assignment at a new diocesan co-ed high school in Attleboro, MA, Bishop Feehan, brought many surprises. The first year we opened with a freshman class of 250 and six fulltime teachers. In that class was a student we affectionately called "our little professor." He was probably among the brightest students that even our "veteran" teachers had taught. That was a bit off-putting to a first year teacher who was a mere 10 years older than her freshmen students and often only two pages ahead of them in the textbook. We learned that this young 13 year old had an unusual hobby — collecting old phonographs, restoring and repairing them as needed.



More than four decades later, responding to an invitation from this former student, Ron L'Herault, I found myself among an abundance of antique phonographs, many fashioned from rich mahogany, nestled in every nook and cranny in his two story Cape house where dust motes danced on the shafts of sunlight streaming through recessed windows. The teacher received a lesson in "advancing technology" from a student. Not only did I receive a fascinating description of each phonograph, I also had the

pleasure of playing a Scott Joplin Rag on the old upright piano and recording it on a wax cylinder. Shades of Edison and the early 20th century! Weeks later, as I listened to the sound recording converted to a CD, I was intrigued by the sound from the wax cylinder – so primitive according to our 21st century standards – yet so satisfying. I marvel at the ingenuity of human beings, like Edison, and other technological geniuses, who with their God-given talents have made our lives richer and fuller.

Here I invite my former student to speak for himself; I asked him to give us some background on how he became interested in this technology and on the early development of the Edison cylinder itself.

Ronald L'Herault is the Lab Supervisor, Restorative Sciences/Biomaterials, Boston University, Goldman School of Dental Medicine.

I started collecting phonographs when I was 13 and now have 27 older machines dating from around 1898-1928. All but two are operable.

Edison invented the phonograph in 1877 using Tin foil as a recording medium. By 1879 Edison was busy with his electric light experiments and it was only the fact that Bell and Tainter had improved the phonograph that caused Edison to revisit his invention. Chichester Bell and Sumner Tainter, employees of Alexander Graham Bell, came up with a paper cylinder with a wax coating on which to record the sound. By 1887 Edison and his staff had created a wax cylinder phonograph powered by an electric motor (using a battery for the source of electricity). There were some water powered and treadle powered — think sewing machine here — phonographs in the early 1890s but by the mid 1890s, several other inventors had developed workable spring motors. Apparently, according to George Frow (*Edison Cylinder Phonograph Companion*, Stationary X-press, 1994) the main problem was developing a good governor, the device that allows the motor to maintain a constant rotational speed. One of the earliest successful models of Edison phonographs is the *Home*. I have two, one called the “Suitcase Home,” from about 1898 and another, The Home, model D, from 1908. The latter machine was used to make your recording of the *Weeping Willow Rag*.

Many experiments were carried out to come up with a suitable wax for records. Some that appeared promising ended up oozing chemicals as they came in contact with moisture in the air. Once a good formulation was made,

it was used to make recordings from the 1890s until 1904 when “Gold Mould” records were introduced. (see photo below) Before records were mass produced by the “Gold Mould” method, each record was made individually. Often a bank of several recording phonographs would run simultaneously to produce several records at once. The same song was repeated over and over to build a stock of records. By 1904, however, Edison had developed a way to record on wax, making the wax conduct electricity by a gold sputter coating process and then using this to form a



master by an electroplating process. The master “form” was then used to mold hundreds of wax cylinders. The earlier wax formulation continued to be used for commercial recordings and was sold for use in home recording. Even before Edison was molding wax, a couple of inventors developed a method of molding Celluloid, a material Edison would like to have used, but he filed his patent a bit too late. He did eventually use it after the initial competing patents expired.

On the CD of your recording, I also included an early brown wax commercially made record and a “Gold Moulded” record of a piano solo. I think what we did holds up pretty well sonically with the commercially made cylinders.

Which Way for Health Care?

Thomas P. Sheahan

(Reprinted with permission from *The Catholic Review*, Archdiocese of Baltimore)

In recent months, As Congress discusses health care and how to change it, attention is being drawn to the continuing escalation of costs. The nationwide feeling that “we’ve got to do *something!*” arises from noticing that medical costs are rising much faster than any other sector of the economy.

We may ask “why?” The contributing factors are: greater life expectancy, burdensome paperwork, and especially *defensive medicine*. That’s where a physician feels it necessary to “cover all bases” by ordering multiple marginally interesting tests. It’s driven entirely by the fear of lawsuits. Healthcare would be much cheaper if it weren’t for *defensive medicine*.

A doctor faces the very grim reality of getting sued into bankruptcy if he or she misses a diagnosis, and that’s what causes the defensive strategy. It’s not clear how people got the idea that doctors must be perfect – that characteristic belongs only to God. However, people often quip about a doctor “playing god,” and hence expect perfection. That may be incorrect reasoning, but very large financial awards testify that plenty of jurors think that way. Any error by a doctor is a “fortune cookie” for a patient.

Being a doctor in clinical practice can be a precarious profession unless a great rampart of protection against lawsuits is in place. To begin with, doctors pay for expensive malpractice insurance. In addition, they must also engage in defensive medicine. That absolutely needs to change; doctors can’t conduct their practice with a sword hanging over their necks.

The solution to the problem is to take the fear of lawsuits out of the picture. If it weren’t so easy to use hindsight and sue a doctor for not being perfect, then doctors would cease ordering expensive long-shot tests. What we need is “tort reform.” Make it almost impossible to sue a doctor; take away the catch-all charge of “negligence.” The criteria for suing a doctor should be greatly tightened; the burden of proof could be shifted so that a plaintiff must *prove* that the doctor was deliberately trying to do harm. When lawsuits start getting dismissed, malpractice insurance costs will drop, and irrelevant unnecessary testing will cease.

Unfortunately, tort reform is nearly impossible to pass through any legislature, federal or state, because they’re always made up primarily of lawyers, who oppose tort reform.

Now consider the alternative: allow the lawsuit game to continue, but find some other way to cut medical costs. What options are available? The primary way to reduce costs is to provide less medical care than is customary now. That’s what we call “rationing,” and the obvious urgent question is “who will be those disfavored people who lose out in the rationing?”

That very stark choice (between tort reform and rationing) needs to sink in. Health care has to follow one path or the other.

In the past, withholding care and letting someone die was “unthinkable.” But in the absence of tort reform, with costs spiraling out of control, the situation is unstable, and something has to give. Already there are statistics suggesting that 80% of medical expenses occur during the last year of life. That final year is an obvious place to save money by withholding treatment. A taxpayer at age 40 doesn’t think much about living to be 83 or 83 ½. There will be creeping “adjustments” devised by medical-ethics boards that will effectively bring about rationing of health care. The definitions of “futile care” will expand to cover more and more conditions of old age. Patients with Alzheimer’s or ALS will be painlessly terminated, and everyone will “be understanding.”

The reality will become that old people will be expected to die and get out of the way. That should not really be surprising; it has been the accepted custom in China for thousands of years, where human life has much less value. In America we thought we were better than that. But financial limitations are going to force the change in ethical values. Even in Catholic hospitals, long presumed to be respecters of human dignity, an ethical squeeze will occur.

The only way to avoid this gloomy future is via tort reform. It will take a colossal grass-roots effort to convince Congress to move in that direction.

Seven Secular Challenges Facing 21st Century Catholics

Father Val J. Peter, JCD, STD

(Paulist Press, 2009)

Reviewed in Catholic News Service in May, 2009 by Jesuit Father William J. Byron, SJ,
University Professor of Business and Society at Saint Joseph University in Philadelphia

Father Val Peter is outspoken, energetic, always thinking and acutely aware of what's going on in the world. From 1985 to 2005, he was executive director of what used to be known as Father Flanagan's Boys Town in Omaha, Neb. It was later renamed Girls and Boys Town and then went back to simply Boys Town in 2008.

This safe haven for troubled youngsters—on the Omaha campus as well as at sites in 14 other states and the District of Columbia—provides family-style living, a first-class educational experience through high school and spiritual formation for thousands of boys and girls ages 10-17 who are admitted through juvenile courts or social service agencies.

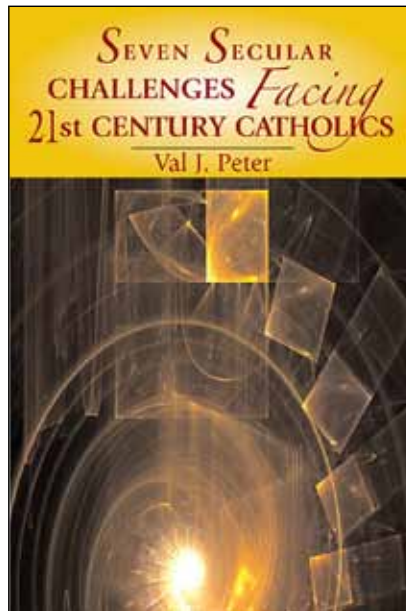
Preference goes to those who have no natural or adoptive parents; many have been physically abused and most have been involved with the courts.

Father Val Peter now runs a Los Angeles-based national coalition of organizations call Character Counts! An astute observer of life in the church and secular world, Father Peter's recently published book titled *Seven Secular Challenges Facing 21st Century Catholics* is well worth reading.

He sees “seven critical areas and challenges where our culture is not enriching, but rather diminishing our lives.” There are:

- (1) Diminished respect for authority.
- (2) The widespread belief that one is free to experience everything.
- (3) Cynicism
- (4) Mistaken ideological beliefs.
- (5) Learned helplessness.
- (6) Anti-intellectualism.
- (7) Political correctness.

“Learned helplessness” is the label Father Peter puts on the conclusion that “There is nothing I can do to make



things better. And the “mistaken ideological beliefs” he identifies include totalitarianism, the MTV culture and terrorism.

Father Peter suggests that the Catholic Church is in possession of an untried remedy to all these problems, namely, Christian idealism. I'd like to let him speak for himself: “More than anywhere else I have learned the lessons of a long spiritual journey (of reform and renewal that the church must take) from my years at Boys Town. I have seen thousands and thousands of young people come to us, all of them filled with anger, loneliness, frustration and the loss of hope, living in a postmodern culture: antiauthoritarian and cynical

“They fee free to experience everything.

They embrace MTV's ideology. In some ways they are hopeless. Victims.

“These lives are reduced to a single narrow focus: Should I destroy my life (drugs, sex and alcohol) or go on? Is it worth the effort to swim against the tide of pain and despair, alienation and dysfunctionality: Or shall I curse God and die?

“Because of their past, they believe that love (even God's love) has to be merited, and they are convinced they are unworthy.

“This is the lie Adam and Eve believed when they hid themselves from God in the garden.

“Our job is to help them choose life.”

Choosing life is not easy for anyone, young or old, who cannot see what the really good life is.

I think of the good life as the life that is lived generously in the service of others. That's a fair description of how Father Peter has chosen to live his very productive life. That's why his advice to 21st century Catholics on choosing life wisely and well is worth considering.

Logical Faith Introducing a Scientific View of Spirituality and Religion

Joseph P. Provenzano and Richard W. Kropf

(iUniverse, Inc., 2007)

Reviewed by Jozef Bicerano, PhD, Bicerano & Associates Consulting, Inc

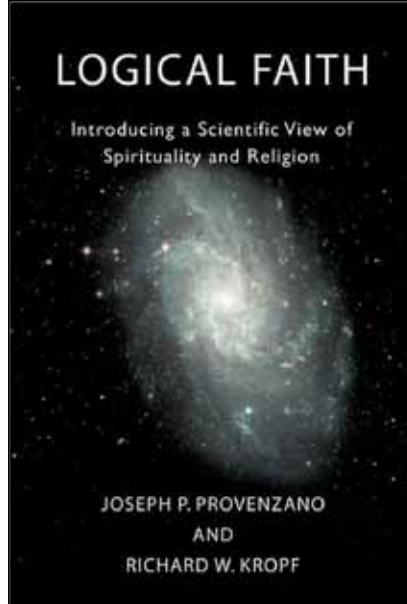
“Logical Faith” provides a concise, incisive, and thought-provoking scientific view of spirituality and religion. It begins by showing the inadequacies of the familiar and conflicting “belief” and “science-only” paradigms. Then it proposes a third paradigm, which the authors name the “conscious energy” paradigm, as an attempt to provide a more comprehensive and well-integrated understanding of all aspects of our existence, that is rational and grounded in scientific knowledge.

The conscious energy paradigm is based on the authors’ intriguing (and reasonable but debatable) hypothesis that *“there is a single, underlying reality in the universe, which consists of energy in its various forms, and that energy can exist in a conscious state”*. It leads to three propositions whose implications are worked out:

A thoroughly evolutionary perspective is adopted, leading to the fundamental premise that human nature is incomplete and still evolving. Deep down inside of us as human beings, there is a hunger for and a drive towards something that is missing. This drive is at the root of much of our endeavors as human beings; including sexuality, the arts and more generally the search for beauty, the sciences and more generally the search for knowledge, and the desire to be a part of a community. Spirituality is a logical outgrowth of this entire broad spectrum of the human quest.

It is emphasized that we don’t exist entirely unto ourselves. We are, instead, each a part of an interdependent web of all existence. Consequently, our thoughts and actions have repercussions all around us for good or ill, whether we are aware of it or not. Clearly, there can be no such thing as a strictly private religion or a strictly private spirituality if this perspective is adopted.

A giant leap is then taken from the rational and science-based worldview promulgated by the first two propositions towards a “logical faith” by adopting



the additional (and reasonable but unprovable) proposition that there is an ultimate meaning to our existence. While the authors do not demand the reader to accept any specific creed or dogma, the love of a Creator and of all creation is at the center of their faith in the existence of an ultimate meaning,

The authors describe how the adoption of such a “logical faith” by increasing numbers of people may inspire a determination and a self-transcendence that may lead to transformations of lasting value in the spiritual lives of individuals, in the quality of human institutions, and in the expansion of mutual understanding between societies and cultures that can help enhance peace throughout the whole world.

The authors are progressive Catholics. Provenzano is a scientist who has a strong interest in theology. Kropf is a theologian who has a strong interest in science. The religious tradition in which they are both rooted has clearly been instrumental in the development of their thoughts. Especially strong in their thinking is the influence of the scientist and theologian Teilhard de Chardin. The book, however, has a truly universal appeal. This reviewer (a scientist and a Unitarian Universalist) found it to be truly rational, as well as inspiring and uplifting, and enjoyed it very much. It is recommended with great enthusiasm to anyone who is interested science, religion, and how they can complement each other to help in individual spiritual growth as well as in the development of a more enlightened and more peaceful world.

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Logical Faith Introducing a Scientific View of Spirituality and Religion

Joseph P. Provenzano and Richard W. Kropf

(iUniverse, Inc., 2007)

Reviewed by Thomas P. Sheahan

This very short book exhibits considerable originality of thought as the authors strive to reconcile disparate views about humanity and religion. They begin by noting that neither the standard traditional religious perception of reality, nor the totally “science-alone” outlook, is sufficient; and then develop a way to transcend those limited view with a “third paradigm” that takes an upward step. They emphasize “conscious energy” as the key to understanding how evolution produced human beings. Their approach draws upon the insights of Teilhard de Chardin, which leads them to formulate a notion of what true fulfillment means for a human being.

Provenzano is a scientist and Kropf a theologian, and a major purpose of their book is to tackle an issue that is right at the heart of the struggle between opponents in the science and religion camps: what survives bodily death? Materialists would say “nothing”; Traditional religion answers “the soul”; but the concept of the soul, which dates back to Plato, is very unclear to contemporary mankind.

The approach of Provenzano & Kropf and their “third paradigm” is to emphasize that self-conscious energy is “a new state of energy with its own properties [which] could, in principle at least, exist apart from its physical origins.” Oddly, they never discuss the role of *information* in forming their picture of conscious energy. Still, their goal is to reach a state of consciousness that transcends physical limits. There is a spiritual evolution going on, which leads to a new unity among people that is a true fulfillment of the human being. “Self-transcending love, in which one largely forgets self, alone can transform us to the point where we might survive bodily death.”

Readers familiar with Teilhard will recognize the difficulties encountered when using scientific terms but attaching a new meaning that is beyond the confines of science. Teilhard’s *radial energy* never gained traction among scientific materialists, because it was not accessible via conventional scientific measurements, but only could be discerned via the collective phenomenon of consciousness. Consequently, Teilhard’s synthesis could always be brushed aside as “speculation.” Here, Provenzano & Kropf face the very same problem and risk the very same rejection.

Very similar to Teilhard, they see a purpose to evolution, a built-in direction despite both randomness and deterministic mechanisms, leading upward to human consciousness, which is a separate state of being. Again like Teilhard, Provenzano & Kropf try to look over the horizon toward the future. They foresee a higher level of religion, into which separate contemporary religions must be subsumed. In a chapter discussing the limitations that religions suffer, they cite Karl Rahner about how a revelatory experience is not transcribed accurately, and point to the inadequacy of language: “The highest level or stage of faith is that stage which has been brought on by some kind of self-transcending experience of God. Yet one of the major effects of such an experience is to greatly cast in doubt the adequacy of any language about what has been experienced.” Then they point out that inadequate structures of thought obstruct “attempts to express the transcendent dimensions of reality.” For there to be peace among competing religions, advance in this direction is necessary.

The final chapter focuses explicitly upon Christianity, and upon the understanding of “the nature of Christ” in the early church councils. Provenzano & Kropf put forth their own interpretation of Jesus’ nature, based on the notions developed in previous chapters: Jesus is the *completion* of humanity. Tying together theologians across the ages, they state that our own purpose is to *participate* in the life of God.

Logical Faith also contains a 2-page epilogue that acts as an “abstract” to give a quick summary. There is a bibliography with annotations telling what each text is about.

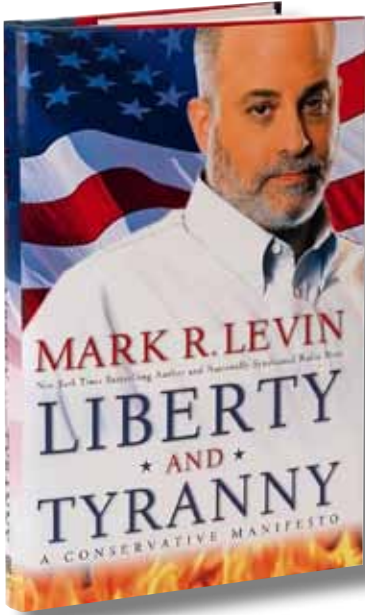
The most significant value of *Logical Faith* is in showing that it is feasible for a scientist and a theologian to blend their outlooks together into a synthesis that hangs together. As a reviewer, I give Provenzano & Kropf high points for originality. It is no easy task to bridge across the split between two very opposite world-views (scientific materialism vs. traditional expressions of religion). They come up with a “new paradigm” that has several attractive features. The reader who accepts their invitation to view the universe, humanity and religion through their prism need not come away convinced, but will certainly have plenty to think about. This book helps to promote serious dialog.

Liberty and Tyranny

Mark R. Levin

(Threshold Editions, Simon & Schuster, 2009)

Reviewed by Thomas P. Sheahen



Mark Levin, widely known as a radio talk-show host, has written a valuable new book that supports the relevance to contemporary life of American principles of self-government. It is a refreshing change from the frequent attacks and ridicule directed at “traditional values,” so common in the popular culture and media. Levin explains where our principles came from, why they need to be preserved, who is attacking them, and why. He understands

quite clearly what the attacks are doing, and hopes that once we grasp where America is headed, we’ll change it in a better direction.

For many years there has been a very negative influence on America by people who hold the worldview known as *scientific materialism*, which is closely allied with *secular humanism*. These philosophies begin with the notion (actually *their own belief*) that atoms and molecules are all there is, that everything we might call “values” are nonexistent. They hold religion in contempt, and figure that God is irrelevant, unconcerned, absent or non-existent. Nor do they give any credence to Natural Law, asserting instead that man merely contrived all that we term “civilization.” They think that the road toward perfection runs entirely through human endeavor. They espouse a very strong government, which knows what’s best for all the ordinary citizens, and exerts control over their own lives (for their own good, of course).

Mark Levin calls the collection of people who think this way *statists*, and his book is devoted to explaining what’s wrong with their viewpoint, and how it is strongly opposed to the principles of liberty on which America was founded. His early chapters look at the Declaration of Independence and the Constitution, and show how the *statists* have driven

America away from those principles. In his chapter on the religious background of America, Levin explains how activist judges forced disruptive changes in society that favored anti-religion, certainly not what Americans wanted.

I particularly liked Levin’s chapter 8 on *Enviro-Statism*, where he describes how a zealous belief in environmentalism leads to interference by governments, resulting in serious harm. He traces the events that led to the banning of DDT, which caused the resurgence of malaria, resulting in the deaths of countless millions. That was a horrible example of overreach based on inadequate science, which should never be allowed again. Contemporary issues like global warming and the accompanying calls for government control are also discussed in that chapter. Was it Churchill who said that those who do not learn from history are condemned to repeat it? The parallels are striking.

The concluding chapter, a *Conservative Manifesto*, assembles the central themes of the other chapters into a blueprint for action.

The chapters are typically 20 pages, and it’s not mandatory to read them in sequence. Levin’s writing style follows a good pace, and the reader seeking more details can turn to adequate reference citations.

The presumptive audience for “Liberty and Tyranny” would be listeners to Mark Levin’s radio broadcasts. However, this book is quite accessible by a much wider age-range of readers. It makes an ideal graduation present for a high school student with some grasp of American values and history. A student bound for college is sure to encounter various professors who hold *secular humanist* positions. They’ll influence lots of students, often with arguments cloaked in “the mantle of science” – even if their science is nonexistent or incorrect. For an early college student, it’s not obvious how to go up against that, and thus anyone striving to defend traditional values and principles needs to prepare. Reading Mark Levin’s “Liberty and Tyranny” can be a helpful start in that direction.

The Jesuit & the Skull

Amir D. Aczel

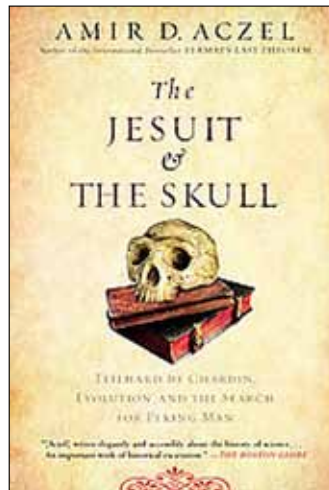
(Riverhead Books, 2007)

Reviewed by Fr. Albert Bruecken, OSB

A Couple of Chapters Short of a Classic on Teilhard de Chardin

This is my first experience reading Amir D. Aczel, and I find his style most attractive: he tells a good story. He explains scientific concepts clearly and simply. He has chosen a fascinating person to describe: Pierre Teilhard de Chardin, a Jesuit priest, a world renowned paleontologist, and a charming and enigmatic man of the world. His account requires that he explain/summarize parts of geology, paleontology, carbon dating, anthropology and some other scientific disciplines, and he has done this well. At the same time Aczel recounts the fascinating story of a Jesuit priest who felt he was able to synthesize both science and religion. His account leaves me wanting to go out and read all I can of the writings of Teilhard (I feel science and religion need not be in conflict), and also to try to keep up with the latest discoveries in paleontology. The story he recounts also conveys the excitement scientists feel in putting the pieces of the fossil puzzle together and the key role evolution plays in helping them to do that.

Aczel makes the point that Teilhard's greatness rests in part on his belief that he could reconcile religion and science. This vision made him popular among many intellectuals in Europe. Unfortunately, he fell into disfavor with the Vatican and with the Jesuit Order in attempting to articulate this synthesis. My disappointment with Aczel's book is that he did not go into that controversy and explain either



the synthesis or the real differences/issues that Teilhard had with the Church: Questions like “What is original sin?”, “Where did Teilhard's view diverge from the Catholic view?”, and “Was this a misunderstanding or is there actually substantial matter over which they disagreed?” are pretty much off limits to this book. Instead, he settles for the somewhat trite characterization of “the brilliant revolutionary thinker vs. the static atavistic establishment” as a way to explain the controversy. What a missed opportunity!

There are two sides of this issue, and it would have been illuminating to present both and let the reader decide which he/she preferred.

It would also have been fascinating to see the actual essentials of Teilhard's synthesis of religion and science. For example, I suspect that most evolutionary biologists would find Teilhard's insertion of a divine driving force into the mechanism of evolution to be just as ‘heretical’ to evolutionary theory as the Catholic Church found his treatment of original sin. But we are left in the dark about the vision and the content of theological discussion.

Perhaps Mr. Aczel did not feel competent in dealing with theological issues. He does say parenthetically that Catholicism teaches that “sex is only for procreation,” [p. 190] which is wrong—the classic teaching states that sex has both unitive and procreative dimensions. And original sin is really a fascinating topic, as it attempts to show how moral evil can enter the world created by a God who is all good—a timeless issue. In any case, I wish that he had read the critique of Teilhard's works that he describes in the Prologue, then sought help in understanding both sides of the issue, so that he could have presented them to us, rather than fall back on the much easier explanation insinuated by comparing Teilhard's plight with Galileo's. This is neither helpful nor illuminating to understanding the issues at stake. Nor does it help us who would like to take a stab at our own synthesis of religion and science.

However, if you are interested in the fascinating person of Teilhard de Chardin, his struggle to remain obedient to his superiors in the Church, his career and contribution as a paleontologist, this book makes all those things accessible, and is a good read.

Fr. Albert Bruecken, OSB

Chemist, Monk and Vocation Director are some of the titles credited to Father Albert Bruecken, OSB, who resides at Conception Abbey in Conception, Missouri. A member of the Order of St. Benedict and a long-time ITEST member, Fr. Bruecken's interests lie, not surprisingly in astronomy, chemistry and faith and science. He earned a PhD in Inorganic Chemistry from the University of Missouri-Columbia in 1987 and taught mathematics and natural sciences at Conception Seminary College. He has also served over the years as Director of Admissions, spiritual advisor and director of postulants. Among his publications, his most recent work, co-authored with Christopher Anadale deals with the Missouri Stem Cell and Cures Initiative. It may be accessed in Life and Learning XVII: Proceedings of the Seventeenth University Faculty for Life Conference (2008), pp. 615-634.

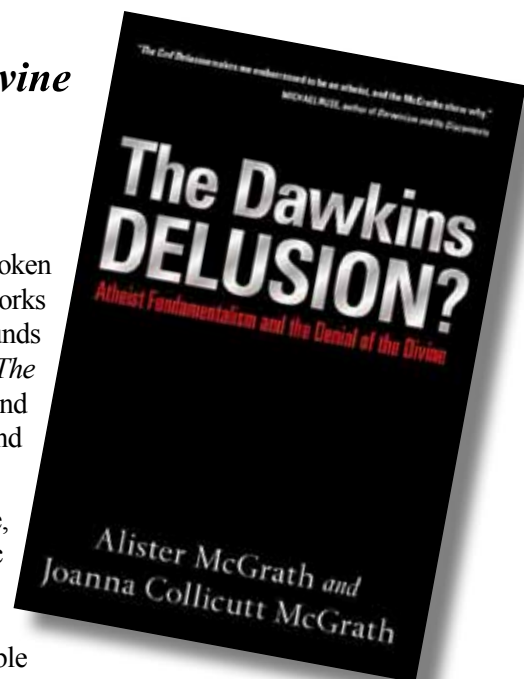
The Dawkins Delusion?

Atheist Fundamentalism and the Denial of the Divine

Alister McGrath and Joanna Collicutt McGrath

(Intervarsity Press, 2007)

Reviewed by Thomas P. Sheahen



The atheist Richard Dawkins has gotten a lot of media attention by his outspoken attacks on religion, most notably in his book *The God Delusion*. Television networks and other media seem to have enjoyed promoting the controversy that surrounds his book, but few have looked carefully at what Dawkins actually says. In *The Dawkins Delusion*, professors Alister and Joanna McGrath provide a succinct and direct critique that explains clearly why Dawkins' attacks are both superficial and incoherent.

The Dawkins Delusion takes a careful and much-needed look at Dawkins' message, points out his many factual errors, and exposes the pattern of extreme atheistic fundamentalism that permeates *The God Delusion*. As they say toward the end of the book, "Atheism must indeed be in a sorry state if its leading contemporary defender has to depend so heavily—and so *obviously*—on the improbable and the false to bolster his case" (95).

The McGraths make refuting Dawkins look easy. In a text of less than one hundred pages, they systematically dismantle each of Dawkins' major assertions. It becomes clear that Dawkins writes books to appeal to those who are already his followers. Dawkins never actually examines *real* religion, but instead creates a negative stereotype and attacks that. The McGraths dissect the pretexts of Dawkins by carefully following his arguments and showing where and how the errors arise. Their analyses of Dawkins' assertions are thoughtful and persuasive.

The Dawkins Delusion is divided into only four chapters. A brief introduction acknowledges Dawkins' success as a popularizer of science, and specifically addresses the similarities of outlook, approach, and thought between Alister McGrath and Dawkins. This is important, because it sets the stage for showing how two individuals with comparable intellectual backgrounds can begin at similar points and wind up with totally different conclusions. While noting the custom of respecting the other fellow's viewpoint, by page 11 the McGraths have begun dismantling Dawkins' arguments. They decline to refute Dawkins' four-hundred-page tome point by point, calling that enterprise tedious. Instead they use selected examples to build their case.

Moving swiftly through the chapters that follow, the McGraths contrast Dawkins' inflamed rhetoric and misrepresentations with simple reality. Grandiose assertions by Dawkins are exposed as dogma of a different kind. Responding to Dawkins' notorious statement that religious education is child abuse, the McGraths write "this whole approach sounds uncomfortably like the antireligious programs built into the education of Soviet children during the 1950s" (21).

The McGraths acknowledge the validity of some points raised by Dawkins, but show how Dawkins carries them too far and jumps to unwarranted conclusions. In chapter 1, "Deluded about God?" for example, they talk about Dawkins' attack on the "God of the gaps" approach to Christian apologetics, the view that an idea of God needs to be proposed to deal with the gaps in our scientific understanding. They show how Dawkins "weakens his argument by suggesting that all religious people try to stop scientists from exploring those gaps." The McGraths agree that the "God of the gaps" argument is a weak approach to "how the God hypothesis makes sense of things" and suggest that there are many better ways of dealing with this question. Oxford philosopher Richard Swinburne, for example, argues "that the intelligibility of the universe itself needs explanation. It is therefore not the *gaps* in our understanding of the world which point to God but rather the very *comprehensibility* of scientific and other forms of understand that requires an explanation" (29–31).

Chapter 2, "Has Science Disproved God?" is particularly helpful, because standard media hype has it that science makes this claim, and the public often perceives science as the enemy of religion. Dawkins' view is that science is unlimited, "it is the only reliable tool that we possess to understand the world" (35). But the McGraths draw from a wide spectrum of sources to show that science does have limits, that "scientific theories cannot be said to 'explain the world'—they only explain the *phenomena* that are observed within the world" (38). They also discuss how diverse philosophers have grappled with serious questions outside those limits.

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One example illustrates especially well how Dawkins and others inject their science with value judgments and metaphysical statements. The McGraths describe how Dawkins and Denis Noble, an Oxford systems biologist, took the same empirical evidence about human genes and drew opposite conclusions from it. In an earlier book Dawkins described the “life” of genes in the body in such a way that it seemed natural for him to conclude that our genes “created us, body and mind; and their preservation is the ultimate rationale for our existence.” Noble rewrote Dawkins’ text sentence by sentence, holding to the same scientific facts but cogently drawing the opposite conclusion: “We are the system that allows their code to be read; and their preservation is totally dependent on the joy that we experience in reproducing ourselves. We are the ultimate rationale for their existence” (36–37). By letting the reader closely examine the Dawkins and Noble texts side by side, the McGraths show clearly how Dawkins overreaches. Additional examples are taken from Paul Davies, Francis Collins, and Owen Gingerich, each demonstrating that science has *not* disproved God. In situations where Dawkins sneers at those he considers intellectually inferior, the McGraths point out how unwarranted his stereotyping is.

Dawkins’ claim to speak for all scientists is unfounded: “There is a massive observational discrepancy between the number of scientists that Dawkins believes should be atheists and those who are so in practice. . . . Dawkins is driven by his core assumption that *real scientists must be atheists*. . . . [This view] just represents the triumph of dogma over observation” (44–45). The McGraths go on to explain how Dawkins is “entrenched in his own peculiar version of a fundamentalist dualism” (48).

Having identified the similarity of Dawkins’ position to religious fundamentalism, the McGraths observe that “one of the greatest disservices that Dawkins has done to the natural sciences is to portray them as relentlessly and inexorably atheistic. They are nothing of the sort; yet Dawkins’ crusading vigor has led to the growth of this alienating perception in many parts of North American conservative Protestantism” (48–49).

The chapters in the latter half of *The Dawkins’ Delusion* are titled “What Are the Origins of Religion?” and “Is Religion Evil?” The pattern in these chapters is to follow a Dawkins argument and show that it is incoherent (in conflict with its own premises), grossly uninformed, or both.

Dawkins recites the customary atheistic explanations of how religion came to be, such as those proposed by Feuerbach, Marx, and Freud. Dawkins himself hypothesizes (indeed, assumes) a “universal Darwinism” (59), but his “failure to offer a defensible definition of religion ultimately negates [his] attempts to offer a Darwinian account of its origins” (65). The McGraths show that Dawkins knows very little about religion

and cannot distinguish it from either belief in God or religiosity. He also knows very little about the Judeo-Christian tradition: “When Dawkins tells us that St. Paul wrote the letter to the Hebrews, you realize just how bad things are” (89).

In the final chapter, the McGraths are particularly attentive to Dawkins’ misrepresentations of Jesus. Dawkins asserts that religion is the root cause of discrimination and social division and portrays Jesus as “a devotee of the same in-group morality—coupled with out-group hostility—that was taken for granted in the Old Testament. . . . It was Paul who invented the idea of taking the Jewish God to the Gentiles” (84, citing *The God Delusion*, 257). As the McGraths show, Dawkins seems to be ignorant of even the most basic of Christ’s teachings, including the parable of the Good Samaritan, Christ’s commandment to “love your enemy,” and His welcoming of those who were marginalized (84–88).

Near the end of *The Dawkins Delusion*, the McGraths ask, “Might *The God Delusion* actually backfire and end up persuading people that atheism is just as intolerant, doctrinaire and disagreeable as the worst that religion can offer?” (97). The McGraths have made a convincing case that it is. Their dispassionate and surprisingly fair-minded explanations stand in sharp contrast to the polemicism of Dawkins.

Dawkins’ own books are basically “red meat” for those already committed to atheism. Dawkins does not let any need for accuracy slow him down. The McGraths’ book, in contrast, is an excellent antidote, a guidebook and model for those who are annoyed by the cavalier insults and accusations hurled at religious faith and who seek a rational, calm, and solid way to reply.

The Dawkins Delusion does not take very long to read. The busy person who wants to know what the Dawkins controversy is about will rapidly gain an adequate understanding of the major issues. Although this book cites a number of sources by learned authors, its explanations do not rely on in-depth knowledge of those sources. In fact, the McGraths state their case so clearly that the book is accessible to a sharp high-school student.

The Dawkins Delusion is well-written and easy to read, and it gives the reader a clear understanding of why Dawkins need not be taken seriously. It will give even the initially neutral reader the opportunity to see that real science is *not* the enemy of religion and that the religiously oriented interpretation is superior to the atheistic one.

The Importance Of *Flatland*

Reviewed by Thomas P. Sheahen

“I will endure this and worse, if by any means I may arouse in the interiors of Plane and Solid Humanity a spirit of rebellion against the conceit which would limit our dimensions to two or three or any number short of infinity.” -- A. Square, in Flatland.

One of the most insightful books ever written was *Flatland*, by Edwin A. Abbott¹. Published in 1872, and superficially an enjoyable fantasy about geometry for junior high math students, this book provides a means of discerning how utterly limited are our human perceptions.

Others have given various synopses of the book; space here does not permit a sufficient summary to do it justice. In addition to recommending it to everyone (young or old) for reading, I will draw upon it heavily in forming the concepts presented here.

Flatland is about creatures who live in a two-dimensional space. The protagonist of the story is a gentleman named “A. Square”, and the book is narrated from his point of view. The first part of the book describes what life is like in Flatland, and the second part describes his encounter with a sphere who comes to visit Flatland from his higher-dimensional existence. It is this second part that is so insightful: On the one hand, we chuckle at the confusion and ineptness of Mr. Square, because of his inability to grasp the reality of more than two dimensions, and his failure to discern that he is dealing with a higher-dimensional being. On the other hand, the underlying message of the book is that we too, in our world, are terribly limited in our ability to grasp higher realities. The sphere, fully comprehensible to us as humans, is a mythological creature to Mr. Square, with awesome and magical powers. The point to be made is that we humans must realize that we ourselves are very limited in our ability to think; and therefore we should be ready to accept the reality of higher-order beings that are beyond the limits of our comprehension, speech and thought patterns.

Initial Presumptions:

In the early part of *Flatland*, the narrator (Mr. A. Square) describes his civilization from a strictly two-dimensional point of view. In fact, when he says that some folks are hexagons or whatever, he explains that the way they tell the difference is by feeling the angles of a person, and



utilizing their own well-trained sense of what size angle corresponds to what shape of person. The text avoids any hint of higher-dimensionality, because the narrator (A. Square) has no such concepts during the early part of the book. It turns out it is possible, albeit clumsy, to describe hexagons, pentagons, squares, triangles, etc., by reference only to their angles and sides; never giving a “top-down” description. In particular, the area enclosed by these figures is never mentioned, because A. Square is not even aware of this concept, having never seen it. He has an awareness of his “insides”, perhaps some form of “inner being”, but not that it is an area that

might be occupied by another plane-geometric figure.

Among other things, all the women in Flatland are merely lines -- creatures with no area at all. As a precaution to keep from having you accidentally bumping into them and getting stabbed, the laws in Flatland require that all women must wiggle while in motion, and talk constantly. In 1872, this was a good way of entertaining junior-high boys, who were the intended audience. Today, this picture of women is lacking in politically correctness.²

At the outset of part II of *Flatland*, Mr. A. Square begins to wise up. He had a dream in which he visits *Lineland*, a one-dimensional space where the king can see only a single point in either direction. A. Square’s message to the king is of the general form “get a life,” but the king will hear none of it, because he is locked into his ignorance by the extremely limited experiences of his life. To be “open-minded”, the king would have to admit that there could exist more than one dimension, and A. Square is dumbfounded that the king won’t concede that point.

Enlightenment:

Soon thereafter the sphere comes to visit Flatland, and after trying vainly to convince A. Square with words of the reasonableness of his existence, the sphere forcibly takes A. Square into the universe of three dimensions. The experience

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is unsettling, to say the least:

An unspeakable horror seized me. There was a darkness; then a dizzy, sickening sensation of sight that was not like seeing; I saw a line that was no line; space that was not space; I was myself, and not myself. When I could find voice, I shrieked aloud in agony, "Either this is madness or it is Hell." ... I looked, and behold, a new world! There stood before me, visibly incorporate, all that I had before inferred, conjectured, dreamed, of perfect circular beauty. ...

Upon observing Flatland from a three-dimensional vantage, A. Square experiences the transition from *inference* to true *knowledge*, brought about by his higher-dimensional vision of his own world.

I looked below, and saw with my physical eye all that domestic individuality which I had hitherto merely inferred with the understanding. And how poor and shadowy was the inferred conjecture in comparison with the reality which I now beheld. My four sons calmly asleep in the north-western rooms, [etc.] ... All this I could now see, not merely infer; ...

The first reaction of A. Square is to assume the sphere is a god, because of what the wise men of Flatland had always taught. But the sphere rebukes him, saying:

Then the very pick-pockets and cut-throats of my country are to be worshipped by your wise men as being gods: for there is not one of them that does not see as much as you see now. ... Surely that is no reason why the pick-pocket or cut-throat should be accepted by you as a god.

The sphere goes on to dispel various other false beliefs of A. Square, and then they travel together to witness a millennial gathering of the Flatland high priests, which the sphere disrupts, with unhappy consequences for the brother of A. Square, who was a scribe at the event. The warning is obvious that A. Square will suffer similar consequences, but he is undaunted because of the clarity of his understanding of the reality of three dimensions.

Eventually, Mr. Square catches on to the concept of higher dimensions, and tries to lead the sphere to think of 4, 5 or more dimensions; but the sphere can't buy it:

...no one has adopted or suggested the theory of a fourth dimension. Therefore, pray have done with this trifling, and let us return to business.

Nevertheless, Mr. Square persists and proceeds to push

harder, until the sphere gets angry and dumps him back into Flatland. Later the sphere come to agree with him, and so A. Square is emboldened to try to teach higher dimensionality to his family. He struggles in vain to get others to accept the notion of "upward, but not northward". He finds little interest, because the people he talks to simply cannot grasp the concepts he is trying to convey. A. Square is variously ignored, considered in need of rest, or judged insane.

The message for us, of course, is that even in our higher-dimensional world, we too are blinded by our preconceived notions, and will too readily dismiss as a "nut" anyone who speaks to us from an unfamiliar reference frame.

Access and Control:

The people of Flatland, including Mr. A. Square, have certain preconceived notions about what it means to be "human" in their two-dimensional space. The sphere freely violates a number of their rules. This is because of a very important point, which author Abbott does not adequately emphasize: when you have *access* to higher dimensions, you have *control* over lower dimensions. The reason the sphere can freely enter and leave two dimensions is because he exists in three dimensions, and hence anything he does in two is only a *projection* of his own higher reality. The sphere does not need all his dimensions at once in order to interact with Flatland, and this gives him an extra "degree of freedom". The primary manifestation of this freedom is the total *control* he has over the way he appears in Flatland. When attacked by the sharp spears of the palace guard, he merely zooms out of the plane; to the Flatlanders, the sphere appears to have vanished from their sight. But their sight *cannot see out of the plane of Flatland!*

The sphere also enjoys the ability to project himself in many different ways. It is no trouble at all to appear to Flatlanders as a circle of various diameters, changing diameter at will. Moreover, the sphere can project himself into regions of Flatland which are inaccessible to Flatlanders themselves; as for instance when he bumps gently against the inside of A. Square, causing a really weird feeling in A. Square's stomach. And of course he can cross walls without benefit of doors. His ability to look down on the plane of Flatland and see it all at once is stunning to Flatlanders, who call this capability *omnividence* and consider it an attribute of a god. Because what passes for "natural" in Flatland is so limited, the sphere is said to have "super-natural" powers.

Going in the other direction is far harder: A. Square must grasp in his mind a higher-dimensional reality for which he has absolutely no reference in experience. He is unable to interact with it under his own control, and can only appreciate higher dimensions through great mental effort. Toward the

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end of the book, his occasionally fading memory of the third dimension indicates a weakening or lapse of that mental effort. When the sphere returns in a dream, it reinforces the mental effort needed to sustain A. Square's knowledge of higher dimensions. It's a constant struggle for him to retain his knowledge. In the world of the sphere, A. Square would be said to be limited to only "sub-natural" powers. The pitiful inadequacy of such powers is brought out by the visits to *Lineland* and *Pointland*, where the sphere and A. Square alike ridicule the arrogant conceit of the lower-dimensional monarchs.

There is one more important point that needs to be emphasized; I first heard it in a lecture by Prof. Tom Banchoff³. The drawing of Flatland on the printed page is not just a *picture* of A. Square's world; that is his world. We higher-dimensional readers have sufficient control over A. Square's world to duplicate it at will, by simply printing more copies of a page. The ambitious reader who writes an alternate ending creates another flatland just as real as Edwin Abbott's original version (although it may not get comparable publicity).

Lessons for People:

All this tends to be mind-boggling, and the easiest way out is to dismiss the whole matter, saying "We're dealing with fiction here! *Flatland* is not real!" On one level, that is true, strictly speaking. But on another level, it is worthwhile to accept the premises behind *Flatland*, going along with the fictional case because it enables us to learn something new about our own world. The reason Abbott went to the trouble of writing about Mr. A. Square is to encourage the reader to grasp the analogy that relates to our own existence, and accept the notion that there exist other realities, of dimensions much greater than our own.

Several thousand years ago, Plato tried to tell people that the reality we experience is just a downward projection of a higher reality -- he used the analogy of shadows flickering on the wall of a cave⁴. That philosophical viewpoint has been widely ignored, because it demeans the reality we all experience. Like the high priests in Flatland, we don't like being told that we're not really in control, and not even aware of the full extent of our existence. As we struggle within the limitations that we all experience, we would like to believe that there cannot be any other beings who are exempt from our limitations.

The whole point of *Flatland* is to make it easier to get used to such exemptions. By the final pages, hopefully nearly everyone will have gotten the message about expanded realities having higher dimensions. It is possible to strengthen our grasp on our mental acknowledgment of this possibility

by reflecting on the types of control we already exert over lower dimensions.

First of all, we can travel on the surface of the earth. Simply by walking around, we can occupy a position $\{x,y\}$ over again as many times as we like, although at sequential times. We can easily execute virtually the same trajectory $\{x(t), y(t)\}$, perhaps by taking the same train to work each morning -- again, the only distinction is that these occur at sequential times.

Second, we can occupy several different positions $\{x_1,y_1\}$, $\{x_2,y_2\}$, $\{x_3,y_3\}$,... at the same time by placing *projections* of ourselves at those points. Stand in the right place at sunrise and you may be able to cast a shadow 200 yards long; then your projection (shadow) occupies a large range of positions $\{x_j, y_j\}$. Run for political office and plaster campaign photo-posters on every telephone pole in town; your two-dimensional image will occupy many discrete positions $\{x_k,y_k\}$, all at the same time. A. Square could not have made a two-dimensional replica of himself; there is no shadow on the plane of a creature in the plane. A. Square is not of sufficient dimensionality to have control over two-dimensional representations, so he couldn't even have a photograph or a two-dimensional signature. We are of higher dimensions and hence we do have control; moreover, we are smart enough to realize that we have such control over fewer dimensions.

Moving up to three dimensions, we can also vary our z-coordinates, say by jumping up and down, or by getting in a airplane, and later returning to the same coordinates $\{x,y,z\}$. Again, all such recurrences occur at sequential times. What we are unable to do is place many three-dimensional representations of ourselves at various coordinates all at the same time. We face the three-dimensional analog of what A. Square lives with in two dimensions. Also, we have gotten used to this limitation: when people complain about being unable to be two places at once, it is universally recognized that "you're kidding, of course."

It is important to note that our ability to occupy the same point $\{x_1,y_1,z_1\}$ again and again (say, by coming home at night) is meaningful only because of the existence of memory. If a nitrogen molecule bounces around a room a while and returns to the same point sometime, it doesn't matter; it is an insignificant event, even to thermodynamics and statistical-mechanics buffs. If an oxygen molecule bounces around a room, is breathed in by a person, flows through the blood stream, combines with a carbon atom, is breathed out as CO₂, eventually finds its way to a tree leaf, where by sunlight it is released back again as oxygen, and returns to the same room, nobody notices. The oxygen molecule certainly doesn't care.

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There is no memory at work here to note the recurrence of certain $\{x_j, y_j, z_j\}$ at different times.

What is important to understand here is that if there were no such thing as *memory*, it would be impossible to invoke the dimension of time to allow freedom of movement around the three spatial directions. Particular choices of spatial coordinates would be as meaningless to us as to a nitrogen molecule.

Time in Flatland:

At the time Edwin Abbott wrote *Flatland*, there was not even a glimmer of Einstein's theory that related space to time. Abbott couldn't conceivably have treated time as a dimension. It was simply not within his catalog of concepts. Thus, in *Flatland*, time marches on in the same way it does in normal human experience. The extra dimensions envisioned by Abbott were all spatial dimensions. However, he does mention a square moving perpendicular to itself and thus sweeping out a cube over time. To this day, such a construct⁵ is used in computer-generated movies to portray the transition from a cube to a hypercube.

Summary:

Flatland teaches us that it is silly to think that our existence is limited to only a few dimensions. Indeed, it teaches that it is arrogant and conceited to so pretend. Through the entertaining narrative of how a benighted two-dimensional being gradually learns to understand three-dimensions, *Flatland* invites us to appreciate our own higher dimensionality, even if we can't grasp it through our ordinary experience. That invitation is an extremely powerful call to reach outward (akin to "upward, not northward"?) toward a higher reality in life, one that is not accessible via the standard means of sensory perception. At the very minimum, it convincingly argues that we must be humble before realities and intelligence far greater than our own.

(Endnotes)

- 1 E. A. Abbott, *Flatland*, (Dover: 1952)
- 2 Indeed, female readers may be offended. I suggest that the way out is to think of all the women as living in a Flatland of their own, which is *orthogonal* (perpendicular) to the Flatland of the men. In that case, the women could be plane figures in their own space, but the intersection of any plane figure with the plane occupied by the men would of course be only a line. Likewise, all men would appear only as lines where they intersected the plane occupied by the women; so there would be a certain symmetry to the confusion and misinformation (obtuseness?) that dominated the culture of each. I'm sure that creative female readers of *Flatland* could have a lot of fun dreaming up various details of this life: for example, to prevent accidental collisions and stabbing, perhaps the laws of feminine *Flatland* would require men to emit gases frequently. Psychologists would write books like "Men are from YZ, women are from XY". And so forth.
- 3 T. Banchoff at *Cosmos & Creation* (May 25, 1996)
- 4 Plato ... (cave story)
- 5 T. Banchoff at *Cosmos & Creation* (May 24, 1996)

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