



BULLETIN

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We shall soon be mailing out notices for Membership Renewal for 2004. In preparation for this mailing, we did a quick survey of deaths among our members since 2000. We arrived at the number of about fifty members -- these are the people we know died. Some may have died without our being informed of their death. Anyway, fifty is a large number to lose in just three years. This is a fact of life, however. So, ITEST - and groups like it -- is at a very important crossroads.

We read in newspapers, magazines and see on TV that the young are far different from their parents and from their grandparents. This seems to ring true especially when we greet a new class of freshmen entering college. Perhaps we should cultivate these young people to join us in our apostolate. If we lose the advantage of the changing student body and recent graduates (from undergraduate and graduate studies) we may lose the people who will keep this work going and growing.

This is the task of the membership; it is part of carrying out their baptismal obligations to "preach the Word (and the word) to the whole world." One way we can do this is by seeking out young people in science and technology (along with the older ones) and explain the apostolate to them. This issue of the *Bulletin* is dedicated to developing in part the rationale behind this apostolate. Please read it, see if you can add to it and share your thoughts about it with others.

The members are truly the key to the apostolate. That the clergy were doing the bulk of the work of spreading the Kingdom of God was an accident of history. There were plenty of vocations to the priesthood and religious life 50 or 60 years ago. Many of them were sent into studies in science, technology, law, philosophy and theology rather than into parish work. They taught and in their spare time devoted themselves to things like the faith/science apostolate. It is, of course, no longer true that there is a plentitude of vocations. Now is the hour of the laity. The laity should be writing the papers, getting new members and so on. We offer people the opportunity to do this. In fact, the offer is open for other people to direct ITEST -- so long as they can support themselves on a pittance. We still have the people. Despite our efforts we simply do not have the money for grand schemes. Maybe we'll get it. In the meantime, the Lord be with you and fill you with ideas about developing the work in faith/science issues. God bless you.

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ANNOUNCEMENTS

1. All dues-paid members should have received the latest ITEST publication, the edited proceedings, *Advances in Neuroscience: Social, Moral, Philosophical and Theological Implications*. (230 pp.) If you paid dues for 2002 and 2003 and did not receive a book, please contact the ITEST office staff and we will send you a copy. Those who are on the mailing list only and who wish to purchase a copy, may also contact the ITEST offices. Price is \$19.95 (postage and handling included) for non-members and \$15.95 for ITEST members.

2. Check our web site at <http://ITEST.slu.edu>. Click on ITEST publications then on Publications of the New Millennium, to view our books of proceedings from workshops on *Christianity and the Human Body (2000)*, *Genetics and Nutrition (2001)* and the latest, *Advances in Neuroscience (2002)*. All books from the 90's and the new millennium are listed on the web site. However, since most of these books are still available in print, they do not appear in their entirety on the web. We list the cover with the title, introduction, table of contents and foreword for each book. That information is usually sufficient for anyone researching a certain topic and looking for a suitable book to purchase.

3. We have set the tentative date of early 2004 for the appearance on the ITEST web site for the updated and revised, *Readings in Faith and Science*. Originally published in 1997 as a spiral-bound book for campus ministry discussion groups on faith/science issues, the "web" book has been expanded to 283 pages with articles by various authors under the general categories of faith/science, science, technology and theology. Titles include, environment and the believer, reproductive biologies, the Christian notion of freedom, spirituality of the scientist, evolution and the Bible, Christianity and modern science, animal research, reproductive technologies, stem cell research, and others. This book will be available free of charge on the ITEST web site. We will let you know as soon as it is "live."

4. Often we receive a message that the Bulletin is not deliverable because the mail box is full. We have an extensive list of address changes, e-mails and phone numbers on the last three pages of this issue. If your name is on the list, let us know if there are any errors; we will correct them in the next issue. If your address, e-mail, etc. has changed, please notify us of that change. Please write or print *clearly*. It is sometimes impossible to decipher e-mail addresses -- especially on the membership cards.

5. The ITEST Board settled on a topic for the Fall, 2004 weekend workshop, *Artificial Intelligence,*

Computers and Virtual Reality. The last time ITEST visited this topic was in 1984 and the Board decided that this area of technology which pervades almost every area of life certainly merited a revisit. Please reserve October 15-17, 2004 for the ITEST Workshop on this topic at Our Lady of the Snows Shrine, Belleville, Illinois. The ITEST Board and ITEST staff have already received commitments from the people who will prepare essays for this timely topic.

Since both computer science and computer technology surround us -- at least in our work environments -- they provide opportunities for growth and development on the one hand. On the other, used inappropriately, they can cause great harm. In themselves technologies are neutral, they become risky, even dangerous, when controlled by the unscrupulous or the greedy. Witness the work of a hacker recently in the news who managed to "worm" his way into secure web sites around the world.

The film industry has made millions producing blockbuster movies on the topic. *Gattaca*, *Matrix*, *Contact*, *A.I.*, to name a few, were box office attractions especially among young viewers ages 13 to 20. Hear what some young computer scientists, technologists and philosophers are saying about the trends in the computer age. Learn how "Virtual Reality" has become a buzz word in the business and academic world. Look for updates on the progress of this workshop in the 2004 Bulletins. Register early.

6. Recently Sister Marianne did a quick survey of our membership and discovered that we have lost almost fifty members to death in the last three years -- those are the ones we know about. That is a troublesome "early-warning" since we are getting pretty "long in the tooth." The long-term trend is not good if we do not recruit more "younger" members. We have said it before but it is worthy of repetition: "if each member were able to recruit just one new member, we would double our membership." We know that some members are not in a position to suggest new members but others may be able to get several. But, please, don't rely on the Staff to keep the membership up. Recruiting may be part of the apostolate about which we write quite a bit in this issue of the *Bulletin*.

7. If you have some material on some aspect of the faith/science apostolate -- scientific or theological -- that you think would be good to share with your colleagues (in and out of ITEST) on the web site, please send it to Sr. Marianne Postiglione, RSM by postage (at ITEST; 3601 Lindell Blvd.; St. Louis, MO 63108) or by e-mail (postigm@slu.edu).

SOME THOUGHTS ON THE FAITH/SCIENCE APOSTOLATE

Robert A. Brungs, S.J.
Director: ITEST

INTRODUCTION

With the thirty-fifth anniversary of ITEST on the immediate horizon and with the beginning of my fortieth year of active involvement in the faith/science dialogue, it seems an appropriate time to put down some of my own impressions of this crucial apostolate.

I have personally been active in all the aspects of this apostolate. I began with the conviction that the real problem was the Church's lack of knowledge and concern about what was happening in scientific laboratories around the world. To do something positive about this situation became the first of our goals when ITEST was created in 1968.

It has become clear over the years that lack of knowledge was truly a part of the problem, but not the most important part. Even though ITEST has been successful in meeting the goal of informing the churches about what has been going on, it now seems to be a small part of the need. The real need, I think, is evangelization and everything that that implies, especially for our laity. It is this notion of evangelization, in several of its aspects, that I will emphasize in what follows.

BACKGROUND

"Whatever things were rightly said among all men, are the property of us Christians." So stated Justin Martyr (c. 165). Augustine repeats this sentiment in a somewhat different way: "whatever they [here, scientists, etc.] can really demonstrate to be true of physical nature, let us show to be capable of reconciliation with our Scriptures."¹ This is the legacy the Church brings to the faith/science dialogue. It is an ancient testimony to the fact that Christianity is the earthiest of all religions. It is also a testimony to the basic Christian openness to the "works of man." Despite all the criticism directed against it over the centuries, Christianity has been the most accessible of all religions to new ideas and new knowledge.

The faith/science dialogue is simply a subset of the more general issue of the place of human culture in the Revelation of Christ. In brief, it is a statement of creation in Christ, Incarnation, Death, Resurrection, Ascension and happiness with God and with each other in the eschaton. As such we can trace its history back to the very beginnings of the Faith. In fact, we can trace the encounter of God's Revelation with what we have come to call Greek culture back to intertestamental times, to the "clash" of Greek thought and

practice with Jewish life. So, the faith/science effort in one sense brings nothing new to the Church. What is new is the fact that we have come back almost full circle to the situation in intertestamental times -- the most crucial part of the dialogue is its effect on the lives of individual people. We cannot afford to lose sight of that element of effect on people's lives. The faith/science dialogue is not simply an intellectual discussion. We are not talking of the *science/theology* dialogue which can be almost totally theoretical. It may be that that dialogue is of necessity far more theoretical than *faith/science* work.

In reality, the voices in the Church on the matter of issues of faith and culture have always been ambivalent. In the earliest days of the Church experts in theology like Justin, Origen, Pseudo-Clement and Clement of Alexandria were very open to the ambient culture while Tertullian and Irenaeus, with different evangelical situations, were far less happy with "inculturation." This ambivalence, fortunately, has never been absent from the Church throughout its history. I say "fortunately" because the tension that has existed is evidence of a healthy search for the truth which is ultimately a search for the Lord Jesus Christ.

One of the great ironies of the history of the faith is that the welfare of science, based on the intellectual foundations of St. Basil, was preserved and fostered in the monasteries (and later the universities), whose disciplines were based on the model advocated by Tertullian and Irenaeus. Basil² in his *Hexaemeron* (The Six Days of Creation) established the basis for the interaction between the faith and science in particular. Basil's essential position was as follows:

- (1) the behavior of the elements must be understood in terms of law ordained by God rather than in terms of their essences;
- (2) the heavens are corruptible like the earth so that the same laws of physics should apply to both;
- (3) nature, once created and put in motion, evolves in accordance with the laws assigned to it without interruption or diminishment of energy.

In many ways, the subsequent story of faith/science is a nuancing (sometimes even to the point of denial) of

these key elements of Basil. In our day, however, especially in view of the shift from physics to biology, they are hardly adequate to our need. There is another element in this history that we must notice. Kaiser³ phrases it in this way:

But the creationist tradition (we are not referring to "creation science") and Basil's contribution, in particular, were not just theoretical in nature. They had strong practical components that were closely related to the theoretical, but took on a life of their own and influenced the history of science just as much, if not more, than the theoretical. We have already discussed the importance of the liturgical concern for time and the regulation of monastic life as vehicles for the sense of regularity in the rhythms of the cosmos. In this section we turn to the healing and helping ministries of the early Church, rooted in the biblical beliefs of creation, resurrection, and the possibility of the miraculous, which, through the work of Basil and his contemporaries, gave rise to the Christian traditions of medical science and technology in the middle ages.

Especially in view of the growing centrality and importance of the life sciences, this tradition of healing and helping must be reconstituted as a cornerstone of faith/science dialogue.

OUR PRESENT CONDITION

Although we physicists and perhaps chemists may drag our feet in acknowledging the fact, biology has assumed center stage in science. We need not linger on this beyond noting that the little book of Erwin Schrödinger, *What is Life?*, may well be the most significant scientific event of the 20th century, nuclear fission and fusion notwithstanding. Shortly after World War II several physicists became interested in problems of biological science. Within ten years or so of the publication of *What is Life?*, Watson and Crick had identified the Double Helix, the structure of DNA. Molecular biology was off and running, with implications for human life that still are beyond our imagination. In its own way molecular biology represents the fullest expression of "the physics of living systems." This may well be the most important aspect of science in the 20th century. It will go a long way in determining the culture (and the lives of individual human beings) of the next century and, perhaps, of the next millennium. As a friend of mine would say, "we'll know more later."

Until the time of Darwin, physics, and to a lesser extent, chemistry, had dominated the history of science

(and, hence, the history of faith/science relationships). Darwin changed everything, although it took many decades for this to be fully realized. Nonetheless, from the time of Schrödinger's book, the methodologies of physics were introduced into the life sciences. As a result, the life sciences over the last forty years or so have moved from a basically observational posture, through a very rapid and intense analytical phase, to a synthetic capacity.⁴ Biology has moved from cataloguing to commerce and industry. This may well be the most significant science/technology development of our lifetime -- perhaps, even of any day, bar none. This is truly a revolutionary science. It promises to leave nothing living untouched.

A TYPICAL DOCTRINAL ISSUE

One of the most important, if not *the* most important (nay, critical) issue that the Church will face is that the sciences, especially the biological sciences and technology, are predicting the making of a *new human*. Cosmological questions and astrophysics, as important and interesting as they are, pale in comparison with this prediction. We know that Christianity from its earliest teaching preached a *New Human* in Christ. Are these two *new humans* related or are they necessarily in conflict? I think that logically we can look at three possibilities.

One, these new humans (the Scriptural *New Human* and the scientific *new human*) are totally unrelated. That is at least a conceptual possibility. It is not, however, a real possibility for a Christian. That would assert, in effect, that there is no connection between "this world" and the "next world." To a Catholic that notion is anathema. However we might explain it, a Christian could never maintain that what we do on earth is totally unrelated to what happens in heaven -- even to the possibility of there being a heaven. Christianity, despite what we've done to it theologically and spirituality, is an earthy religion; it's also an urban religion. It's the only major religion in the world -- at least the only major one I know -- that began in a city. Christianity does not look forward to the recreation of Eden. Our future, insofar as it has been revealed to us, does not take place in a Garden. Rather, the New Jerusalem, the home of the blessed, is a city. I don't intend to try to prove anything from this. It is, nonetheless a suggestive use of images: there is some kind of a divine "urbanization program" taking place. Do I know what this involves? No, I don't. I do, however, think it is a compelling argument against a total divorce between this world and the next, between the Church militant and the Church triumphant. Such a separation would certainly fly in the face of Christian tradition.

The second conceptual possibility is that the scientific *new human* and the Christian *New Human* are identical -- the one is the other. This option, I think, can be disposed of as easily as the first. Before anything else, the scientific *new human* is immanent in this world. The *New Human* of the Scripture and Tradition is eschatological, i.e., it will be reached only in the final Kingdom of God, in heaven. That's certainly reason enough to say that they cannot be identical. At its best, our life is sacramental and our activity has "only sacramental" value. We'll return to this later. Suffice it here to say that we await the transformation of the cosmos that will be definitive only when Christ comes back to us. Nothing we are able to do can accomplish that transfiguration which St. Paul talks about in Romans and Philippians when Christ will transform these wretched bodies of ours into copies of his own glorified body.

The third conceptual possibility, and the only one I think a Christian can accept, is that somehow or other these *new humans* are related. How? We don't exactly know; there is room here for speculation. In fact, we hardly have a theology capable of asking the proper questions. I'm willing to go a bit further and say that for the most part theologians are hardly aware that there are questions to be asked. Nor do I see any indication that that state of affairs will change in the near future. The few who have ventured into this area seem to be inclined to be popularizers rather than to be serious researchers. This is a shame because the work of science and the cultural tendency we face, and into which these powers will fall, demand a significant development of genuine Christian doctrine. This is one of the items on the agenda for doctrinal development in the foreseeable future.

In the biological mix I see two areas of particular need, *in vitro* fertilization and molecular biology. These two areas, especially taken together, raise significant moral issues for Catholics, which in turn demand a significant development of doctrine. One thing seems totally clear: our current doctrinal understanding of the body *at most* allows us to begin to search for the proper *questions* we must put to the Tradition. At the risk of being reckless -- especially since I am not a systematic theologian by profession -- I'll include a brief doctrinal approach to these issues a bit further on. Before doing that, however, I'd like to call upon over 25 years experience in faith/science work to say something about the dialogue itself.

THE DIALOGUE

It is clear that there has been a significant increase in interest in what only recently was seen as an esoteric concern. I believe that there have been more "high-

level" meetings this summer than we were accustomed to experience in several years. In the midst of growing attention to the faith/science dialogue it is necessary to be aware of many levels of issues and opportunities for evangelization. It is also imperative to keep several distinctions in mind.

1.) The first of these distinctions is that between *science/theology* and *science/faith* concerns. I am treating neither of these terms in a pejorative sense. They are both necessary and both can be productive. All I am saying here is that they are not the same. They are no more the same than theology and doctrine are the same. I would classify as *theology/science* dialogue issues like the scientific method, how science affects the way we think as well as questions of cosmology. This type of issue tends to be concerned with epistemologies of one kind or another, on *how* we think or believe rather than on *what* we think or believe. Yet, any position that we assume as Catholic participants in dialogue has to be essentially based on what we believe. In other words, we cannot build systems apart from Revelation and Tradition. In my opinion, too much of the *science/theology* dialogue -- and sometimes even of the *faith/science* dialogue -- is overly defensive in terms of our basic religious assumptions. That, however, is another topic.

2.) Another type of *theology/science* dialogue -- one much closer to *faith/science* dialogue -- involves issues with a significant moral element which is generally lacking in the dialogue already described. These dialogues concern issues like genetic engineering, neurotechnology, death and dying, and many other issues coming from science and technology. They tend to be philosophy of science/philosophy and/or theology discussions to the extent that the emphasis is on ethics rather than morality. Although they are valuable in defining terms, they tend to be rather more intellectual than affective. As such they are more appropriate to "experts" than to "practitioners."

3.) Finally, there are dialogues which center on actual scientific results and the credal and liturgical aspects of the Christian faith. These, I believe, are the most difficult but most important part of the faith/science dialogue. They are difficult because, in general, they demand an "ontology" rather than an "ethic," doctrine rather than morality. They are important because they require a development in our understanding of the faith. They tend to concentrate on raising and refining questions rather than on providing answers. They are today's equivalent of the problems facing the early Councils like Nicaea and Chalcedon. In brief, they are translational and transitional between revelation and human knowledge.

A separate range of distinctions is involved in all of the above types of dialogue. These distinctions deal mainly with the people involved in the dialogue and in the purpose of a particular dialogue. In general, there are three models, each important in itself, but each with its own agenda and methods.

The first is the type of meetings that the Bishops' Committee on Science and Human Values conducts with a group of people from the National Academy of Sciences. What is the purpose of such meetings beyond people getting to know people? One obvious goal is the exchange of information about basic approaches to issues -- a why-we-hold-what-we-hold position. This type of dialogue is quite significant because members of the National Academy of Science (and other such groups of "leaders" are often called on to help shape governmental postures and practices on issues with a significant scientific/technical component. Also, the bishops are given the opportunity to learn about the issues from "experts" and to explain basic Catholic positions on this type of issue. They are able to show that these positions rest on solid foundations and are not simply some reactionary obscurantism.

A second type of dialogue is composed of the actual researchers in science meeting with those actually doing doctrinal investigation. This type of dialogue can be, and should be, more wide ranging and open-ended than the more official type mentioned above. It is really concerned more with the questions posed by scientific advance and the opportunity these provide for Catholics to develop their understanding of and commitment to their faith. This type of dialogue can be the most intellectual of the three, but it can never be solely intellectual. It is concerned with a dimension that Pope John Paul II mentions:

For science develops best when its concepts and conclusions are integrated into the broader human culture and its concerns for ultimate meaning and value. Scientists cannot, therefore, hold themselves entirely aloof from the sorts of issues dealt with by philosophers and theologians. By devoting to these issues something of the energy and care they give to their research in science, they can help others realize more fully the human potentialities of their discoveries. They can also come to appreciate for themselves that these discoveries cannot be a genuine substitute for knowledge of the truly ultimate. Science can purify religion from error and superstition; religion can purify science from idolatry and false absolutes. Each can draw the other into a wider world, a world in which both can flourish.

A third type of dialogue, perhaps the most important, is with Christians in science in order to introduce them to the riches of their faith. It has been stated by many ITEST members that people operating at the peak of scientific performance cannot be satisfied with only a grade-school knowledge of the Christian faith. Among other elements, a rationale for this third type of dialogue is that these people are crucial in breaking down the myth of a conflict between science and belief. We are not dealing with issues that can be solved (or moved forward) on the basis of the faith that these scientists may have learned in grammar school. It is a question of the necessary and the sufficient. Grammar school education may be necessary but it is hardly sufficient. Also, it is certainly a part of the evangelization promulgated in Vatican II and in papal encyclicals since the Council. Catholics in science are basically the only evangelists we have in the scientific/technological communities. I would recommend the statement by the American delegates at the Fifth Synod of Catholic Bishops in 1977. [The text of that statement is on the ITEST web site at <http://ITEST.slu.edu>. The document can be found under "Theological Viewpoints\The Vineyard\Appendix 3."

Many Christians in science tell me that their work in science is called into question if they are discovered to be believers. Clearly then, the myth of conflict is alive and well and must be broken down before solid dialogue is as effective as it might be. Excellent Catholic scientists who are also real believers are essential to the success of all this effort. In fact, it cannot be achieved at all if Catholic scientists are not involved.

It is clear that no single group nor one type of dialogue is sufficient in itself. In fact, the more groups that are involved, the greater progress there will be in the critical aspect of our times. As an addendum to this set of distinctions I would remark that probably the most crucial aspect of the across-the-bench dialogue is the education of young Christians in science in their faith. The only place left for any concentrated effort in this regard is the campus ministry center. In the United States, at least, most Christians in science will be trained in secular and state universities. Generally, excellent Catholic university programs in the various sciences are a thing of the past. The only venue for significant faith enrichment, then, is the campus ministry program. Yet, very few campus ministry programs seem to be disposed to work in this area. Even fewer are equipped to do so. Moreover, there is little effort to recruit knowledgeable Christian faculty members to conduct faith/science programs. Most unfortunately, there seems to be little effort to remedy this very sad situation.

Please allow me a personal anecdote here. Some years

ago I visited Iowa State University at the invitation of the Catholic campus ministry center. Part of the program was a small get-together with "a few Catholic students in science." It was scheduled to last an hour or so on Sunday evening after the 7:00 PM Mass. The pastor expressed sorrow that so few students would be at my talk. He expected maybe a dozen students would attend. As it turned out there were more than 80 and the discussion went on for many hours. I found an intense hunger on the part of these young people in science for an integration of their career in science with their Catholic faith. The real problem is that their knowledge of the faith is very poor, despite the fact that many of them had Catholic primary and secondary educations. This type of "evangelical work" is extremely important in any faith/science dialogue simply because these young people will be the only evangelists we will have in the scientific/technical community. Much effort must be put into a fostering of the faith in this very important group of people. In this regard I would simply point to part of the intervention of the American Bishops at the Fifth Synod in Rome in 1977:

. . . evangelization and catechesis by scientists who are men and women of faith are extremely important. They should be encouraged by the church. They constitute one of those small groups which will be responsible for so much of the mission of the church in the years to come. Scientists who acknowledge the reign of God should be encouraged to form communities where they may grow in their own understanding, experience and response to their Catholic faith, and where they show their insights into how the mysteries of redemption can be presented to their brothers and sisters who are seeking answers to the dilemmas posed by their scientific research.

What are we doing to fulfill this prophetic statement of the Bishops? It is clearly a significant part of the dialogue between faith and science. It might be a better world if Christians in science knew enough about their faith to promote that faith in the scientific community. We are not advocating here that these apostles proselytize -- referring every advance to God's action alone. But believing Christians in science are rather different from non-believers in the same vocation. (Yes, doing science is a vocation in the Church.) Scientists knowing the content of their faith could imbue other scientists with a different view of nature -- just as adventurous and imaginative as the non-believer. Christianity was never a brake on the intuitive in nature. Rather, it is a spur. That it will have to be done humbly and carefully is clear. We cannot afford to "turn off scientists" with triumphalist-sounding speeches. But we do have to

preach, even if we do this only by being the best scientists we can possibly be and living in faith.

Scientists could teach real science to their colleagues in theology. A theologian without any knowledge of sound science is really at a disadvantage. Only scientists have a sure enough grasp of sound science to pass on to theologians. Theologians have to learn their theology from the best sources. Why not from excellent Christians in science. We have in ITEST a group in which such "cross-education" can take place. With scientists writing about science (and speculating on the impact of scientific progress on faith) and theologians doing the same in theology, we can help the Church deal significantly with issues that will certainly arise. Educating each other and promoting the notion of the importance of both science and theology in research will have a profound effect on the growth of the Christian Church.

DOCTRINAL CONSIDERATIONS

All the central issues now challenging the faith revolve around our understanding of our *bodied* existence. This is true even of our basic understanding of the nature of the Church. St. Paul remarks in Ephesians 5:31-32: "For this reason, a man must leave his father and mother and be joined to his wife, and the two will become one body." This mystery has many implications; but I am saying it applies to Christ and his Church." This implies a bodily relationship even between Christ and His Church. Each age in the Church has its own genius and its own challenges. Those responses best suited to, say, the Middle Ages are almost certainly not the best suited to the 21st century. In the Middle Ages the theological thrust was concerned more with the soul than with the body. Thomism, at least as it has been taught in the school of theology at which I was trained, was far more directed to the "rational" aspects of the human being than to the "animal." I doubt that my training in philosophy was vastly different from that of most students of the Thomistic system. On the first day of class we were told that "man is a rational animal." We spent two years, eleven months and twenty-nine and a half days on "rational" and an afternoon on "animal." This is, of course, an exaggeration, but not too much of one.

I was trained in theology in the early '60s by one of the best Catholic theological faculties ever assembled in the U.S. We spent a great deal of time on the union of the divinity and humanity of Christ. That was interesting, but it was terribly abstract, general and maybe even ethereal. It was not really directed to the central Christian revelation of God's covenantal love for his people. In fact, once the center of the theological effort moved from the monasteries to the universities in the

twelfth and thirteen centuries it became almost totally intellectual. Yet, as St. Paul stressed, it is love that makes the building grow. This is something, of course, that is well known; unfortunately we have not carried out the implications in our catechesis.

I suppose if every Catholic were to write down the points most basic to the faith each one would have a different list. At least I hope they would. That is a very healthy type of diversity, I believe, because we have no evidence that God's approach is the same to each of us. To put it more forcefully, I know of no evidence that God ever does the same thing twice. Thus, what follows is my personal statement of essential, but relatively little used, aspects of the faith.

In the beginning God created the heavens and the earth. He made Man in his own image and likeness; male and female he made them. In his Gospel, St. John tells us that "in the beginning was the Word and the Word was with God. And the Word was God." St. Paul in that beautiful hymn in Colossians tells us that Christ is "the image of the unseen God, the firstborn of all creation, for in Him all things were created." All these quotes, among many others, are talking about the same thing.

The council of Chalcedon seven times in its formal decree proclaimed that the Word (the Logos) and Jesus, son of Mary, are *one and the same*. Therefore since the Word is God, as the council of Ephesus tells us, Mary of Nazareth is *Theotokos*, the mother of God, not *Christotokos*. Thus, as Romano Guardini emphasizes in his book, *The Lord*, God now has a body; God now has a destiny in creation. God has become part of human history, part of the history of his creation. He has now, in Christ, covenanted himself to a particular people; we are a people set apart, as St. Peter says. This is not an "ethnic people," nor a "regional people," nor a "national people." It is not a people assembled along any humanly conceived division. His "people set apart" are the members of his Church -- those who have accepted his covenant. Note, however, that the "people" is not set apart to be apart, but to sing the praises of God.

Christianity is the covenant. More than that, it is a covenant *in the body*. It is the new covenant in the body and blood of Christ: "This is the cup of my blood, the blood of the new and everlasting *covenant*." This is not the place to discuss the nature and history of the covenant -- from Noah through Christ -- even though it is *the central notion* of all of God's recorded creative and redemptive energy. Nonetheless, it is critical that we understand that this is the way God would be united with his creation -- by covenantal overture and response "in the body."

The covenant is in Christ's body and blood and the union he set up is of a marital and nuptial nature. Pope John Paul II has stated that the "proto-covenant" -- the covenant between God and creation with Adam and Eve -- was a marital covenant. Certainly, the covenant with Israel, especially as preached by the later prophets, was a covenant between God and his bridal people, Israel. The Book of Revelation ends with John's description of the New Jerusalem, the City come down from heaven all dressed for God *as a Bride*. St. Paul in Ephesians talks about marriage as the sign of the bridal union between God and his Church.

Pursuing this brings us into Paul's thoughts on the Second Adam and the Second Eve. It is this nuptial covenantal relationship that is Christianity. Christ and Mary, by their obedience to the Father's will, have assumed the headship of creation rejected by the First Adam and the First Eve. This part of doctrine, rather neglected for a thousand years, provides a fruitful entry into our understanding of the Faith in the very neuralgic areas arising from science, because it tells us of God's desire for our free response (and that of all creation) in love. The covenant between Christ and Mary is *integral* (it points to nothing beyond itself; it is in itself the reality to which all other created reality points).

We (and creation with us) are fully redeemed by Christ (with Mary's free ratification of God's will) -- though not yet. As Paul tells us, we enjoy the first-fruits of the Spirit, but we wait for our bodies to be set free. Paul says: "We are waiting for our bodies to be set free." He most emphatically does not say that we are waiting to be set free *from* our bodies. Scripture and Catholic living and worship does not refer to some "nature" out there doing something. It refers to specific, individual persons living out a life in the light of the life, death and resurrection of Jesus of Nazareth, the Son of Mary and the Son of the living God.

Historically, theologians and philosophers constructed an intellectual model of the human as composed of two *principles* of being (body and soul) to describe the complexity of the human being. These "principles of being" in time became "things" in their own right (something the original authors would have firmly rejected). We use that language unthinkingly: missionaries go overseas, for instance, to "save souls." That's all right if we realize that at its best that phrase is merely a shorthand for "saving people." Souls are not saved. Moreover, it is not heretical to say that "souls" are not saved at all. People are saved. To maintain that, I cite St. Thomas himself from a little known, and in my training never mentioned, work (ii lecture on 1 Corinthians 15): "Even if the soul should attain salvation, yet not I nor any human being." In short, the soul is not the human being

nor is the human being the soul. Of course, this notion does not originate with St. Thomas. Irenaeus,⁵ in a very important passage of the *Adversus Haereses*, writes:

For by the hands of the Father, that is, by the Son and the Holy Spirit, man, and not [merely] a part of man, was made in the likeness of God. Now the soul and the spirit are certainly a *part* of the man, but certainly not *the* man; for the perfect man consists in the commingling and the union of the soul receiving the spirit of the Father, and the admixture of that fleshly nature which was moulded after the image of God.

I propose that the soul-body model, despite all the good use it has been put to in the past, is no longer capable of answering the questions we must now put to the revelation.

The most powerful questions (actually, not so much questions as cultural stances) are being put to the Church in sexual matters -- ranging from divorce to contraception, through abortion to *in vitro* fertilization and even finally to eugenics with a lot of stops in between. These are not very amenable to a body-soul model of the individual. Neither is an understanding of the union of Christ and Church. The only model -- as strange as it may sound on first hearing -- is Christ's Eucharistic presence to us in order to give the Spirit to us. That is why He became one of us in the Incarnation.

We must go back to covenant, to Mary accepting the covenant in which she would bear a son and name him Jesus. In her acceptance in grace of this Gift of God to creation she became the Woman, Israel, the Second Eve. All these are covenantal terms. In virtue of her free "yes" God became incarnate, assumed a body (from her) and took on a historical destiny, as Guardini insists. Mary, conceived without original sin and sinless her whole life through, was able in her acceptance of masculinity to represent the whole of creation in an *integral* (whole, unsplintered by sin) fashion. Mary's free acceptance of the covenant with and in Christ was indispensable to God's being with us. Nowhere are we told in revelation that God had a back-up plan in the event of Mary's refusal. God, as Guardini maintains, has made himself weak and humble, lest he overwhelm us with his beauty and love. God clearly bends over backwards not to coerce us in any way. He wants our *free* acceptance and our *free* response to his overtures. This is something to remember whenever we talk about our covenant with our "meek and humble" Lord.

Mary's ratification of God's will extended beyond the

moment of incarnation. Her presence on Calvary was necessary so that in the name of all creation she could ratify Jesus' gift of himself on the Cross. Both Christ's gift, then, and Mary's ratification of that gift was needed for our redemption. The Church is also referred to as the Second Eve by the Fathers of the Church. The Church's union with Christ, however, is *sacramental*; it is not integral. The Church, while growing in holiness through the presence and gift of the Spirit, is not sinless nor is it the reality of the union of God with his people. Rather the Church's union with Christ *effectively* points to Christ's eschatological union with Mary. We, of course, remember the Baltimore Catechism's definition of a sacrament as an outward *sign* instituted by Christ to give grace. It is a sign of some greater reality. It points to something beyond itself. Christ's presence to the Church, and to us in the Church, is Eucharistic. It is the covenant in the body and blood of Christ. It is traditional Catholic teaching that the Eucharist "makes" the Church, is the continual source of the Church. It is in the Eucharist that Christ is present to his Church. The union of Christ and Church is Eucharistic; it is sacramental.

In the theology of the post-medieval tradition, one could easily get the impression that Christian matrimony exists on the fringe of the revelation. It is as if matrimony merely is the overtaking of a natural union by grace. If we work from a theology of covenant, we find that matrimony is at the very center of the revelation. It is the sacrament of Christian matrimony that signs the Eucharistic union of Christ and the Church. As the Eucharist is the foundation and cause of the union between Christ and the Church, so matrimony is its sacramental strengthening. It points to and effectively signs that union.

Thus the sacrament of human sexuality (matrimony) is a sacramental sign of the union between Christ and the Church. Our sexuality lies at the very heart of Christian reality, namely, Christ's covenant with his Bride the Church. Many these days will dismiss this thinking with an easy declaration that the nuptial language of the Church is merely metaphor, merely imagery. The Church for the first 12 centuries was not so facile in declaring the nuptial imagery to be metaphorical. I find it quite instructive to note that through the time of Bernard of Clairvaux the book of scripture most frequently commented on was the *Song of Songs*, the celebration of the love of a man and a woman. They saw this love as an extremely important sign of the Christian faith. For that reason, if for no other, I don't believe we can write off the scriptural use of nuptial imagery as simply metaphor. (I am always amazed at the "sure grasp" opponents of sacramental realism have of scripture's use of metaphor. They seem to know by some

divine illumination what is metaphorical [almost everything] and what is not.) I'm reminded of a cartoon showing God standing on a cloud brandishing a thunderbolt. The caption, as I recall, was: "Metaphorical? I'll show you metaphorical!"

Sexuality is at the heart of any realistic understanding of our being bodied. I suspect, though I can't prove it, that the Church will continue to see it as more important than our cognitive faculties, as more human than our neo-cortical character. We are bodied and our sexuality is written in every cell of our body. Contemporary science and technology are creating the need (a blessed opportunity from the Spirit, I think) to redevelop our doctrinal theology. Most people with whom I discuss this immediately start into ethics -- we more accurately used to call it moral theology. I am not talking about ethics. I am talking about doctrine. I'm talking about another and deeper approach to the Psalmist's question: "What is Man that you are mindful of him, the son of Man that you should care for him?"

We are bodied. Our destiny is to remain bodied when we (hopefully) enter into glory. God's providence for us is most evident in our bodiedness. There is a period of only a day or two in the history of the universe when *we* can be conceived. What are the odds of a particular sperm uniting with a particular egg in that period of only a few hours? Then multiply those odds by the odds involved in the conception of each of our ancestors over maybe 10,000 - 20,000 generations. That's the probability that any of us has of being alive. Either we are totally trivial and our being here has absolutely no lasting meaning -- or we are and were deeply wanted. The same genetic probability holds for Christ. Since he was of the house of David, he had very specific ancestors -- not all of them, by the way, upstanding in a Jewish or Christian way.

A pivotal part of our lives in Christ depends on our parents and our ancestors. A significant part of our worshipful approach to God depends on our bodies. All of the sacraments are *material* and all of them (except the Eucharist, interestingly) depend on the physical presence of (and communication between) at least two human beings. They are material signs and they are communal signs. We cannot overlook the communal nature of our being; we are oriented, outside the confines of our body, to each other. They are covenantal signs. The body provides the only means of communication we have with each other and with God. We do not communicate simply by thought; we do it with words, gestures and changes in tone of voice. Indeed, a grimace or a smile may be worth many words and all uncommunicable thoughts.

Perhaps, I say this only in my ignorance, but I think that God has chosen to communicate with us only through our bodies and particularly he has done this in and through Christ's body. Mystics seem to remember what happened to them, so the experience is clearly written into their brains. Also, it is the body that makes us specific -- another genetic gift from God. It is our bodied character that differentiates us from each other and from all other creatures, angels included. This is true on the level of the species, the sexes and individuals of the same sex. Toward the end of the Letter to the Romans St. Paul says "Just as each of our bodies has several parts and each part has a separate function, so all of us, in union with Christ, form one body, and as parts of it we belong to each other." I think this says all that needs to be said regarding the necessity of our communion with each other.

Our bodies both individuate us and allow us to be members of a community. We are not simply some material substrate that can be pummeled into any shape or form that someone else would prefer. We *are* bodied in a very specific way and *always will be*. Our physical heritage matters to us -- probably even more than we even know or think. It certainly ties us to the past and to the future, even to the eschaton.

How we will be bodied here (and *maybe* hereafter) depends on the uses to which we shall put the new powers we are gaining especially from the biological sciences -- genetics, neurosciences, aging, and eventually "life-everlasting" -- and computer technologies. We are clearly entering a new era of human living. No matter how many years or decades it may take for us to be ready to alter the shape and texture and function of our bodies predictably and reproducibly, we have already begun in small ways to work toward it. Popularizers of microbiology, particularly, talk about directing further human evolution. This is eugenics -- not necessarily in a bad sense -- but it is eugenics indeed.

But if we are going to direct our further evolution, in what direction shall we further it? It presumes that we know the destination we want to reach. What is our goal as humans? Does science give us even a hint about which direction it would be proper for us to go? No! Does philosophy? Not really! Does theology? Not yet. Does the Faith? Yes, it tells us the goal of our pilgrimage, but we have not spent nearly enough time or energy in working out an itinerary. We only really know that we have to go forward into the future with an open mind and, even more, with an open heart. We cannot afford to cringe in fear or to be giddy with success. In general, the genetic technologies will be the same as past technologies -- partly good and partly bad. They will increase both our sense of accomplishment (we will

make "new humans") and our sense of anxiety (why have we made "new humans"? to what end? life everlasting?).

I shall list five guidelines which I think are a part of any attempt to "improve" ourselves and our stock. They probably are not exhaustive. I have been speaking of them for more than thirty years and I have yet to have anyone add any others. But that could change quickly if we really dedicated ourselves to this needed development of doctrine. The five are:

- 1.) Does the proposed physical alteration enhance our individual dignity?
- 2.) Does the proposed advance enhance our individual freedom?
- 3.) Does the proposed advance enhance our communal freedom? Does it enhance our ability to live freely in society? Is it ordered to uniformity or to the exotic? Does it enhance the sense of community and the reality of community?
- 4.) Does the proposed change enhance our ability to worship God? This concerns sexuality particularly, though not exclusively.
- 5.) Does the proposed alteration give us a deeper understanding of the true role of our body in our salvation or does it present an exaggerated view of our "physical nature"? Does it promise "everlasting life" or some equivalent of it? Does it help us come to grips with both our fallibility and our need for each other and for God? Is it concerned with our bodily integrity?

It is too early in our recognizing the tremendous importance and beauty of our bodied existence to go into great detail. What is of primary urgency right now is realizing that Christianity is a religion of specifics, not generalities. It is critical now to realize that the incarnation is exactly that -- God becoming a unique human being and remaining so. It is crucial to realize that God is forever a part of His creation and it forever has a destiny in Him. It is urgent to understand that the sacramental realism of the Church must be maintained and to perceive that human history is really salvation history. The history of the Church contains the history of the cosmos. They are not distinct.

It is important for us to re-focus on the historical reality of the sacraments and of the Church. The Church is not just an assembly whose growth is founded on the faith of its members. Rather, it grows dynamically with the power of the Eucharistic Christ. I simply refer to the parable in Mark about the seed growing under its own

dynamism (chapter 4). The Church grows "on its own." Like its members, it lives in a sacramental (and marital) relationship with Christ which points to his integral (not sacramental) union with Mary. God has a destiny in history in the Church. Even the angels, St. Paul tells us, learn of the fullness of the mystery of Christ in and from the Church.

Also, it is doctrinally radical (in the original sense of the word -- *radix*, rooted) to note and develop the idea that *all of creation* awaits freedom from sin and death. As we sin in the body, we are saved in it as well. Somehow or other we are being brought into sharing the divine nature, without losing our humanity. The Greek Fathers of the Church referred to this process as *divinization*. I am assuming the prophetic role proper to my being a Christian in stating that it may be that, as we are being divinized, the world around us is being humanized. I do not know in any kind of detail what that might mean. I do know that there will be a heaven (and a hell). I know that we shall rise recognizably ourselves (with our own history, ancestral background and memories). I know that creation will be freed from decadence. I know that Christ will transfigure our bodies into copies of his own glorious body. I know that somehow (the *how* belongs to God, not us) we shall have been involved in the making of heaven -- of course, the greater work will have been his. I know that all will be one (though it will remain itself) in the Father. That is the goal.

We must consider the Church as historical. If it is historical, it changes, as does everything historical. Science and technology are a part of the history of the universe -- maybe not yet a large part as the universe goes -- but a significant part. Whether we are considering genetics, neuroscientific advance, computers or more theoretical philosophical things like the beginnings of the universe or of life, our thought and affective theology must include them. The Church has grown (not just in numbers) over the intervening 2,000 years and is still growing and changing. Again, science and technology are part of this growth. Now, the Church is still facing a problem that has dogged its steps since the beginning: how to preserve a never-changing message of salvation while everything is changing. Somehow, the Church has to present eternal truth by updating its statement of that truth. But she is able to do so; after all, she has done it for two millennia at the hand of the Holy Spirit. The crux of the issue is still the same: the Church must live in history. To be true to herself she has to change.

These are my (maybe) esoteric ideas that I think should be given far more consideration in our systematic theology. In their context they create a wide-open arena for faith/science work. Our task is to help direct now the

course of our bodied history. Rarely has any generation received so great and glorious a challenge.

CONCLUSION

If the goal of the faith/science dialogue is evangelization, we cannot be defensive about the Church's centrality to human history and to the cosmos. If the Church is not the center of God's plan for his creation then I see no sense in belonging to it. Also, if the goal is simply to dialogue (to talk, but not to evangelize) then I believe we can forget Christ's mandate to "preach the Gospel to the whole world." I am old-fashioned enough to believe that our actions speak louder than our words. If our love for the Church and for Christ is not apparent, our intellectual attainments and our eloquence will have little long-term effect. St. Paul in Corinthians mentions "booming gongs and clashing cymbals." In dialogue, whether it is with the National Academy of Sciences or Christian graduate students, "passionate belief" will (or at least should) carry more weight than abstract intellectualisms. In other words, belief (and the hope it generates) is more appealing than intellectual argument. Hope is a very attractive virtue.

I can think of no purpose for the faith/science dialogue other than our evangelical duty to preach the Good News, in season and out of season. In this vein, we have to teach (and convince) Catholics that evangelization is a privilege and duty imposed on us in baptism and enabled in confirmation. By the very fact of our baptism we are sent to "preach the Word who is God." We don't need ordination or any other sacrament to give us a mandate. The clergy are not and never were meant to be the only evangelists in the world nor are they necessarily the most important ones. To raise up evangelists we have to inform them of their baptismal obligations; we have to show them that that is a part of our lives -- without apology. We must also let them know that they need no permission from anybody to fulfill an obligation.

Furthermore, we have to convince ourselves and them that teamwork among all of us is critical. As one ITEST member mentioned at the ITEST 25th anniversary Convention, "an army without a general is a rabble, a general without an army is ridiculous." Evangelization must operate at all levels of the dialogue and, as Vatican II and subsequent papal encyclicals have stated, they will operate effectively only "in community." Serious faith/science dialogue is really a cultural movement, requiring many inputs and many interests and skills. Above all, it demands faith, hope and love -- and love is still the greatest of these. After all, as Saint Paul teaches, "it is love that makes the building grow."

A Protestant theologian of the 19th century, Horace Bushnell, noted that power always follows the direction of hope. Do we personally and communally have the faith in Christ that will make our hope in Him visible? Do we so share in Christ's love that it shows forth from us on its own? If we cannot show Christ's love vividly enough to validate our hope in the future, all the dialogue in the world will be futile. We should in St. Paul's words, radiate the brightness of the Lord.

I am convinced that we do have that love and that our defensiveness in the face of great scientific achievement is decreasing. While scientists may know much more about the detailed workings of the human body and of the cosmos, we Christians have had revealed to us the meaning of our existence in the body -- indeed, the meaning of the whole of creation -- in the Church. We have a duty in love to share it with all people with humility, kindness and the flavor of wit that St. Paul recommends. I am confident that with God's help we shall do so. After all, it can come only from us.

In our hearts we should carry the words of Athanasius⁶

Like a musician who has attuned his lyre, and by the artistic blending of low and high and medium tones produces a single melody, so the Wisdom of God, holding the universe like a lyre, adapting things heavenly to things earthly, and earthly things to heavenly, harmonizes them all, and, leading them by His will, makes one world and one world-order in beauty and harmony.

The faith/science apostolate can help make "one world and one world-order in beauty and harmony." Our decisive task on earth is aiding in this work of the Spirit.

ENDNOTES

- 1.) Augustine, *De Genesi ad litteram*, 1b, 1c 21, no. 41.
- 2.) Basil of Caesarea (d. 379) ranks as one of the greatest of the Fathers of the Church. For a history of the relationship between Christian thought and science I would recommend: Christopher Kaiser, *Creation and the History of Science*, Grand Rapids: Eerdmans Publishing Company, 1991; Fr. William Wallace, OP, "History of Science and Faith," in *Transfiguration: Elements of Science and Christian Faith*, St. Louis: ITEST Faith/Science Press, 1993. Also, I would recommend any of the books of Fr. Stanley Jaki, OSB.
3. Kaiser, op. cit., pp. 34-35.
4. By *synthetic* I mean the capacity to build or rebuild living systems -- plants, animals and human beings.
5. *Adversus Haereses*, V, ch. VI, no. 1.
6. Athanasius, *Contra Gentes*, 41, p. 26.

DECISION: THE EDUCATIONAL ASPECTS

William T. Mooney, Jr.

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This is a great, interesting, exciting time in the country. The timeliness of ITEST's decision to sponsor a conference on education (Science and Technology Education in Church-Related Schools, Oct., 1989) is only emphasized by the experience I had on Monday and Tuesday of this week in Washington as a member of the Easley group of the National Science Foundation. We were asked to give the Foundation some ideas about improving the quality of the sciences in the two year colleges.

The leaders of the National Science Foundation emphasized that they are quite concerned about the nation's future with respect to economic competitiveness, and scientific and technological viability. They worry that we are going to be unable to continue in the role of leader, or even be competitive, because the number of people entering careers in science and technology is rapidly decreasing. The percentage and the actual number from the traditional population pools who went into science and technology are declining. If we're going to be competitive, we have to reach out and tap new pools -- women, some minorities, those with handicaps, for instance -- that traditionally have not gone into the sciences. Additionally they were quite concerned about the low level of scientific and technological literacy found in the populace. Many of you have read about that in the work of John Miller from Northern Illinois University and the national assessment reports that have been published in the media.

A further complication in this concern is the ability of academia to be competitive for those who will soon be graduating and vying for jobs. Academia cannot attract the top talent. Consequently, students are not being taught by top people even when they are faculty members. Too often the graduate students end up doing the teaching. Thus, much of the focus in the educational system is on increasing the quantity and the quality of science and technology education not just for the professionals but also for the total population. . . .

Last night we heard the Director speak about examining ITEST's future. I feel that this particular approach would be great fuel for the fire that ITEST is going to create in the nation as it moves ahead into this future. The educational imperatives will certainly give the staff and Board of Directors fresh ideas about what they can do in the educational field in the future.

I will quote what Father Brungs said last night: he asked us "to tell the leadership what to do. Don't worry about the funds. And don't let the quest for the perfect be the enemy of the good. In other words, that means that you have no limitations on your imagination when these ideas are suggested." We can say that, if we are really truly Christians, we believe that where there's a will, there's a way. If the Lord would have us do these things, He will provide for us. This is a great way of testifying to our Christian faith....

... We want to think about both the formal and the informal conduits which we have for communicating an understanding of science and technology and theology and their interactions. Don't confine your suggestions to those things done in the formal side: schools, colleges, universities. Think about that great informal educational enterprise we have in the country, including such things as museums and libraries, mass media, churches, industries, businesses, extension centers, and a whole variety of other institutions and organizations which have ways of communicating new knowledge and understanding to our populace. . . . If there is anything ITEST must do in the future, it is to move out of just the smaller group working together here. It's necessary to build partnerships with other organizations. Otherwise, I don't think we're going to have the influence that we can and should have. Let me list these needs I think I found in *Decision*. These needs are the ones that I thought were most significant.

First, there is the need to understand that careers in

science and technology are significant forms of Christian vocation. This refers to the pipeline. We can contribute to this national need of getting more people into the pipeline by becoming a part of that recruitment campaign. But we should do it within the Christian community. Some people have suggested that Christians are underrepresented in science and technology. So, in addition to women and other minorities, let's recruit Christians into the field.

Second, there is a need to develop a Christian perspective on the nature of science and technology and their interactions. This has to do with scientific and technological literacy. Quite often when we talk about scientific and technological literacy, we usually think of scientific and technological knowledge, and about being able to understand the interactions between science, technology, and society. Well, we should also include in that phrase the interactions between science, technology, and theology, religion -- faith.

The third is the need to determine the role of the sciences and technology in theological education. About five or six years ago I sat on the task force studying the future of chemical education in the United States. The American Chemical Society had just published the *Tomorrow Report*. We found that there was a great need in all other professional education -- whether it be in law, business, theology -- to do something about improving the scientific and technological literacy of those who become policy makers, policy influencers, decision makers in our society. We have to do that with respect to theological education also.

But this should not be a one way street. There is an equal need for us to determine the role of theology in science and technology education. Now that might be a little hard to work in in some of the public sector institutions, but I suggest that we should challenge our church-related institutions to make sure that they are really considering this role and that they are doing all that can be done. They can become models for determining the role of theology in science and technology education and then implementing it.

There is another issue when we move into a field like this, namely, who's going to lead and how are we going to prepare them to lead. There is an interesting movement in the junior colleges to try to overcome some problems created by the entrenchment of the idea that the two year colleges are teaching institutions and not research institutions. It's gotten so bad that scholarship in these colleges and others labelling themselves teaching institutions has almost evaporated.

There is a move now to resurrect the idea of scholar

teachers and to expand the idea of scholarship from just discovering knowledge through research into one that recognizes that there are four dimensions of scholarship and only one of them is discovering knowledge.

There's the scholarship of integrating knowledge through curricular development. So we have to train people to be able to integrate this theological/scientific/technological interface material. There's the scholarship of applying knowledge through service. We need people committed to the application of the theological/scientific/technological understanding. Above all, there's the scholarship of presenting knowledge through effective teaching. We have to educate and train people to do this. There's a great need then to develop the concept of the scholar teacher to work with what I call in the paper TEST -- simply *Theological Encounter with Science and Technology*.

Finally, we can make all these suggestions, but if we do not go out and build partnerships or some alliances to serve as centers for the theological encounter with science and technology in regional areas -- not just in the St. Louis area but in Los Angeles, Chicago, New York and Atlanta and so on -- we're not going to be effective. There's a need then to develop partnerships and alliances to serve as sort of the nucleation centers for this.

Whatever programs are designed to satisfy these needs should essentially contribute to the following:

- They should contribute to the building of "communities of scientists and technologists who acknowledge the reign of God, where they may grow in their own understanding, experience, and response to their Christian faith and integrate their professional and religious personal lives." (from ITEST Brochure)
- They should contribute to the improvement of the scientific/technological/theological literacy of non-science and non-technology students by increasing their understanding of the nature of science and technology and their theological interaction as well as their societal interactions.
- They should contribute to the presentation of the recent advances in science and technology and their contribution to our understanding of the theological significance, potential and meaning in terms of God's plan and word.

I think we have to design programs for faculty, clergy, and laity to develop scholar teachers -- a concept I mentioned earlier -- concerned with the theological encounter with science and technology and competent

to assume leadership roles in developing and delivering educational programs. This is to be done through both the formal and the informal conduits in order to develop theological, scientific and technological literacy among the populace. It's important that these programs develop both a competence in dealing with "TEST" and an enthusiasm for it. That's one specific type of program that we could get involved in.

I put three options here. One, we have to do it for faculty because they're going to be teaching, for clergy because they're teaching in that great informal center, the church, for the laity.

Secondly, we have to develop regional alliances and centers for "TEST" that will provide fora to discuss issues raised by *Decision*, which will become partnerships to implement the educational imperatives. That in turn will build an interdisciplinary community for those interested in "TEST." I have in mind something like the following: I plan to present this concept and this particular recommendation to Jerry Miller the President, and Jim Hanson, the Dean, of the California Lutheran University in Thousand Oaks, with which I have a long affiliation, and to Bishop Roger Anderson, the Bishop of the Southern California West Center of the Evangelical Lutheran Church in America. I want to see if we can develop such a center at California Lutheran University. It's timely because just last week they dedicated a new science building. There is great evidence of interest in science on that campus.

Third, ITEST could prepare and distribute a position paper derived from this presentation and amplified by ideas presented during the workshop discussions. This paper should reflect the participants' consensus on the implications of *Decision* and suggest educational programs.

Often, in the educational field, change does not occur unless we advance some ideas which motivate people in the field to think about what they could do. And that's our purpose.

Fourth, -- it's been suggested this would be done when possible -- the video should be revised to make it more appropriate for a secular, multicultural market such as that found in the public educational institutions.

Next, ITEST could prepare a monograph on the science and technological education to serve as the basis for the recommended "TEST" initiative for theologians. This work would be of benefit to seminary students, theological educators, students of religion, religious educators, and clergy. If well done, it might pique the interest of the scientific and technological laity of the church.

While reading the Chronicle of Higher Education I saw the title *The Role of Art in Theological Education* in the new book section. Immediately I asked, "Why shouldn't there be a monograph on the role of science in theological education issuing from ITEST?"

Next we could collect and/or commission papers related to such topics as *The Christian as Scientist* and *The Scientist as Christian* and publish them. Encourage church related colleges and seminaries to sponsor symposia and colloquia on the subject with presented invited papers and discussion summaries to be included in this collection. It's not an original idea.

Next I think we have to develop overtures to our brothers and sisters who share in the life of our heavenly Father through our savior, the Lord, Jesus Christ, and who are empowered by the Holy Spirit to join with us regardless of their denominational persuasion in this new adventure stimulated by *Decision*. Such an outreach should emphasize the great commonness that we all share, regardless of our origins in our Christian faith and life.

I strongly suggest that less important, minor differences brought about by denominational theological differences should be transcended in the light of our great need to build a broadly based "TEST" community which can have an impact in this world. Such cooperation is needed in all aspects of the programs suggested in this paper. Let's present a united front to the rest of the world. It's imperative that we do this if we want to have the impact that *Decision* emphasizes. [NOTE: These suggestions were made well before the omnipresence of the world-wide web. ITEST has now done much of this on our website at <http://ITEST.slu.edu>.]

We could develop discussion groups on campuses, both colleges and seminaries, and in churches, both local and synodical. Here, scientists, technologists, and theologians can openly and candidly share ways of serving the Lord through "TEST" activities.

We could also prepare papers for publication in journals and other periodicals, papers entitled "Give us more scientists and technologists" or "Give us more scientifically and technologically literate theologians and clergy," or some such title. Charles Ford suggested that *The Lutheran* is looking for publishable autobiographical information from people who have achieved something in the field of science and technology. We need to get that type of thing spread throughout the churches with these kinds of programs.

Finally, keeping in mind our informal sector of education, we could develop sermon idea papers or a series

for pastors to encourage them and help them preach one sermon a year that stresses to the universities, the colleges, and schools the importance of evangelizing the modern world. It could also present the call of scholarship, especially in science and technology, as a legitimate Christian vocation.

People will do it if you give them a little help and

orientation in the direction you want to go. But they won't generate it on their own. You just can't say, "Go do it"; you have to motivate and inspire them.

I submit these ideas for your consideration. Think about whose responsibility these programs should be, how they should be done. Do you believe that they have value or are not worth the effort?

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