



A Blessed and Joyous New Year!

We are, relatively speaking, at the beginning of a New Century and a New Millennium as well as a New Year. It would seem appropriate that we review our mission in the Faith, how we have done and what we shall be doing -- all on one page. We are devoting much of this issue of the *ITEST Bulletin* to that purpose.

We have successfully fulfilled the first of our purposes: to act as an early warning system of impending scientific advances. We have an ongoing purpose as well, one which we can accomplish only over time. That purpose is building a vibrant "community" of scientists, philosophers, theologians and interested "laity" of every kind. We are not just building a community, though. We are building a "community of people" deeply in love with the Body of Christ, the Church, deeply loyal to it and to the true scientific progress. We have the task of "baptizing" scientific effort in the Church and protecting that progress from the "corrosive acids of modernity", in the words of Walter Lippmann. We are a "people set apart" to proclaim the glory of Christ to those engaged in science and to proclaim the glories of scientific investigation to the Church.

This is a work of rebuilding the harmony which was at least offered to the first human couple "in the beginning." They turned down the offer and we certainly follow their example in some of our efforts. We have an obligation and a privilege to preach the Word. We also have an obligation to further expand on the aspects of the Word that have arisen and are arising from the work of science. Science, the method and the true product of the method, is of deep importance to the Word and works of God. We must, finally, incorporate the products of science into our religious view of the world. We can do this in our efforts to come to grips with the opportunity and the challenge of faith and science. Have a Blessed New Year and a productive one in our corporate work for the Kingdom of God.

Page 1	DIRECTOR'S MESSAGE
Page 2	ANNOUNCEMENTS
Page 2	TECHNOLOGY & THE NATION STATE Dr. Duane Priebe
Page 8	5TH SYNOD, 1977
Page 10	SOME OBSERVATIONS ON THE CHURCH & SCIENTISTS Robert Brungs, SJ
Page 13	JESUITS IN SCIENCE: THE THIRD PARADIGM Agustin Udias, SJ
Page 15	SCI/TECH EDUCATION IN CHURCH-RELATED COLLEGES AND UNIVERSITIES Joseph A. Panuska, SJ
Page 17	NEW MEMBERS, ETC

The ITEST Bulletin: Publisher, Robert Brungs, S.J.; Editor, S. Marianne Postiglione, RSM

ITEST Offices: Director, Robert Brungs, S.J.  
Director of Communications, S. Marianne Postiglione, RSM  
221 North Grand Boulevard  
St. Louis, Missouri 63103 USA



## ANNOUNCEMENTS

1. Please reserve September 27-29, 2002 for the workshop on Neurobiology in the 21st century: social, moral, philosophical and theological implications. A partial list of essayists includes: Dr. Keith Crutcher, Department of Neuroscience, University of Cincinnati; Dr. J. Michael Wyss, Department of Cell Biology, University of Alabama at Birmingham; Carla Mae Streeter, OP, PhD, Systematic Theology, Aquinas Institute, St. Louis, Missouri and Amalia Issa, PhD, Assistant Professor, Southern Illinois University School of Medicine and Clinical Ethicist at Memorial Medical Center. Future issues of the *Bulletin* will carry more detailed information on registration, schedules and travel arrangements. We have chosen to hold our workshop at Our Lady of the Snows Conference Center.

2. We have notified publishers, bookstores and jobbers that increasing postage rates have forced us to raise the prices of our books to \$17.95 as of January 1, 2002. For members of ITEST, the prices will remain the same: \$15.95, postage and handling included. Our best sellers to date are *Creation and Evolution*, *The Human Genome Project* and *The Genome: Plant Animal and Human*.

3. A Tanzanian Monsignor, and ITEST member, asks for help in collecting books to stock a school he hopes to build. He received a doctorate from the University of Michigan in Ann Arbor

twenty years ago. He spent twenty years in administrative work, except for teaching at the Catholic University of Eastern Africa. He was also Secretary General of the Catholic Bishops of Eastern Africa.

He would like to establish an institution of higher learning... He has already collected about three thousand "good" books and is in the process of collecting more books. He would like to begin the construction of the buildings as soon as the funds allow: a few basic structures at first: a library, lecture rooms and offices. He writes: "Is it possible and convenient for you to appeal to the members of ITEST to donate books for this noble and worthy cause? Any "good" book is always most welcome: general books, professional books, specialized books and so forth are all useful. If the books are available, the modalities of collecting them and/or shipping them to me can be worked out later on."

Rt. Rev. Fortunatus M. Lukanima  
P.O. Box 1421  
Mwanza, Tanzania  
balibonaki@hotmail.com

If anyone is willing to help our brother in Africa, please contact him either via e-mail or through the Post Office box above.

---

## TECHNOLOGY AND THE NATION STATE A THEOLOGICAL PERSPECTIVE

**Dr. Duane Priebe**

[This article is reprinted from the ITEST Workshop on Technology and the Survival of the Nation-State. This Workshop was held in March, 1982. Dr. Duane Priebe, the author, is Professor of Systematic Theology at Wartburg Theological Seminary, Dubuque, Iowa. Dr. Priebe has a B.Sc in Physics from the University of Washington, a B.D. from Luther Theological Seminary and a Th.D. from the School of Theology at Claremont, California.]

### PROMISE AND THREAT

Science and technology have helped make us aware that we live in one interconnected world. International travel has become easy and common. Each of us depends on products and resources from many parts of the world. Modern means of communication bring the natural and human world, international events, and even the planets and the universe into our living rooms. Political and

social events from the farthest reaches of the planet become part of our lives and area of concern.

Science has added to that awareness. Life is a complex unity bound together in the biological history of the earth. Both the possibilities for life and the environment necessary for life as we know it are the result of this history and depend on the complex web of ways in which all living creatures interact in our common environment. Each creature makes its contribution to the



whole and benefits from the whole, as the environment is constantly being altered and sustained by all of life. Lewis Thomas in *The Lives of a Cell* pictures the earth as a single living cell, in which all the parts live out their individual lives and in so doing contribute in hidden ways to the whole. Human beings are a part of the natural world, but they cannot escape responsibility for the whole through the exercise of their capacity for control.

Pictures of the earth from the moon brought home to many people the unity of the earth, while discoveries in astronomy have made us aware that the earth and human life occupies a very small place in the vast reaches of time and space. Dead, inhospitable planets suggest how fragile life may be and how dependent it is on the environmental balance life has produced on the earth. But the whole universe is also part of us and our self-understanding. Our hydrogen was produced in the initial Big Bang, while all the atoms heavier than helium were produced in the nuclear fires at the center of ancient stars and in supernova explosions. We all wonder whether intelligent life is common in a universe that is friendly to life, or if, as some biologists believe, we are alone in a violent universe populated by billions of galaxies filled with billions of flaming stars and dead planets.

Visions of the future offered by science and technology hold both promise and threat. The possibilities for communication open enormous potential for mutual enrichment through contact with people who are different from ourselves. Technology offers the possibility of wisely managing our environment in a way that enhances life for people and for nature. As we become more aware of the ways in which our world is one interrelated whole, we can live in ways that are more responsible to the whole and, therefore, offer richer possibilities for human life itself. Although we see the whole only in fragmentary ways, science and technology offer exciting, imaginative glimpses of the wholeness and unity of our world and the possibilities that offers for human life.

But the future offered by science and technology often appears more threatening than promising. Threats arise from several sources. First, they arise from the competition and lust for power among the national states, which look out for their own "national interest." The arms race seems to have an irrational drive to increasing destructive capacity. Nuclear war threatens to destroy the whole world for the sake of "national security" and outmoded ideas of "supremacy." Second, human greed leads to forms of industrialization that take place at the expense of people and the environment, sacrificing the world and people for temporary economic gain. The cost in human suffering and environmental destruction

can be enormous. Third, technology seems to offer the power to unify the world at the expense of the richness and creative resources offered by life's variety. Cultural differences seem to fade in the face of technological uniformity, while the variety of life necessary for the ecological balance that is essential to all life is threatened.

All these problems exceed the scope of national interest and national solutions. Nuclear war threatens to destroy the conflicting nations, but it also threatens to destroy the whole world and all the peoples who want no part of the conflict. Multi-national companies and technological developments have a certain independence from national control. Prosperity in some parts of the world is often bought at the price of poverty and suffering elsewhere in the world and at the expense of the environment that will be inherited by our grandchildren. Damage to the environment — depleting resources or the capacity of the earth to produce food, polluting the seas and the atmosphere, burning hydrocarbons and destroying the forests that consume carbon dioxide and produce oxygen — affects the quality of the environment at great distances and ultimately for the whole world. If one nation or region takes action to solve some of the problems, the problems remain, even for those people. Technological advances have interrelated people's lives so strongly with the whole world that local solutions no longer seem possible.

However, utopian solutions also seem to offer little promise. It does not appear likely that the nations will give up their sovereignty to a centralized world government. It is also not clear that a centralized world government would offer the necessary checks and balances to guard against the domination of people by others, to preserve freedom, and to offer the variety of possibilities and flexibility necessary to enhance human life and creativity. On the other hand, our present national states do not seem to be prepared to abandon their destructive courses, and the world feels more dangerous today than it did ten years ago. In addition, people do not appear to be prepared to make the changes in life style that are necessary to live in a way that is more in harmony with the kind of life the earth can support in an enduring way. It is easy to lose hope, and perhaps we are headed toward destruction as the next phase of human history.

#### BIBLICAL TRADITIONS AND NATIONALISM

Christian faith does not offer a package of solutions, but it offers an alternative vision of reality that has the possibility of changing people's fundamental attitude toward themselves and the world. Even that seems to be a risky statement, since the Christian west has con-



tributed its full share to the problems we are facing, and nations with a long Christian history threaten the world with destruction. Christian tradition has often allied itself with tendencies that run counter to its fundamental spirit. In part that has been made possible by the tendency to individualize Christian hope and project it into the future in a way that forgets that God's kingdom is the future of this world and of all peoples as God's creation.

Israel knew themselves to be a people chosen by God, and they lived in a history that moved toward the realization of his promises. God chose Israel when God called Abraham and promised to make him the means by which the nations will be blessed (Gen. 12:1-3). Through all the vicissitudes of their history, God in faithfulness chose Israel in new ways when God delivered them from Egypt, made the covenant with them at Sinai, destroyed them and led them into Exile for their sins, and promised them a future beyond anything they could imagine. God chose David and promised that his descendants would be the vehicle of God's rule, and God chose Jerusalem and the temple to be the place where God would be present for the sake of the world. Every fulfillment of these promises became new promises and the basis of new hopes. But at the core of all these traditions there was one promise: Israel will be God's people and the Lord will be their God.

What is meant for Israel to be God's chosen people remained an issue of dispute throughout their history. It was often interpreted as election to privilege. Israel displaced other peoples from the land, and they dreamed of a future glory and power among the nations of the Middle East. The coming day of the Lord was seen as a day of blessing for Israel and a day of judgment for the surrounding nations. In a sense, the world and the nations existed for the sake of Israel.

Others interpreted Israel's election as an election to a vocation for the world. Israel was chosen to be the means by which God will make himself known to the nations, and thus they are the means by which God will bless the nations. Election brings the obligation to live in a way that manifests God's deity, and election means that God will judge Israel for their disobedience and unfaithfulness (Am. 3:1-2). Israel has no advantage over the other nations (Am. 9:7-8). The rule of the true king will bring peace and justice for the nations and for nature as well as for Israel, and the salvation of Israel will bring the salvation of the world (cf. Is. 2:1-4; 11:1-10). In the age of salvation people from all nations will be members of God's people (Zech. 2:11). In this sense, Israel exists for the sake of the nations and for the sake of the world.

After the exile the issue became focused in the contrast between an emphasis on Israel's universal vocation, reflected in Ruth and Jonah, and a particular, exclusive understanding of Israel's election, reflected in Ezra and Nehemiah. The latter was motivated by an intensified awareness of the danger of temptation and sin. The issue was reflected in a different way by the fact that a Judaism scattered throughout the world attracted many Gentiles, while a person had to become a Jew to participate fully in God's people.

Christianity brought a realization of the universal scope of Israel's hope and destiny. Jesus announced that God's kingdom had drawn near, casting everything in a new light. His activity was turned toward sinners, the lost, the suffering, and the outcast, as well as toward the righteous. What was decisive was that a person turn toward the kingdom and live from its power, not whether a person was righteous or a sinner. Jesus died for the sake of his message of the kingdom and for the sake of the outcast whom he included in its saving power. Through Jesus' resurrection God confirmed his message. Thus God's rule, Israel's hope and the future of all humanity, has appeared in Jesus as the rule of a God who wills to be the God of the lost and outcast and a God who creates a people among the ungodly and life in the midst of death.

In view of the appearance of the end of history in Jesus' resurrection and in view of the eschatological prophecies that in the age of salvation the nations would be included in God's people, some early Christians applied God's care for the lost and the outcast to the Gentiles. That was a disputed step, and it was only slowly that Gentile mission came to be accepted and that the church finally became primarily a Gentile community. But the mission to the nations expressed the universal scope of the hope for God's kingdom and of the future of all creation that appeared in Jesus Christ. When a person is baptized into Christ he or she is incorporated into a new human unity, in which the old distinctions and hostilities are transcended: in Christ there is neither Jew nor Greek, male nor female, slave nor free (Gal. 3:27-28; Eph. 2:11-3:13). That unity is not a uniformity in which the distinctions are erased, but it is a unity grounded in the reconciling power of God's forgiveness and love in Jesus Christ, in whom the divisive power of the differences are overcome. People are united with one another in their differences to form one body in Christ.

The message of God's kingdom that has appeared in Jesus' activity, death, and resurrection offers a vision of reality quite different from that embodied in any existing political system. The future for which all humanity longs is an eschatological reality that will be brought



about by God, not by human effort. Yet it has appeared in Jesus, and its power shapes life in the present as people are called to move beyond what they and their society already are by turning toward God's future and living from its power. The message of the cross articulates the contradiction between God's rule and the political, religious, and even revolutionary structures of this age, and it reveals God's power in the "weakness" of the suffering of his love on behalf of the lost and the ungodly. So also those who belong to Christ are not to rule over one another, but they are to live for one another in love, especially for the weakest, the poor, the lost, and the outcast.

The message of God's salvation in Christ for the outcast and sinner is combined with the command to love our enemies. The message of Jesus' death and his forgiving power brings an end to the distinction between insiders and outsiders and overcomes the dividing walls of hostility that fragment the human community. Coupled with the concern for the individual, especially for the weakest and the least, this unity is based on peace and reconciliation in Christ rather than on uniformity. This unity, therefore, includes space for the cultural and historical differences that belong to human life, providing a social framework that supports freedom and individuality and offers the "abnormal" and outsider a place.

#### CHURCH AND STATE

The church's lived reality has always lagged behind its vision of God's kingdom. The gospel is open to people in every historical and cultural context, and the message of the kingdom has social and political dimensions that need to be lived out in society. This has led to both conflict and accommodation. But the message of Christ has always preserved an awareness that the gospel and the hope it brings contradicts our world and the church's accommodations with the world. Thus the hope of the kingdom provides a dynamic impulse toward change.

In the early centuries of the church three themes, intertwined in changing patterns, provided the framework for the Christian community's relationship to the Roman Empire. First, the political authorities were seen as the agents of God's order (Rom. 13:1-7), and prayer for good government expresses God's will that all people be saved (1 Tim. 2:1-7). Interest in political order is the present component of the eschatological hope for the universal peace and justice of God's kingdom. Second, persecution and the Empire's tendency to identify itself with the divine and to demand absolute allegiance led to a tendency to identify the imperial authorities with the anti-Christ, whom Christians were to resist in faithfulness to their Lord (Rev. 12-13). Third, from the time

of Luke, the correspondence between the rise of the Roman Empire under Augustus and the birth of Christ was regarded as a significant event. On the other hand, the Roman authorities regarded Christianity as dangerous in many respects: their emphasis on love for enemies and their pacifism, their exclusive allegiance to Jesus Christ as Lord and their refusal to give the state the allegiance it desired, their orientation to the poor and the outcast seemed to threaten the social order, and their monotheism and universalism seemed to undermine the importance of the national characteristics the Empire encouraged to preserve its unity.

In the first half of the third century, while persecution was still a problem, Origen viewed the establishment of the Roman Empire under Augustus as a preparation for Christian faith, creating the conditions necessary for the spread of Christian faith. Furthermore, the political unity of the Empire manifested the unity of humanity and released people from the illusion that people are fundamentally divided into many unrelated societies and nationalities. Thus the Roman Empire pointed toward the kingdom of God, which will bring the fragmentation of the world to an end in the unity for which God created all people. On the other hand, Hippolytus of Rome saw the correspondence between the origin of the Roman Empire and Christ's birth to be a demonic imitation of God's kingdom by the kingdom of this world. The Augustan peace could only be a falsifying image of the peace of God's kingdom, while Origen thought the Augustan peace corresponded to the universal peace brought by Christ.

In the fourth century, Eusebius, in his church history, following Origen saw God's hand in the coincidence of Christ's birth and the beginning of the Empire under Augustus ending the pluralistic rule of many and bringing peace. The restoration of the Empire under Constantine completed what Augustus had begun, restoring the empire on the basis of the true religion. He understood the church to be God's people, who were guided and organized by the bishops and the emperor, with the emperor representing Christ's heavenly rule on earth. Thus church and society virtually coincided.

Both the positive and negative view of the Empire were based on the fact that the hope for God's kingdom was political in character. It included the promise of a genuinely human ordering of society, bringing a universal peace and justice. Therefore, hope for the kingdom has a political component in the search for a system of universal peace and justice. The Roman Empire could be understood as an expression of that hope. On the other hand, identifying the Empire with Christ's rule on earth was also problematic. First, such an identification overlooks the provisional character of any realization of



peace and justice in human society. Second, the Empire was not universal, and Christianity became the religion of a particular society that existed in competition and conflict with others.

When the Goths conquered Rome, Augustine defended Christianity against the charge that the Christian God had been unable to defend the Empire. He distinguished the kingdom of God from any earthly political order. Christians will make use of the peace and justice achieved by governments, and they will contribute to its stability. But human sin and the competition for power among individuals, groups, and nations places a limit on political peace and justice. In Augustine one has the beginning of the idea of the two kingdoms. It led to the tendency to distinguish the kingdom of God from any hope of even a provisional realization of peace and justice in the political ordering of human society. The kingdom of God came to be associated with the church rather than with society. As the Empire was replaced by competing groups and nations, the church was the one institution in society that structurally represented the unity of peoples and nations in Christ. The universal authority of the Catholic church stood alongside national particularity and conflicts.

Luther's doctrine of the two kingdoms was in the Augustinian tradition and drew on the medieval distinction between the two powers. Luther's doctrine expressed clearly the distinction between God's kingdom and any realized political system and between the church and the state. But it was less adequate for seeing the significance of hope for the kingdom for political life in the present. Furthermore, with the divisions in the church, it produced the danger of regional churches that identified themselves too closely with local political rulers and the emerging national states. That resulted in a loss of concrete ways in which the church could symbolize its relationship to the universal destiny of all humanity in the promise of the kingdom.

The confessional wars reflected the difficulty a church accustomed to doctrinal unity imposed by the authority of the church and the state had in recognizing some religious pluralism as a part of Christian faith. The result was that a certain measure of tolerance and religious freedom had to be imposed for the sake of the unity of the state. Freedom that should arise from the gospel had to be imposed out of political necessity. Conversely, both state and free churches tended to assume the older pre-Christian function of religion for the state: they sanctioned the state and its authority by linking it to God's will under the authority of Romans 13. But in so doing they lent support to the rise of competing and conflicting national states, each of which wanted to identify its cause with God and its enemies with God's

enemies.

These developments through the course of the church's history are not incidental to the gospel. The revolutionary power of Jesus' message of the kingdom was blunted. Jesus' concern for sinners and the outcast receded. The message that God cares for the lost and the outcast and that the dividing walls of hostility have been overcome by the power of Jesus' death to bring forgiveness and reconciliation to every human situation had its accent shifted. It became focused in the message that God loves individual sinners, who are reconciled to God and are granted salvation in the coming age. The connection between the promised future and the imperative to live in the present in the light of that future dissolved, and with it the implications of the message of the kingdom for the human quest for a universal peace and justice within the provisional political structures of this age receded. Political life was isolated from the core of the Christian message. The concrete, practical concern for enemies, outcast, and sinners no longer occupied the center of the stage, and the church reinforced existing social structures, with their divisions and boundaries of hostility. Paul's driving concern that the distinction between Jew and Gentile be overcome in practical ways in the unity of Christ's body seems foreign to a church that has accommodated itself to similar distinctions. For all their accommodations, the Christian community has never lost an awareness that there is a deep contradiction between Jesus' interest and their own reality. But the contradictions threaten the church's contact with the core of Jesus' cause and with the power of the gospel to transform human life and social relationships.

#### WHERE DO WE GO FROM HERE?

The threats to our world created by our technological capabilities have made it necessary to reopen the question of the church's accommodation to the drive for power and the hostilities that have been an integral part of the life of national states. At the same time, the technological possibilities of communication make it possible and imperative to think in new ways about the unity of humanity and of our world. None of us are isolated from cultures and events in the remotest parts of the world, and none of us can live apart from the total fabric of interrelationships that exist within our biosphere. We can hardly prescribe or predict the appropriate future, but certain directions seem clear.

First, it is difficult for the church to take an effective stand against the divisions and hostilities that threaten our world when the church cherishes its own divisions and hostilities. It is important for the church to act out symbolic anticipations of the unity of humanity in Jesus



Christ and of the power of his death to overcome all divisions and hostilities within the horizon of its own community. That seems to require some form of ecumenical reconciliation of the different churches in a way that recognizes an appropriate place for theological and structural pluralism. At the same time it is important for the church to find concrete ways in its own community to transcend the hostilities and divisions that exist in the societies in which it finds itself, identifying itself with the poor, the outcast, the valueless and the enemies.

It is also essential that churches transcend the limitations of national identification. It is not clear how national or regional churches can in any effective way symbolize, or even practically realize, the unity of Christ's people that reaches out beyond every national, racial and cultural boundary. Membership in the body of Christ must carry with it a clear sense of being a member of a community that knows no national or racial boundaries and that drastically relativizes those boundaries. That ought not remain merely theoretical, but there ought to be concrete ways in which that world wide unity is realized and symbolized. In this respect the Roman Catholic church has some advantages, and Protestants probably need to give a stronger place to organizations like the Lutheran World Federation or the Baptist World Alliance in their identity as churches. This sense of the broader unity of the church needs to be strengthened to the point that it effectively raises questions about identification with the divisive tendencies of nationalism.

Second, Christians need to reappropriate the political and social meaning of central Christian themes: love for enemies, seeking the outcast and the ungodly, forgiveness, reconciliation and the peace and justice that belong to the kingdom. They cannot do that with a utopian idealism that has little relation to realizable reality, but they can find ways to work for concrete changes in an awareness that every new social order is provisional and itself requires new modifications in the light of the hope revealed in Christ. Above all, they can heed the call of the gospel to engage in the struggle for peace and justice, to resist the lure of nationally and culturally sanctioned hostilities, and to realize the forgiveness and reconciliation effected by Christ in their personal life and in their social and political decisions. All of that involves a certain risk, indeed, it involves the call to follow our Lord who was crucified because his message seemed dangerous to the political and religious structures of this world.

Third, there is a parable offered by biology. If the primordial pools in which molecules were evolving toward what we know as life worked on a Darwinian model

featuring the survival of the most successful, life would never have developed. The molecule that was the most successful in "eating" the material in the biological soup would quickly displace any competing molecule and become the sole form of molecule in the pool. Any less successful mutations would quickly vanish, while any more successful molecule would quickly take over the whole pool. There would only be a series of successful, but unstable molecules, and the variety necessary for life would not have arisen. Each stage would give way to the next.

What was apparently necessary for the evolution of life was quite a different process. If molecule A produced a byproduct that was beneficial to molecule B, and molecule B produced a byproduct that was beneficial to molecule C, and molecule C produced a byproduct that was beneficial to molecule A, a much more stable mix arose. A mutation could survive only if it enhanced the whole system. In this case survival does not depend on being the most powerful or the most efficient, but it depends on the contribution the molecule makes to others in the unity of the whole. That should not be a surprise to Christians, who know that God rules in service to the lost and powerless and in our crucified Lord, who died to give life to others, including his enemies.

Nations have more commonly sought to survive on a more Darwinian model of the survival of the most powerful. Surprisingly, Christians have not often reflected on the contradiction between that kind of national policy and the most fundamental themes of their faith in Christ, nor have they often reflected on what it means for national policy that those who live by the sword shall perish by the sword. But if God's care for the lost and powerless, if God's forgiveness and reconciliation in Christ lies at the foundation of reality, then for nations, cultures, and political and economic organizational forms, as for the molecules in primordial pools, survival value depends on the extent to which they contribute to the benefit of others in the unity of the whole. It does not depend on the degree to which they prevail over others or dominate the world. Indeed, that threatens their own survival.

Fourth, that suggests that the most advantageous form of a world-wide community that unites all humanity may not be a centralized world government. The survival of a plant or animal species when its environment changes depends on the richness of the variations in its gene pool, which gives it the flexibility to meet new challenges. Variations in social, cultural, political and economic patterns provides an analogous reservoir for human society. The unity of the human race ought not sacrifice that plurality to an oppressive uniformity. The Christian interest in the unity of humanity based on the peace



and reconciliation effected in Christ does not lead to uniformity. It includes the variety of Jew and Gentile, the weak and the strong, and the many different gifts of the Spirit. It includes the freedom, plurality, and variety that belong to human life, all of which include genuine human values that ought not be lost.

The model these considerations seem to suggest would be some form of mutual inter-dependence among nations and peoples, in which communities seek ways to benefit others on many levels — certainly not only on the economic or military level. Regional associations like the European community need to be encouraged. But it is also necessary to find ways to weave nations together in mutual interdependence across the sharpest divisions in our world today. Israel can have no security unless its life as a people becomes essentially intertwined with the Arab nations among whom Israel lives. Bridges of interdependence need to be built between the United States and Russia, between the Western nations and the communist block, and between the developed world and the third world. We need to have a common stake in the survival and welfare of all. The present tendency to sharpen hostilities and to reduce interdependence, especially between the United States and Russia, can only be seen as a counterproductive and dangerous move.

The Christian community has an important contribution to make to this process with its vision of God's kingdom as the future destiny of all people and its message of God's love for the lost and for enemies. The gospel can help people move beyond the limitations of their divisions and hostilities if it is not simply a message reserved for the next world. At the same time we live in

a world where evil, violence, hatred, force, and death seem to be the powers that prevail. Love, mercy, forgiveness, and reconciliation seem rather weak and foolish. Practical reality seems to suggest the more violent course. In this context it is difficult to believe that love prevails because it is God's power, especially since those who risk love risk the destruction of themselves and the things they live for at the hands of the violent. In this kind of world it is possible to dare to love even our enemies only if we can die without being destroyed. The love that is necessary for our world is possible only through faith in the God who raised Jesus from the dead, revealing the suffering and weakness of God's love for the ungodly in Jesus' death on the cross to be God's power that overcomes all the violence and evil of our world that appear to be so powerful. Ultimately Christians share in God's power in Christ only in sharing in the weakness of God's love in Christ's cross.

\*\*\*\*\*

This reprint (ITEST Bulletin, 1993, Number 1) is provided for your consideration. We hope sometime in the relatively near future to have a conference on "Globalization." It would include papers on such topics as the environment, politics, power, and so on. No dates are set. It may be that other things of equal or greater moment may intervene. But it might be well to contemplate these issues no matter when that particular workshop is convened.

---

## THE CHURCH AND SCIENTISTS -- SYNOD 1977

Reprinted from *Origins*, 1977, Vol. 7, No. 21

*[The relationship between the Church and the scientific community was explored in a message submitted to the Synod of Bishops by the U.S. delegation. There is at present a real "opportunity for the Church to offer to these scientists the guidance of the wisdom entrusted to it concerning the dignity and vocation of the human person and to collaborate with them in evaluating the impact which these discoveries have on human life," the paper states. "The Church ought to demonstrate to scientists its willingness to work with them in a partnership for the benefit of humanity", it adds. The paper takes up questions concerning the catechesis of scientists, the relationship between Christian and non-Christian scientists, dialogue concerning the goals and limits of science, recognition of the rightful independence of science and the role Catholic colleges might play in promoting dialogue of the church with the scientific community. The text of the message follows.]*

Contemporary culture in many parts of the world is characterized, among other things, by a scientific and

technological revolution which evangelization and catechesis must take into account (cf. *Gaudium et Spes*,



54). Part of the Church's response to the opportunities and challenges posed by this cultural situation should be directed at those men and women responsible for scientific research and the application of its discoveries. If the gospel is indeed to penetrate "into all the strata of humanity" and bring about a transformation of humanity's "criteria of judgment, determining values, points of interest, lines of thought, sources of inspiration and models of life" *Evangelii Nuntiandi* 18, 19), the world of science and technology cannot be ignored.

Of particular urgency today are the questions posed by advances in the so-called life sciences. These appear to make possible the identification, dismantling, rearrangement and reassembly of the basic components of living organisms, including deliberately modifying the human organism. Humanity stands at the threshold of being able to direct its own biological future consciously and deliberately. Nor is it only a question of biological technology; it is also a matter of a kind of biological industrialization, that is, the integration of such fields as solid-state physics, genetics and neurophysiology. For example, scientists are talking about joining electronic circuitry to human brain function. These and other developments and possibilities raise serious questions about personal human integrity which are of enormous import to humanity and therefore to the church, which shares "the joys and hopes, the griefs and the anxieties of the people of this age" (*Gaudium et Spes*, 1).

Moreover, the scientific community is very far from monolithic in its opinions concerning the significance of these discoveries. There is at present a real -- and, we would say, providential -- opportunity for the church to offer to these scientists the guidance of the wisdom entrusted to it concerning the dignity, and vocation of the human person and to collaborate with them in evaluating the impact which these discoveries have on human life. The Catholic Church has now a providential opportunity to demonstrate to scientists its willingness to work with them in a partnership for the benefit of humanity. It is opportune to recall the closing message addressed by the Second Vatican Council to the men and women of thought and science: "Our paths could not fail to cross. Your road is ours. Your paths are never foreign to ours. We are friends of your vocation as searchers, companions in your fatigue, admirers of your successes, and, if necessary, consoling in your discouragement and your failures . . . Without troubling your efforts, without dazzling brilliance, we come to offer you the light of our mysterious lamp which is faith . . . Never perhaps, thank God, has there been so clear a possibility as today of a deep understanding between real science and real faith, mutual servants of one another in the one truth. Do not stand in the way of this important meeting."

Admittedly this effort involves a very precise and specialized form of catechesis, but it is one which cannot be ignored. Some of the fundamental components of such a catechesis are the following:

1. The recognition of the rightful independence of science. The faith of the church is not threatened by scientific discoveries. "If methodical investigation within every branch of learning is carried out in a genuinely, scientific manner and in accord with moral norms, it never truly conflicts with faith. For earthly matters and the concerns of faith derive from the same God. Indeed, whoever labors to penetrate the secrets of reality with a humble and steady mind is, if even unawares, being led by the hand of God, who holds all things in existence and gives them their identity" (*Gaudium et Spes*, 36).

2. The most important area of dialogue between the Church and the scientific community does not concern the discoveries of science as such, but the uses to which these discoveries are put. It is precisely in this area that the most important concerns and questions raised by recent discoveries in the life sciences lie. The fundamental conviction which the Catholic Church offers to the scientific community is this: all problems regarding human life are "to be considered -- beyond partial perspectives -- whether of the biological or psychological, demographic or sociological order -- in the light of an integral vision of man and of his vocation, not only his natural and earthly, but also his supernatural and eternal vocation" (*Humanae Vitae*, 7).

The new biological technology, for example, requires the direct, immediate and systematic intervention into the human composite. This means that for biomedical procedures to be used successfully, in order to create new norms of physical, intellectual and psychological health, they must produce results which are both predictable and repeatable. Such considerations, however, are proper only to a controlled or closed system. Therefore they cannot provide the ultimate criteria for the construction of a society that is truly human. They represent a threat to human spontaneity. They can only result in a society which is essentially static. Creativity is thus threatened. The human spirit, which is always open to a transcendent dimension which cannot be controlled, is stilled. Unless the values of human integrity and a respect for human freedom motivate scientific research and technological practice, we will arrive at a world in which nothing is independent, nothing is moved by its own vitality, a society in which even our children are not our progeny, but our creation. Partisans of large-scale eugenics planning are often motivated by noble humanitarian sentiments. Yet it cannot be the values of science which alone determine what human



life ought to be like.

The Catholic Church believes that salvation cannot be obtained without the grace of God which is a gift. Human self-fulfillment, therefore, will not be brought about entirely by human planning. The ultimate resolution of the drama of human life lies in a divine intervention which transcends the limitations of space and time: the lordship of Jesus Christ. Hence the teaching of the Second Vatican Council: "the independence of human affairs . . . (cannot) be taken to mean that created things do not depend on God and that man can use them without any reference to their creator" (*Gaudium et Spes*, 36).

3. Admittedly, it is not easy to speak of God the creator and of the lordship of Jesus Christ to those scientists who are agnostics or atheists. Nevertheless, the Catholic Church has never despaired of the capacity of the human mind and the human heart to respond to the secret impulses of divine providence, even if their origin is not explicitly recognized. Moreover, many scientists today recognize the precise limitations of their methodology. They have become aware that dogmatism and ideology have not been absent from the history of scientific research itself. The use of the secret of the atom in weapons capable of massive destruction has been a humbling experience for them. In this connection, 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.

4. Catholic institutions of higher learning should be encouraged to promote programs of this kind, especially since they are equipped to offer the opportunity for an interdisciplinary dialogue in which theology and philosophy can make an invaluable contribution (cf. *Gravissimum Educationis*, 10).

5. Finally, all the faithful should be made aware of the implications to the faith of what is taking place in these scientific investigations. They should be helped to become more familiar with the teaching of the Church concerning the proper role of scientific research; the limitations of scientific discoveries; the positive and negative aspects of technological progress; the sanctity of life; the respect due the human person regardless of physical, intellectual or psychological characteristics; the supremacy of grace and the need to respond to unwarranted use of scientific discoveries with a resistance which may sometimes have to be heroic.

---

## SOME OBSERVATIONS ON THE CHURCH AND SCIENTISTS

Robert Brungs, SJ

Despite the little publicity this intervention received at the time (1977), it was and remains a very important piece in the Church's relationship, not to science or Science but to scientists. Notice the specificity of the title. It is a statement that shows the Church's placing of the actions of scientists above the work of science. It is important also as a rallying cry for Christians in science (and theology, if we read between the lines) to make their specialties their apostolic springboard.

This intervention, made 25 years ago in September, received little notice at the time and has hardly seen the light of day since, although this is probably the third time it has been reproduced in the pages of the *ITEST Bulletin*. It was crafted at the behest of John Cardinal Carberry who was one of the Bishops at the Synod and the inspiration behind it. It certainly deserved a better audience than it had at the time and since.

It begins with a statement of the importance of science

and technology in the culture of the day -- at least in the "western-looking" contemporary culture. In doing so, the American delegates mentioned the response to the "opportunities and the challenges posed by this cultural situation" as properly belonging to those men and women "responsible for scientific research and the application of its discoveries." In other words, who can better respond to the opportunities and challenges than those who are trained in the science or the technology itself? And remember, we all have the obligation of spreading the Good News of Jesus Christ to that part of the world where we reside.

The document then turns to the urgency for this kind of apostolate evidenced in biological advance. It treats in passing the possibility of humanity's directing its own biological future such as reassembling the most basic components of life. Remember, this was written twenty-five years ago, before the "promise" of stem cells and human cloning. It is a prophetic statement -- at least in



the modern sense of prediction. It puts the problems (the opportunities and the challenges) squarely before us, the men and women of science and also theology. Science and technology are raising serious issues and the response from theologians has been far from enthusiastic and far from productive.

Faith is the basis of our lives as Christians -- as Christians we can do nothing without faith in the Lord Jesus who is God and man. It is not part of our Christian faith to build a theology based on science. Our faith arises from revelation, not from advances in this or that science or the successful application of one or another technology. Personally I have a little rule of thumb: whenever I read of a "new" theology, I look to see whence it issued. If it comes basically from "faith" in science or technology, I quietly put it aside. As Christians our faith is radically revelatory. It believes first and foremost in the humanity and divinity of the Lord Jesus. It proclaims his life, death, resurrection and ascension and his eschatological return to us to guarantee our own reembodiment in Him. If this is not our faith, everything is vain, as St. Paul say in the letter to the Corinthians. Theologians should work from Scripture to science, not the other way around.

Having said all this, the Synod's intervention continues with a discussion of a new catechesis which, it says, cannot be ignored. It then lists five characteristics of this "new catechesis."

The first concerns the rightful independence of science. Then it proceeds to specify what it means by science. It then gives the now commonplace answer that true science and true faith derive from the same God and cannot be in conflict. This is certainly the proper answer when it considers science as a method. There is nothing in that method which contradicts the Faith. When science is considered as a body of "true knowledge", distinctions become necessary; they depend on the degree of interpretation needed to present scientific data to the public. In reality, all science can do is present data about physical reality. Anything beyond that demands interpretation and depends on assumptions on the part of the expositors. As the Synod says, if science is carried out genuinely and morally, it cannot be in conflict with the Faith. The trick is to decide what knowledge is simply data and what material carries a high degree of interpretation.

The second component is really a new one: all problems regarding human life are to be considered in the light of an integral vision of mankind and its vocation. Here is where the problems with "science" really begin to be felt. The problem is a massive one and the answers may not be where they have always seemed to be. In dealing

with organisms, for example, we have a very complicated system -- immensely complicated system. It is not enough to treat it as if a simple change in one subsystem will produce a simple change in the whole system. In other words, a linear solution will not work well in a non-linear situation. The human being is as complicated as a climatic system; I would suggest that we are more complicated. A simple "good" change in one gene or in one organ may have a profoundly deleterious effect on the composite.

Science in and of itself cannot provide the ultimate criteria of a "good society." It is far too limited in its approach to reality to provide such a basis. As the Synod says: "Unless the values of human integrity and a respect for human freedom motivate scientific research and technological practice, we will arrive at a world in which nothing is independent, nothing is moved by its own vitality, a society in which even our children are not our progeny, but our creation." We believe that human freedom is indeed a gift of God to all human beings; we do not believe that human planning can bring about full human self-fulfillment. Salvation and fulfillment cannot be had except as a gift of God, a free gift from the God who truly loves us.

Next the Synod acknowledges the difficulty of proclaiming God the creator and the Lordship of Jesus the Christ to atheists and agnostics. They, indeed, are not likely to be moved by such things. In fact, they might well be angered by them. That anger may be defensive, but it is real anger. It might be better in many cases to be the best we can possibly be in the science and win their respect by being at least as proficient in science as they are or perceive themselves to be. Then, by indirection, small advances may be made. But to accomplish this well, we have to be knowledgeable about the contents of our faith as well.

More scientists now, I believe, are skeptical about the possibilities residing in science to change the world. Some scientists may look down on "dirty politics," or the pro-life effort of most of the Christian churches, but, again, this may be more of a defensive position; people justify their actions in any way they can. Some Christians in science may be in a milieu in which they cannot openly proclaim their Christianity. Even they can pray; and the power of prayer cannot be dismissed.

The Synod then goes on to say: ... evangelization and catechesis by scientists who are men and women of faith are extremely important.... 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 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."

This is an extremely important statement. It notes that the evangelization of the scientific communities is the work of dedicated Christian scientists. It is clear that they should be, from a Christian perspective, as good in their science as possible. It would help little to have incompetents in science evangelizing this community. They would at best be ignored, at worst derided. Their message would simply be unheard. St. Paul asks a simple question: "is it possible that they did not hear? Indeed they did; in the words of the psalm, their voice has gone out through all the earth, and their message to the ends of the world. A second question: is it possible that Israel did not understand? Moses answered this long ago: I will make you jealous of people who are not even a nation; I will make you angry with an irreligious people.

But these men and women of science have to have an accurate catechesis. In this regard there is one temptation into which they do not fall. Their theology (their catechesis) must not be based on the science itself. Science by its very methodology cannot arrive at presence or existence of the eternal God. Christian in science need revelation as a base, as do all Christians. Nothing else will suffice. This in no way means that they are bereft when it comes to problems arising from the sciences or from technology. This is the moment of their true creativity and spontaneity. They are in their catechesis (silent in speech as they may have to be but eloquent in their example perhaps) to apply the lessons of revelation to the situation in the sciences.

This cannot be the off-of-the-top-of-head answer to the questions facing science and technology. It should be more that the "I don't see why not" variety of answer. It should be reasoned, but built on faith. Before the Enlightenment faith and reason acted in concert in questions of dispute among men and women. The Enlightenment by definition dropped faith from the equation. But it didn't really effect a separation between faith and reason. What it did was raise up reason to a position formerly occupied by faith, to the position of an assumption. This colored everything afterwards. Some contemporary ideologies (deconstructionism, for example) owe as much to the Enlightenment as does science. As much as they may deride the folly of deconstructionism, post-modern science must accept the fact that it is equally a child of the Enlightenment.

It may be blowing ITEST's horn, something we do very rarely, but we were very much in the mind of the

American bishops when this intervention was made. They recognized ITEST as fulfilling such a role in the Church. We are a community of scientists, theologians and dedicated Christians striving to bring the scientific community into a broader context, one in which Christianity can flourish. Your membership in this community of prayer, thought and faith is highly valued. In this light we would urge you to make two resolutions as we begin the New Year. First, make your insights in the area of faith and science known to us. If suitable they could be printed in this *Bulletin*. Secondly, let your colleagues and friends know about us. Maybe once or twice a month we are informed by people that we were unknown to them until very recently. It is true: despite an almost 34 year history as a formal, not-for-profit corporation we are relatively unpublicized. Part of this is by design; we believe that membership is best increased by word of mouth. We have found over the years that this is the best possible way for a long-term relationship between the staff and the new member.

It would certainly be a commonplace to point out that we would double our membership if each member were able to recruit one other person. Surely almost every member knows one other person who would profit from membership and contribute to the faith/science dialogue we conduct. The contribution of good material from the members is a priority. This, in reality, is *our* community of people interested in faith and science. It is here that we can grow in our own "understanding, experience and response to our faith."

Fourthly, the Synod recommends that "institutions of higher learning should be encouraged to promote programs of this kind." In the twenty-five since this proclamation was made by the Bishops little has been done. It is true that the number of faith/science groups has multiplied but the number of university-type programs has not increased all that much. It would be well for each of us in a university setting to promote the existence or the beginning of some such program, especially those that involve philosophy and theology. We need more creative, but orthodox, ways of looking at these issues such as embryonic stem cell research, human cloning or the merging of biology and computer science. This latter is an issue waiting to be recognized. The last characteristic of this new catechesis was said to be the need for all the faithful to be made aware of the implications to the faith of what is taking place in scientific investigations. This is truly needed and necessary. The writers and speakers among us could do much to inform the "laity" of such implications. The conflict or the opportunity for harmony is indeed vast as are its implications. The "laity" has a need and a right to know these things and we can help provide them. This is a profound part of our vocation in the Body of Christ.



We ask all the members of ITEST to be more active in all the aspects of this apostolate. Just think what a gift we would present to Christ if we all exercised our prerogatives in the work on faith/science. We need no one's permission to be more active in faith and science. Our work in spreading the Gospel is a necessity and an obligation which we do not always take seriously. We need no permission to carry out an obligation. We are

called and we are sent on mission. How will we answer St. Paul's question: can it be that they have not heard? They (here, scientists, technologists, philosophers and theologians) will not hear unless we speak.

We ought to keep the words of the Fifth Synod of Bishops in our minds and hearts.

---

## JESUITS IN SCIENCE: THE THIRD PARADIGM

Agustin Udias, S.J.

Presence of Jesuits in the world of science can be traced back to the first professors of mathematics of Jesuit colleges in the middle of the XVI century, especially to Clavius and the chair of mathematics in the Collegio Romano. We can divide the motivations for this presence, which I call paradigms, into two periods. The first up the suppression of the Society and the second from the restoration to about 1970. We are now faced with a new third paradigm if we want to continue this presence in the future.

From the 16th to the 18th centuries Jesuits took part in the process of the birth and the early development of modern science. Figures like Clavius, Scheiner, Grienberger, Riccioli, in astronomy, Gregoire de Saint Vicent, Sacheri and Riccati in mathematics, Grimaldi, Aguilon and Pardies in optics, Kircher, Cabeo and Bosovic in various fields of physics are well known. The first paradigm of the presence Jesuits in science is represented by this period. One of the most importance aspects of the scientific revolution was its introduction of the mathematical language in the study of nature and its foundation in experimental evidences. This implied the abandonment of the Aristotelian physics. Jesuit professors of mathematics joined the currents of modern science and justified the use of mathematical analysis by defending the proposition that it constitutes a true science even in the strict Aristotelian sense.

Clavius insisted on the importance given to the mathematical analysis in the new developments of science and remarked that it would be very sad if the Society is left behind in this process. Thus, following his advice, Chairs of Mathematics were created in all the important Jesuit colleges which also covered the subjects of astronomy, mechanics, optics and other physical disciplines as electricity and magnetism. Their professors distinguished themselves from those teachers of physics who taught the Aristotelian doctrine; today we would call them philosophers of nature. Between 1600 and

1773, counting in France alone, there were 620 professors of mathematics teaching in 29 colleges and in the Germanic countries (Germany, Austria, Belgium, Holland and Czech Republic) about 900 in 42 colleges. Jesuits rapidly assumed the new ideas of modern science from authors as Galileo, Kepler, Huygens, Descartes and Newton, though, they were deterred from holding publicly the heliocentric doctrine by the ecclesiastical prohibition. The first paradigm of Jesuit presence in science was, then, that of a participation in the development of the new science in its epistemological justification. By the middle of the 18th century heliocentric astronomy and Newtonian physics were openly taught in Jesuit colleges. About that time began also the establishment of observatories in Jesuit colleges, reaching about 30 in Europe at the time of the suppression. This movement abruptly came to an end with the suppression of the Society in 1773.

The second paradigm began with the restored Society in 1814. One of the main aspects of the presence of Jesuits in science, besides teaching in colleges and universities, was the establishment of observatories. Since 1825 more than 70 Jesuit observatories of different types and importance existed at different times throughout the world. The oldest began as astronomical observatories and the more recent dedicated to various fields such as meteorology, solar physics, seismology and geomagnetism. A large number of Jesuits participated in this activity for more than 160 years. To the work in the observatories one has to add also the presence of Jesuits as professors of science in secondary schools, colleges and universities. In the American Jesuit universities there were a large number of Jesuits teaching in all sciences from mathematics to biology, many of them with doctoral degrees from the most prestigious universities. At the peak of this movement they formed the very active American Association of Jesuit Scientists which published a Bulletin from 1922 to 1965. Before about 1920 science was also taught at an advance level



in the philosophy faculties for Jesuits.

The paradigm of this period was based mainly on the apologetic argument against the extended mentality of the 19th century that declares the incompatibility of science and religion and accuses the Church of obscurantism and of its position against science. The presence of Jesuits in science, through their own scientific institutions, was considered as a clear argument against these accusations. Thus Aloysius Cortie, director of the Observatory of Stonyhurst writing about Angelo Secchi in 1923, said: "The enemies of the Holy Church have made such unwarranted use of science as a weapon against even her most fundamental truths, that an impression has sometimes been produced among many of her children that the pursuit of science is damaging and dangerous to faith.... Father Secchi is a striking example of one who knew how to unite religion and science". The observatories in mission countries added the argument of scientific prestige in face of non-Christian societies. Bonaventure Berloty founder of the Ksara Observatory in Lebanon wrote in 1912: "Missionaries, helping this scientific evolution perform work useful to the countries where they work and show, once more, that the Catholic Religion, working mainly for the salvation of souls, has never neglected the true science which ornate [ornament] the human spirit". This has been the spirit of the great missionaries of the old Society in China, as was expressed by Ferdinand Verbiest: "Christian Religion entered China by the hand of Astronomy".

This type of Jesuit presence in science fell into a crisis at about 1970. Many factors influenced this crisis which contributed to end of this paradigm. Among them the most important were the abatement of the apologetic mentality in the Church and the decay in the science versus religion controversy, together with the shift in the priorities of the Society to the social justice issues after the 32nd General Congregation. While in the 31st Congregation there was a clear statement of the importance of the scientific apostolate, no mention is made of it in the 32nd. This crisis led finally to the closing of practically all Jesuit observatories and the practical end of the dedication of Jesuits as professors in the fields of science.

If Jesuit presence in science is to continue today, we are in need of a new paradigm. This must take into account, first of all, the influence of science and technology in our society and the need for an active presence of the Church in the world of science. Unfortunately this is rarely mentioned in the official documents of the Society today. Science is practically ignored in the documents of the last General Congregation. For example, it is not mentioned in the document about

enculturation and it seems that the commission did not even consider it. The new paradigm must take also into account the changes in the practice of science today. Some authors considered that a new form of doing science is being created today, with a merging of science and technology, and of academic and industrial science. Moreover, the impact of science and technology upon society is becoming more immediate and their consequences more profound. All of this affects the form of the presence of the Church in science. Need of this presence is urgently felt, but ways of carrying it out are not yet clear. Jesuits by their scientific tradition are still called today to actively contribute to this presence. No other institution in the Church has the scientific tradition of the Society. Even today the Church relies upon the Society for work in the field of science, as evidenced by the Vatican Observatory. Jesuit presence in science must contribute to the enculturation and dialogue of the Church with the scientific culture. It must try to bridge the gap between the scientific and Christian communities. This implies both to make present the Christian values to the scientific community and the scientific results, knowledge and language to the Christian community. It would have a two way necessary function.

The practical aspects of Jesuit presence in science today are not clear and much consideration is needed. Operating our own scientific institutions is, now, clearly out of the question. Modern science requires costs that are impossible for the Society to assume. Besides, the best scientific research is done in a few institutions which attract scientists from the whole world. Thus Jesuit presence in science would have to be exercised through personal work of Jesuits in scientific centers. The work of individual Jesuit scientists must be coordinated at the regional and world level through groups like EJIS (European Jesuits in Science). This is important to avoid the isolation in which Jesuit scientists sometime work. As the number of Jesuits diminishes, those in science will be few and at the level of the whole Society in need of communication and coordination.

Science today is becoming aware of its many relationships with other fields of human interest, such as ethics, religion and philosophy. The ethical problems of science are today a field of growing interest and not only in bioethics. The relation between science and religion is growing and is of great interest, as evidenced by the recent books about this subject written by scientists, for example, those of Gould and Alegre. Jesuits scientists would have to be active in this type of discussion. In the past Jesuit scientists worked in their field of research without caring much about these problems. This is no longer possible. They have to be active in this type of discussion and contribute to it. This imposes an added burden since it will presuppose their active work



in philosophy and theology. A pioneer of this type of work is Robert Brungs in St Louis who created in 1968

the Institute for Theological Encounter with Science and Technology.

---

## SCIENCE/TECHNOLOGY EDUCATION IN CHURCH-RELATED COLLEGES AND UNIVERSITIES

**Joseph A. Panuska, SJ**

*[This excerpt is taken from the Proceedings of an ITEST Workshop on Science/Technology Education in Church-Related Colleges and Universities held at Fordyce House, St. Louis University in 1989. At that time Father Panuska was President of the University of Scranton. Father Panuska has a doctorate in cryobiology.]*

.... Now let me speak a little more directly about the role of science in a church-related university. One could have a whole conference on the nature of a university or, to be more complicated, a church-related university. I'm not going to talk about either one in terms of definition, but I would like to say that, in my opinion, any Church relationship should be, and in most cases is, more behavioral than juridical. Of course, behavioral and juridical relationships are not mutually exclusive. Recently within the Catholic tradition, there has been considerable discussion about juridical relationships. While not considering this unimportant, it is very far from the heart of the matter. In such considerations, shared purpose and purposeful behavior are far more effective than unwelcome and unenforceable juridical ties, but a juridical tie naturally can influence behavior.

### GOOD FOR SCIENCE

Science within the Church-related educational context is good for the progress of science itself. I do not mean to suggest that pure science can be accomplished better in a church-related environment, but I believe that this environment could lead scientists to investigate questions with great human value and which might possibly be overlooked in another type of environment. I think that a church environment can have an integrating effect, or a broadening effect, on the scientist. This is hard to measure since it is based on a subjective judgment, but it is real. There is something psychologically stimulating that comes from a diversified environment.

In a church-related environment, the scientist may be less likely to have a perspective of the world that is overly dominated by scientific methodologies. The door is open to other approaches to reality. Life is less likely to be exclusive. Intense concentration on any research, whether it be in science or the arts can be narrowing. Broader visions and challenging experiences tend, in my experience, to encourage imaginative thinking, some-

thing which can only enhance the productivity of the scientific effort. Sciences should have an integrated view of the world, especially those sciences which touch the human person.

The cohesion of science and church-related universities should be mutually nourishing, both because of the science/church relationship and because the institution is a university.

### GOOD FOR CHURCH

What are the advantages for the church-related aspect of this question? There is the advantage of the continuity of a tradition. From the very beginning of education in church-related schools there was scientific education. And just as the church-related environment assists scientists to an integrated view of the world, so the presence of science helps the Church maintain an integrated view of the world. Churches do not deal simply with things of pure spirit, but of spirit acting through flesh and blood, with psychological, sociological and economic human relationships. Being "other worldly" is incomplete, just as being simply "worldly" is incomplete.

A complete university setting provides the Church with a special opportunity to influence students and professors in both scientific and theological disciplines. The more complete and honest the relationship, the stronger that influence will be. If there are to be any apparent conflicts in the human mind between religion and science, it is far better that those conflicts appear in an environment where there can be a healing, where there is time and intelligence for integration.

For these and other reasons, some of which I am sure will emerge in the course of our workshop, the presence of science and technology appears to me to be very important within the church-related aspect of our question. Indeed, science is necessary for the full



development of the church.

### AN EDUCATIONAL NECESSITY

Now to the easy part. For me it is inconceivable to think of a university, especially one dealing with undergraduates, which does not have strong scientific programs as a part of its basic environment for learning. All of our school catalogues claim in one way or another that we strive to produce well-balanced persons with an integration of knowledge, professionally competent -- ready for graduate schools or professional schools, ready for life. This means there should be a strong liberal arts base so that the view of the world is broadened and the past respected. Sensitivity to all the elements of the present should result in future steps to be taken in the context of history, present knowledge and a long-range vision. I do not believe that in the world today, any more than in the world of the middle ages, one can have this balanced view, this integration of knowledge which leads to a fuller life and the capacity for fuller service, without science.

I believe that there should be serious science taught even in general programs, not merely soft introductions which could be obtained equally well from popular reading. Science is too important a part of our world to be given light treatment. As educators we have an obligation to see that this integration is accomplished.

In order to achieve a balance even for the general student it is important to have strong science departments, departments which are not only knowledgeable and can provide a solid major, but also involved in scientific research. And, of course, there must be, an integration and a balance within the university itself.

To repeat what is probably an already clear opinion of mine: there is no complete university without science. Therefore, there is no complete Catholic university without science. Without science it is impossible to be in adequate contact with the world.

Universities have a responsibility to perpetuate scientific knowledge and add creatively to it. Religiously-related universities can add a perspective which broadens vision. Their scientific activities not only give them credibility, which is very important, but also help them to achieve their purpose both as a university and as a religiously-related university.

### ADDITIONS

Let me, add a few other practical comments and then draw this keynote address to a close.

Although there have been cutbacks in federal support for science in recent years, external funding for scientific works through research grants and development of facilities is greater than that for the humanities. Despite my affection for science, this is unfortunate, but nevertheless true. The presence of science in our schools opens the door to research opportunities and has the capacity to set a tone which can have a very positive effect on the creative aspects of university life in other areas.

When I first came to the University of Scranton one of my primary goals was to intensify the spirit of scholarly inquiry. I thought that this was healthy for the faculty themselves and certainly for the entire university, reaching both the graduate and undergraduate levels. The movement of one portion of the faculty in this direction is truly a stimulus to the entire faculty. Such a movement applies pressure on the administration to provide the necessary course loads, equipment, and other means to support this. It is not inexpensive, but I believe that it is both healthy and essential.

Another thing that I would mention is that at least for a number of universities, including church-related schools like the University of Scranton, excellence in science and technology can assist our outreach to the community at large in a practical way, which is truly helpful to our neighbors and also increases the appreciation of our communities for the value of having a vital university in their midst. This can often be helpful. At my university we have been intensifying this relationship dramatically over the past few years and I expect that movement to continue.

### AND FINALLY

Let me conclude by once again thanking Father Brungs and St. Louis University for co-sponsoring this conference. Congratulations to ITEST on its 21st year. Thanks to all of you for participating in this workshop.

God gave us a world full of wonders, beautifully integrated, remarkably balanced, but ever changing and sometimes confusing. In order to understand God and to become a gift ourselves we must move forward in our own lives and in our schools as best we can with that integration of knowledge that leads to imaginative discovery. Such an integration in our church-related schools, such a remaking of ourselves and the keeping of our churches on course is not possible without the presence of science as a significant part of our educational systems. I hope that this keynote will help to open doors to our discussions this weekend. I look forward to our sharing of ideas.



## NEW MEMBERS

**AVILA**, Christopher; 1335 Louisiana; Lawrence, Kansas, 66044; U.S.A.; Student; University of Kansas; (785)-312-1784.

**BRENNER**, Ms Sara; 1608 HyVue Street; Adel, Iowa, 50003; U.S.A.; Student; Iowa State University; Genetics, bioethics, theology; (515)-993-4952; E-MAIL sbrenner@iastate.edu.

**CAMARATA**, Ms Kate; 1506 Lilac Lane; Lawrence, Kansas, 66044; U.S.A.; Student; University of Kansas; Teaching studies; (785)-312-3148; E-MAIL nebulak@hotmail.com.

**CRUTCHER, PHD**, Keith; Dept of Neurosurgery - Univ. of Cincinnati; Cincinnati, Ohio, 45221; U.S.A.; Professor of Neurosurgery; University of Cincinnati; Neurosurgery, Brain Research; 513-558-3552; E-MAIL crutchka@ucunix.san.uc.edu.

**LANG**, Katie; 2401 W. 25th St. Apt. 16 A2; Lawrence, Kansas, 66047; U.S.A.; Student - cellular biology; University of Kansas; (785)-838-3273; E-MAIL kmlang@ku.edu.

**MARQUEZ**, J. Gerardo; 3314 Polaris Drive #5; Ames, Iowa, 50010; U.S.A.; Student - genetics; Iowa State University; Molecular population genetics; (515)-233-0358; E-MAIL marquez@iastate.edu.

**MAYANS**, David; 1515 N. Engel Road #506; Lawrence, Kansas, 66044; U.S.A.; Student; University of Kansas; (785)-312-1047.

**SING, PhD**, Charles; 1241 E. Catherine St. - 5928 Buhl Bldg; Ann Arbor, Michigan, 48109-0618; U.S.A.; Professor of Human Genetics; University of Michigan; (734)-764-5492; FAX (734)-763-5277; E-MAIL csing@umich.edu.

**WESTENBERG, PhD**, Dave; 2 Vichy Rd - Univ. of Missouri - Rolla; Rolla, Missouri, 65409; U.S.A.; Assistant Professor - Biological Science; University of Missouri - Rolla; Bio-ethics; (753)-341-4821; FAX; E-MAIL djwesten@umr.edu.

**WYSS, MD**, J. Michael; 1670 University Blvd/VH217; Birmingham, Alabama, 35294; U.S.A.; Professor of Medicine; University of Alabama; Neurobiology/cardiology; (205)-934-7029; E-MAIL jmwys@uab.edu.

## CHANGE OF ADDRESS

**ABEL (Fabre)**, Dr. Francesc; c/ Santa Rosa, 39-57 3rd floor; Esplugues de Llobregat (Barcelona), 08950; Spain; MD/PhD, SJ, Prof of Bioethics; Institut Borja De Bioethica; Bioethics; 34-3.600.61.06; FAX 34-3.600.61.10; E-MAIL bioetica@ibb.hsjdbcn.org.

**ANDREWS PhD**, Frank A.; 1112 River Crescent Drive; Annapolis, Maryland, 21401; U.S.A.; College Professor (ret.); The Catholic University of America; Physics, evolution, cosmology; (410)-897-9398; E-MAIL fandrews27@home.com.

**BRUN, PhD**, Rudolf; 3006 Tanglewood Park W.; Fort Worth, Texas, 76109; U.S.A.; Professor-developmental biology; Texas Christian University; Integrating evolution into a Christian theology of nature; (817)-257-6173; FAX (817)-924-4869; E-MAIL r.brun@tcu.edu.

**CONNELL, CSJ**, Sr. Rosemary; 335 Valle Serena; El Paso, Texas, 79907; U.S.A.; Advocacy/Education (ret.); Sisters of St. Joseph; Evolution, genetics, stem cells; (915)-629-8297; E-MAIL csjrosemary@aol.com.

**DISCHER, PhD**, Mark; 2724 Harrison Place; Lawrence, Kansas, 66047; U.S.A.; Professor; University of Ottawa; FaithScience issues; (785)-749-0742; E-MAIL discher@ottawa.edu.

**DURBIN, JR, PhD**, William A.; RR 1 BOX 317; Macon, North Carolina, 27551; U.S.A.; Professor/church historian; Washington Theol Union; History of science and Christianity; (252)-257-6120; (202)-726-1716; E-MAIL durbin@wtu.edu.

**FITZGERALD, SJ**, Kevin T.; GU Med. Ctr. 4000 Reservoir Rd., NW Bldg. D, Suite 236; Washington, DC, 20007; U.S.A.; Assoc. Professor - Health Care Ethics; Georgetown University Medical Center; Molecular biology, genetics & ethics; (202)-687-5473; E-MAIL ktf3@georgetown.edu.

**FORSTHOEFEL, SJ**, Fr. Paulinus; Colombiere Center, P.O. BOX 139; Clarkston, Michigan, 48347; U.S.A.; Prof. of Genetics (emer); Colombiere Health Center; Genetics; (248)-620-2545.

**HERWICK, MD**, Robert P.; 490 Post Street - #700; San Francisco, California, 94102; U.S.A.; Dermatologist; University of California Med. School; (415)-362-2238; FAX (415)-362-7745; E-MAIL rph9@cornell.edu.

**KAPPES, CST**, Sr. Marcianne; 1900 W. Mac Arthur Drive; Shawnee, Oklahoma, 74804; U.S.A.; Faculty - Rel. Studies Division; St. Gregory's University; Sci/relig/art/drama/hist/lit; (405)-232-7926; E-MAIL srmarcianne@sgc.edu.



**KRACHER, PhD**, Alfred; Dept of Chem/Biochem - U. of Arkansas; Fayetteville, Arkansas, 72701; U.S.A.; Geochemist; University of Arkansas; Philosophy of science; extraterrestrial life; E-MAIL [akracher@iastate.edu](mailto:akracher@iastate.edu).

**LUKANIMA**, Bishop Fortunatus; P.O. BOX 1421; Mwanza; Tanzania; Bishop; 255 57 2313; E-MAIL [balibonaki@hotmail.com](mailto:balibonaki@hotmail.com).

**MAGILL**, Dr. Gerard; 3545 Lafayette Avenue; St. Louis, Missouri, 63104; U.S.A.; Director/Ethics; Center for Health Care Ethics/SLU; Health Care/Business Ethics; (314)-977-6660; FAX (314)-977-5150; E-MAIL [magill@slu.edu](mailto:magill@slu.edu).

**O'DONNELL, CSP**, Rev. Robert J.; St. Paul the Apostle Church 405 West 59th Street; New York, New York, 10019; U.S.A.; Priest; Paulist Institute; Cosmology, evolution, technology; (212)-265-3209, ext.343; E-MAIL [rjodcsp@aol.com](mailto:rjodcsp@aol.com).

**OULVEY, SJ**, Fr. William T.; Melhado Hall Jesuit Residence PO BOX 548; Belize City; Belize, Central America; Priest-chem. teacher; Jesuits, Missouri Province; Science, ecology; 501.2.32411; FAX 501.2.37491; E-MAIL [bjjesuits@btl.net](mailto:bjjesuits@btl.net).

**PRATHER, PhD**, Randall S.; 162 Animal Research Ctr-920 East Campus Dr. ; Univ. of Missouri - Columbia, Missouri, 65211; U.S.A.; Distinguished Prof of Reproductive biotechnol; University of Missouri-Columbia; (573)-882-6414; FAX (573)-882-6827; E-MAIL [pratherr@missouri.edu](mailto:pratherr@missouri.edu).

**THOMPSON, PhD**, Thomas N.; 13294 W. 111th Terrace; Overland Park, Kansas, 66210; U.S.A.; Life scientist; Quintiles, Inc.; Origin of life, biochemistry; (913)-498-8679; E-MAIL [tthompson2@kc.rr.com](mailto:tthompson2@kc.rr.com).

**UDIAS, SJ**, Augustin; Alberto Aguilera 21; Madrid, 28015; Spain; Professor of Geophysics; University of Madrid; Faith and Science; 34-91-540-6172; FAX 34-91-542-3103; E-MAIL [figeo12@sis.ucm.es](mailto:figeo12@sis.ucm.es).

**VAN HOVE, SJ**, Fr. Brian; 5208 South 494 Highway; Mission, Texas, 78572; U.S.A.; Priest, Teacher; Pontifical College Josephinum; (956)-491-3835 (cell); (965)-585-7078; E-MAIL [frbrianvhdob@aol.com](mailto:frbrianvhdob@aol.com).

#### E-MAIL CHANGES

<b>BECK</b>	<a href="mailto:hbeck@austin.rr.com">hbeck@austin.rr.com</a>
<b>BUKOWIECKI</b>	<a href="mailto:cetc7937@peoplepc.com">cetc7937@peoplepc.com</a>
<b>COLELLA</b>	PHONE: (765)-463-3029; FAX (765)-496-0706
<b>D'SOUZA</b>	<a href="mailto:xil@vsnl.com">xil@vsnl.com</a>
<b>FERGUSON</b>	<a href="mailto:jimferguson@ayshireassoc.com">jimferguson@ayshireassoc.com</a>
<b>FOLLIS</b>	<a href="mailto:lefollis@aol.com">lefollis@aol.com</a>
<b>GREENLEY</b>	<a href="mailto:robert.z.greenley@pharmacia.com">robert.z.greenley@pharmacia.com</a>
<b>HOY</b>	<a href="mailto:mhoy@htlutheran.org">mhoy@htlutheran.org</a>
<b>HYNES</b>	<a href="mailto:thynes@arl.army.mil">thynes@arl.army.mil</a>
<b>LANCTOT</b>	<a href="mailto:cal.grpapa@starpower.net">cal.grpapa@starpower.net</a>
<b>LSPS - SEMINEX</b>	PHONE (512)-477-2666
<b>MERRIFIELD, D.B.</b>	PHONE (202)-887-0877
<b>O'NEILL, RSM</b>	<a href="mailto:maryaquinrsm@aol.com">maryaquinrsm@aol.com</a>
<b>RAYMOND</b>	<a href="mailto:pmraymond@att.net">pmraymond@att.net</a>
<b>ROSSI</b>	PHONE (313)-745-7145
<b>RSMs, PROVIDENCE</b>	<a href="mailto:administration@mercyri.org">administration@mercyri.org</a>
<b>SCHMUDE</b>	<a href="mailto:kschmude@northnet.com.au">kschmude@northnet.com.au</a>
<b>SMITH, M</b>	<a href="mailto:mark.e.smith@pharmacia.com">mark.e.smith@pharmacia.com</a>
<b>SMULDERS, CFMM</b>	<a href="mailto:asmulder@lmu.edu">asmulder@lmu.edu</a>
<b>SPORMAN</b>	PHONE (989)-671-1545
<b>VALE</b>	<a href="mailto:cvale@chc.edu">cvale@chc.edu</a>
<b>WANZONG</b>	PHONE (310)-647-3662
<b>WEST</b>	<a href="mailto:c.c.west@worldnet.att.net">c.c.west@worldnet.att.net</a>
<b>ZETLMEISL</b>	PHONE (281)-693-2350

#### IN MEMORIAM

Mr. Lee Carter  
Mrs. Hazel Roberts  
Archbishop F. R. Rush

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