



We have now reached the actual date of our 30th anniversary. Thanks be to God for his gift of longevity. It is up to us to continually strive for more years.

We will be sending out renewal notices soon for the year 1999 and we will very soon be holding our Workshop, *The Future of the Family/The Family of the Future* (October 16-18, 1998). Then there is the Celebration "Thirty Something," the anniversary of our 31 years of existence — *The Genome: Plant, Animal and Human*. That Celebration will be held August 1-5, 1999 at the Lakeshore Campus of Loyola University — Chicago. Invitations will be mailed out in the next month or so when the program is complete.

This is an excellent occasion for the Board of Directors to look to both the past and the near future to contemplate those things we have done well and those things that we have done less well. We have certainly fulfilled the first three of our corporate goals — acting as an "early-warning system" for the Churches, translating the information into a theological/ecclesial vocabulary and identifying those scientific developments which affect Christian *belief*. We have been less successful in building a *community* of Christian scientists dedicated to the advancement of scientific understanding as well as to the growth of the churches. We have done much in this regard but certainly not enough. Your input would indeed be welcome. It is important as well to involve students and younger scientists in building this community. Please share your wisdom and insights with us.

In the meantime, let's thank God for thirty years of existence and hopefully for a good measure of success in our corporate undertaking. We might also ask his favor for many more years of existence — if such be his will.

I want to thank every one of you for your help over the years and ask for its continuance. God's blessings on you all.

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*Robert Brungs, S.J.*

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## ANNOUNCEMENTS

1. Plans for the August 1-5, 1999 *30-Something celebration* of ITEST's 31st. anniversary at Loyola University, Chicago, are going very well. Francis Cardinal George, Archbishop of Chicago, (Theology/Biotechnology); Dr. Brendan Niemira, Michigan State University, (Plant Genetics); Dr. Randall S. Prather, University of Missouri/Columbia (Animal Genetics); Mr. Richard Cusack, TV producer/director, film writer, (Biogenetics in the Media); Dr. William Sly, Geneticist/Pediatrician, St. Louis University, (The Physician & Biotechnology); Dr. Alice Hayes, President, University of San Diego (Education in Biotechnology & Faith/science); As soon as we confirm the speakers on the topics of Human Genetics and The Faith/Science Apostolate, we will send out preliminary publicity, including room/board and registration figures. **Please reserve these dates: August 1-5, 1999.** The daily program will afford ample time for informal as well as formal interaction with the speakers and the other participants. The choice of the Mid-west location should make it relatively easy for many of our members to attend. The planning sub-committee has even scheduled a "free" day to afford participants the opportunity to see the sights of Chicago (boat and bus tours, museums, restaurants or restored neighborhoods).

2. Renewal membership notices will be sent out soon. Again we are keeping the yearly fee (\$45.00; students: \$20.00) at the same rate this year.

3. We are repeating the following information originally published in this year's Summer Bulletin. *Christianity, Science, and Art: Toward an Updated Christian Doctrine of Creation* (1998) (spiral bound, 161 pages) by Rudolf Brun, PhD, (biologist) Texas Christian University. We have a copy of the book which is presently unavailable in print but may be downloaded from the Web Site.\* We plan to review the book for a future bulletin unless anyone would like to review it within the next few months. Let us know! We could send you the book or you could download it from the web site. Includes a representative bibliography of related literature as well.

\* <<http://www.webfeats.com/rbrun>>

4. We could use a few more volunteers for our "discussion" page on the ITEST Web Site. To access this page: <http://ITEST.slu.edu> Then on that first page of the web site click on "more information"; that will take you to a section that reads, "click here for open

ing dialogue on faith/science issues." At this time we have two ITEST members who are handling inquiries; however, it would be helpful if more people would volunteer for this important task. Quite often this is the avenue young people use to garner information on faith/science issues - a relatively non-threatening atmosphere. When you volunteer, let us know the area with which you would feel comfortable and knowledgeable discussing, i.e., biology, genetics, theology, faith and others. This could be an opportunity for retirees to use your academic/research background to do some ITEST "community service" on your own time while offering the benefit of your experience to those searching for insights into the faith/science area.

5. **BOOK RECEIVED:** *Respect for Human Life In Its Origin and the Dignity of Procreation*, (The Congregation for the Doctrine of the Faith's Instruction "Donum Vitae" — An Appraisal) by Guido M. Miglietta, OSJ. The TSG Arti Grafiche Publishing Company, Asti, Italy, 1998. pp. 151. Miglietta is Assistant Professor in Moral Theology at the Faculty of Theology of Urbaniana University in Rome. Among his books are, *Teologia morale contemporanea: il principio del duplice effetto* (1997), *Bioetica nuova scienza della vita e della salute* (1998).

If anyone would like to review the book listed, please let us know at the ITEST offices and we will send it to you.

6. We will print one of the essays from the October, 1998 workshop on *The Future of the Family/The Family of the Future* in the Winter, 1999 Volume 30, Number 1 issue of the Bulletin. Although all 1998 dues-paid members will receive all the essays and discussion (in the bound edited proceedings), non-members will have the opportunity to have a "taste" of the fare served at our yearly workshops. Essayists for this workshop were: S. Timothy Prokes, FSE, (mutuality of husband and wife, covenantal unity); Ms Peggy Keilholz, (family counseling perspective); Dr. Robert Bertram (two-in-one flesh unity) and Dr. Kenneth Schmitz (marriage from a philosophical perspective)

7. We are researching possible locations for our weekend workshops since Fordyce Education & Conference Center will be sold. Again we are doing our best to stay within reasonable distance from the St. Louis Airport. We would appreciate any suggestions you might have.



## THE STARRY MESSENGER

The Most Reverend Pierre DuMaine  
Bishop of San Jose

*[Reprinted with permission from the Valley Catholic, December 1997.]*

The Star of Bethlehem illumines this Season as a sign of the Mystery we celebrate, pointing the way to the Child we worship as God made Man. It links the Magi and the Manger (Matthew 2-2-12) and evokes the Glory and the Good News of the angelic choirs.

However, this "starry messenger" delivers different messages to different people, and it is important for Christians to ponder the true Message in its incomprehensible mystery as well as its appealing human dimensions.

Media will trot out their annual parade of theologians and scientists to rationalize or to debunk the "star" story, and literalists and mythologizers will do battle once again. For many, unfortunately, this pseudo-debate will reconfirm stereotypes about Religion and Science and the presumed conflict between them.

However, my own Christmas thought is that this Season and the Mystery it enshrines actually invite us to learn from Science how to revalue the Religion we profess. Let me try to explain briefly why I find this line of thought so fruitful at this time of year.

I begin with my reference to the "starry messenger." This was the title (*Sidereus Nuntius*) Galileo gave his first published treatise on his telescopic observations which supported the theory of Copernicus that a revolving earth orbited around the sun.

And we all know about Galileo, don't we? He defiantly confronted superstition, rejected the Bible as revealed truth, and defeated obscurantist authority with the light of free scientific inquiry. Right? Well, not quite.

This is not the place to explore the complexities of the "Galileo affair" or the bloodless martyrdom which has made him the icon of "science vs. religion," leaving a wound in the Church that has never completely healed.

Suffice it here to note that Galileo was a man of profound religious faith (right to the end of his life, even after his ordeal) as well as a scientific genius. So was Copernicus. (It has been said that both, by the way, were Cathedral Canons, a curious fact that trivia buffs

may wish to pursue.)

Galileo was no theologian, but he clearly agreed with the axiom (attributed to his contemporary, Cardinal Cesare Baronius) that "the Bible teaches us how to go to heaven, not how the heavens go."

When Galileo's telescope revealed that the murky cosmic cloud of the "Milky Way" was in fact an unimaginable array of stars beyond numbering, he recognized new and virtually limitless realms of religious as well as scientific understanding.

He was equally conversant with the already established exegetical principle, embraced by Cardinal Robert Bellarmine (often cast as the villain of the Galileo affair), that if a received interpretation of a scripture passage is found to be in irresolvable conflict with firmly established facts of human knowledge, then the interpretation must be revisited and revised.

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*And we all know about Galileo, don't we? He defiantly confronted superstition, rejected the Bible as revealed truth, and defeated obscurantist authority with the light of free scientific inquiry. Right? Well, not quite.*

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Unfortunately, Galileo's observations and intuition did not, by the emerging standards of his own empirical science, yet constitute "firmly established facts" to prove conclusively Copernicus' theory. This fine scientific/theological nuance was quickly submerged in the politics of a Church locked in controversy with the Reformers over biblical interpretation.

Galileo also collided with an attitude that has perennially infected the Church, namely, that the "teaching authority" must be protected, even at risk to the truth the authority is established to teach. In the event, Galileo's coerced recantation capitulated to the teaching authority at a cost to both religious and scientific truth that we are still repaying.

Now, what does all this have to do with my Christmas reflection on the "starry messenger"? First of all,

astronomy (from the Magi-astrologers to Galileo to Hubble to the present) offers a splendid image of the majesty and Mystery of creation, as the Psalmist understood: *The heavens declare the glory of God, the firmament proclaims his handiwork. (Ps. 19:1).*

Astronomy also suggests an analogy for conflicting approaches to interpreting sacred scripture, including the Christmas story. Most Christian scholars study the scriptures as the astronomer studies the stars: resolved to know them as fully as possible, but resigned to ever-expanding mystery. Others approach the Bible like astrologers, seeking hidden codes, portents, predictions, and certainties that dispel mystery. (There is in fact a current best-seller about "bible codes.")

This second approach is symptomatic of a tendency of many believers to "shrink" the Mystery of Faith to fit comfortably inside their personal needs and fears and set rigid limits to expanded or changing understanding.

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***Today our telescopes ride satellites into space and see — through billions of galaxies, each with billions of stars — the near-dawn of our universe.***

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Herein, I think, lies the perceived conflict between Religion and Science. Here lies also the need to rediscover the truth that each pursues in its own way.

Earlier in this century, a noted scientist published a major report on the state of science in America and entitled it *Science: the Endless Frontier*. More recently another scientist writes of a "naive optimism" of scientific inquiry, that is, a conviction that there is a real world "out there" that we can explore and know with increasing levels of certainty, even though the fundamental categories of scientific knowledge remain the same: what we know, what we know we *don't* know, and what we don't even know we don't know.

This scientist also likes, as I do, Blaise Pascal's image that "the growth of knowledge is like an expanding sphere in space. The greater our understanding (symbolized by the sphere's volume), the greater our contact with the unknown (the sphere's surface)."

My question is: why cannot Religion, like Science, perceive the "endless frontier" of God's presence and action in the world, knowing what we don't know and

reckoning equally with expanding knowledge and deepening mystery?

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***Science can purify religion from error and superstition. Religion can purify science from idolatry and false absolutes. (Pope John Paul II)***

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***Science without religion is lame. Religion without science is blind. (Albert Einstein)***

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Instead, in every age (not just Galileo's), some people of Religion seem compelled to shrink Pascal's sphere to a neat little ball that will fit snugly within our feeble human grasp. This I think subverts and betrays the true nature of Faith and Religion, and we have much to learn from the excitement of the scientific quest and what it continues to reveal.

This brings me back to Galileo's *Starry Messenger*. Why did he give a poetic title to his scientific treatise? Can't we rightly speculate on the surge of joy in this man of Science and man of Faith when his little lenses resolved the milky cloud into myriads of stars and unexplored realms of new knowledge, relegating our little sphere to its proper place in the solar system and the universe?

Today our telescopes ride satellites into space and see — through billions of galaxies, each with billions of stars — the near-dawn of our universe.

How can Science and Religion not be partners in exploring the endless frontiers of continuing creation and discovery? The answer, I think, has been suggested by two acknowledged experts in their fields.

***Science can purify religion from error and superstition. Religion can purify science from idolatry and false absolutes. (Pope John Paul II)***

***Science without religion is lame. Religion without science is blind. (Albert Einstein)***

So — when the *Starry Messenger* of the Gospels returns again this Season, may we see with new eyes the endless frontier opened to us by the God of the Galaxies, who "calls each star by name," and numbers the hairs of our head, and became Flesh, and dwelt among us, and dwells among us still.

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## EUROPEAN SOCIETY FOR THE STUDY OF SCIENCE AND THEOLOGY IN DURHAM

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The European Society for the Study of Science and Theology (ESSSAT) traditionally holds its general meetings two weeks before Easter in even-numbered years. The 1998 conference, seventh in the series, was held in the ancient city of Durham in Northern England. About 160 participants from 27 countries met in St. John's College, a few yards from the magnificent Norman cathedral, to discuss this year's topic: *The Person-Perspectives from Science and Theology*.

The format of plenary lectures alternating with small group workshops familiar from earlier conferences was retained, but with some modifications to allow participants more flexibility in attending presentations of interest. Perhaps as a tribute to an old British tradition, a public debate was added to the schedule of events.

The series of plenary lectures was opened by Frazer Watts, Starbridge Lecturer at the University of Cambridge. The Starbridge Chair in Science and Theology is a private endowment by Susan Howatch, author of a series of popular novels about the Church of England. Watts, who is both a psychologist and theologian, considered *Psychological and Religious Concepts of the Person*, with particular emphasis on his own research area in the psychology of emotions. This previously neglected field of psychology is now recognized as, in Watts' words, "sitting on the fault line between biology and social science." It is thus a potential antidote to the absolutist tendencies on either side, which have led to the starkly contradictory claims of biological determinism on one side and social constructionism on the other. To engage the psychology of emotions in a useful way, however, theology has to overcome the "myth of the passions," which has wrongly equated goodness with rationality, and seen emotions solely under the aspect of "temptations."

Michael Welker, theologian at the University of Heidelberg in Germany, began his answer to *Is the Autonomous Person of European Modernity a Sustainable Model of Human Personhood?* with a semantic analysis of "persona." The word originally refers to the mask worn by actors in Greek drama. As such it mediates between the subjectivity of the actor, and the public's expectation of the role, and also includes the aspect of social interaction between the public and the

player. The European tradition of "subjectivisation of the person" did not endanger the balance among these aspects as long as social expectations were in any case rigidly structured. Welker believes, however, that today this development has gone too far, since all kinds of social abuses are justified in the name of individual autonomy.

The well known philosopher Mary Midgley brought penetrating analysis and sharp wit to bear on *Consciousness, Fatalism and Science*. Take, for example, her comments on epiphenomenalism. This is the theory that consciousness is a mere "epiphenomenon," a more or less useless by-product, of the neurological processes in our brains, or, as T. H. Huxley put it, a "steam-whistle which accompanies the working of a locomotive ... without influence on its machinery." Midgley suggested that its fancy label "epiphenomenalism" gives this view a spurious respectability. Instead, she proposed calling it the "steam-whistle theory of consciousness." Her main point, however, was that this view, and similar ones arising from the "selfish gene" metaphor, amount to fatalism. And whereas fatalism may be a legitimate literary device in fiction, it cannot literally apply to any person who is not mentally or physically incapacitated.

Hugo Lagercrantz from the Karolinska Institute in Stockholm, Sweden, brought a more science-oriented style to *The Child's Brain: On Neurogenetic Determinism and the Free Will*, illustrating his presentation with an abundance of spectacular slides. Medical and biological science is beginning to unravel the complex connections between neurophysiological development and social interactions.

The series of plenary presentations concluded with Philip Hefner from the Lutheran School of Theology in Chicago, who developed his idea of the human as created co-creator in *Imago Dei: The Possibility and Necessity of the Human Person*. Hefner summarized his view, explained in detail in his book *The Human Factor*, that freedom is an intrinsic part of human nature, and that there is genuine creativity in the exercise of this freedom in the context of human culture. God did not create as if from a blueprint, but built personal freedom into the very fabric of creation. Although this gives humans scope for being "co-



creative," their freedom is not unlimited, since it is obviously possible to abuse it, that is, to use it in a way not beneficial to the rest of creation.

To add a personal observation to Phil Hefner's interesting ideas, I see the most serious difficulty in telling the proper use from the abuse of our "co-creative faculties." This is not a criticism of Hefner, however, since the problem of discernment (to give it its theological label) is existential rather than theoretical, and exists independent of the model that we use for making sense of our range of options. What does seem to follow, in my view, from Hefner's theory, is that there is normally not simply a single course of action that is consonant with "the will of God," but a range of possible actions that each in their own small way "shape the world" for all of us. If this is more confusing than the traditional picture of religion saying "do this" and "don't do that," it seems to me to be also more realistic, and thus ultimately more useful for individual lives.

The General Assembly of ESSSAT included a memorial to the society's honorary president, Karl Schmitz-Moormann, who died suddenly on October 31, 1996. Arthur Peacocke and James Salmon remembered Karl as a tireless and forceful voice in organizing the science-religion dialog. ESSSAT was formed mainly owing to his initiative, and until the 1996 meeting Karl served as its first president.

The second ESSSAT Prize for original contributions to the science-theology dialog by younger authors was awarded to Nicholas Saunders of Cambridge, UK. The monetary award of the ESSSAT Prize is made possible by the Radboud Foundation of the Netherlands. In the award-winning essay, *Divine Action in the Context of Modern Science*, Saunders takes a critical look at the idea that quantum mechanics introduces gaps in an otherwise deterministic universe which open up a place for divine action. He argues that it is unlikely that God acts in this manner.

The debate on *Does a Naturalist Conception Offer an Adequate Understanding of a Human Being as a Person?* between Willem B. "Whu" Drees and Kevin O'Shea drew mixed responses. As an engaging way of presenting diverse ideas, such debates have a respectable tradition, especially in England. Nonetheless the short exchanges imposed by the debate format can rarely do justice to complex points of philosophy. In a debate held in England it is perhaps inevitable that T. H. Huxley and Bishop Wilberforce come to mind, and the history of their debate on Darwinism is an excellent example of the ambiguity of the form. Whereas history has unanimously sided with Huxley,

contemporary accounts credit Wilberforce with making the better points. None of this detracts from the serious and candid efforts of Wim Drees to defend his theological naturalism, and of O'Shea to show that this is inadequate for a proper theological understanding of personhood.

Ultimately the success of a conference of this kind is largely determined by the workshops in which individual contributed papers are presented and discussed. To get a better impression of this, I asked several participants about their assessment of the conference. Since there are many different workshops held in parallel, and taste in plenary speakers varies, there is naturally a diversity of opinions. The majority of participants I talked to confirmed my impression that this ESSSAT conference was more focused on its general topic than previous ones. The choice of *The Person* as an overall theme may have been felicitous in this respect. It is sufficiently broad to allow for a variety of issues to be addressed — from anthropology to pedagogy, and from ethics to extraterrestrial life. At the same time, I got the distinct impression that plenary sessions as well as workshop contributions were more coherent, and contributors made a stronger effort to place their papers in the framework of the overall theme than had been the case at earlier meetings.

Without taking away from any of the other aspects of the meeting, I must confess that the two things that decided me to attend the Durham conference in spite of personal scheduling problems were its unique location and the opportunity to meet Mary Midgley. I have already recounted the philosopher's role, but a word about Durham is in order. During the Middle Ages the city's easily defensible position on a rock almost totally surrounded by the river Wear made it a choice location for an outpost against Vikings and "Northern savages." After the destruction of the monastery of Lindisfarne by the Vikings the remains of St. Cuthbert were brought there, and the Venerable Bede found his final resting place in Durham as well. Today their burial places mark respectively the East and West end of the cathedral, which was begun in 1093. With the exception of some later additions, Durham thus pre-dates the period of the Gothic style typical of most other English cathedrals. The complex of Durham Cathedral and Durham Castle is a World Heritage Site.

Holding a meeting about science and religion literally only a few paces away from such a unique and magnificent work of human creativity cannot fail to leave its mark on the event as well. Given the success of and general interest in the Durham meeting, most



of the participants are surely looking forward to the year 2000, when the 8th European Conference on

Science and Religion will be held in Lyon, France.

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### REMARKS ON "ST. PROMETHEUS ..."

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It was with pleasure that I saw in the summer issue of the ITEST Bulletin a theological article written by Dr. T. Meijknecht, Chaplain at the Delft University of Technology (St. Prometheus: Does Technology Have a Religion?). Predictably, I have mixed feelings towards it beginning with its title. That title sounds misleading to me. It would have been better to say "Does Technology have a Religion," or "Do Technologists have a Religion? or, "Is Technology a Religion?" At the end of the paper Dr. Meijknecht's message is that a theology of technology is needed in order to reconcile those *two estranged friends*, lest "*society is at loss and our future is in danger*."

This effort is similar to Pope John Paul II's interest in *reconciling two old lovers* (science and faith) as beautifully written by Fr. Michael Sherwin, OP, (posted at <http://www.cco.caltech.edu/-newman/sci-faith.html>). Given this parallelism with the Pope's effort I was a bit surprised that the author does not quote *Laborem Exercens* which contains, essentially, the Pope's theological message about work to save society from capitalistic-socialistic warfare and technological Armageddon. The Pope considers *work* objectively and subjectively.

Objectively considered he says in *Laborem Exercens* #5: "... man '**subdues the earth**' much more when he begins to cultivate it and then to **transform** its products, adapting them to his own use." "**Industry** in its turn will always consist in linking the earth's riches ... with man's work, whether physical or intellectual. This is also in a sense true in the sphere of what are called **service** industries, and also in the sphere of research, pure or applied." "However, it is also a fact that, in some instances, **technology** can cease to be man's ally and become almost his enemy, as when the mechanization of work supplants him, taking away **all personal satisfaction** and the incentive to **creativity** and **responsibility**, ... when exalting the machine, it reduces man to the status of its slave." "These questions are particularly charged with *content and tension of an ethical and social character*" [The bold emphases are mine; the italics are the Pope's].

In section V, number 25, the Pope gives the traditional doctrine of "Work as a Sharing in the Activity of the Creator", and he quotes Genesis, *Lumen Gentium* and Vatican II. A significant paragraph in *Gaudium et Spes* states:

This Christian spirituality of work should be a heritage shared by all. Especially in the modern age, the *spirituality* of work should show the *maturity* called for by the tensions and restlessness of mind and heart. "Far from thinking that works produced by man's own talent and energy are in opposition to God's power, and that the rational creature exists as a kind of rival of the Creator, Christians are convinced that the triumphs of the human race are a sign of God's greatness and the flowering of His own mysterious design. For the greater man's power becomes, the farther his individual and community responsibility extends... People are not deterred by the Christian message from **building up the world**, or impelled to neglect **the welfare of their fellows**. They are, rather, more stringently bound to do these very things." (*Gaudium et Spes*, 34)

My purpose in bolding some words is to show that in those words, and in general in that precious Encyclical of John Paul II (*Laborem Exercens*), we can find the very same key concepts and values sought by Meijknecht's article, (and much more!). My contention is: what is the need to follow Taylor in retrieval of *words* that could save the dialogue between theology and technology when the Pope already has done a much better job? In fact, Taylor's attitude seems a merely nominalistic one.

I have more serious problems with the quotes by David Noble. Of course Meijknecht also noted that Noble cannot be followed entirely. But his refutation appears somehow bleak to me. How can Noble mix together such different men as Edison and Bacon, or Columbus and Comte, and say that they all "considered technology and its inventions as a way to penetrate into God's mind..."? Comte? The founder of positivism, in search of God's mind? No way!



But, anyway, Meijknecht refutes the obvious *technolatry* that flows from Noble's words when he says "I feel like God." It is here where the crux of the problem lies: work and its extension, technology (which is nothing but a cultural accumulation of work and instruments of work), have a morally *ambiguous* value. Like a ladder, technology can serve us to climb to Heaven. But it can also send us catastrophically down to hell.

It all depends upon one crucial point: on the judgment that man makes about his own work and creations. If he sees them as a reflection of a God-given power and acknowledges in gratitude and humility that power and in faithful obedience fulfills God's will through the use of that power, then he is saved. But if he forgets God, and considers himself as his own God, then he is damned. And the punishment is this: just as when Adam and Eve rebelled against God, and their passions in turn rebelled against their reason, so now, when technological man, *homo faber*, forgets God then he starts making a *god* of his own artifacts and creations (technolatry) then technology *rebels* against man becoming a danger and a threat to himself, as we know only too well in this century.

This is the drama of man: he either imitates God or he supplants God. The Christian West worked hard under the *ora et labora* spirituality of the Middle Ages, as White rightfully said in the article. But later secularism, anthropocentrism and atheistic humanism, dissociated the *labora* from the *ora*, and started making a Messiah of its own science and technology. Then the spirit of Prometheus took over, a rivalry with the gods, certainly no attitude to be canonized.

The Promethean spirit of most of contemporary science and technology is precisely what is condemned by many contemporary philosophers, both Catholic and non-Catholic. I recall here the writing at the General Motors' pavilion at Disney's Epcot Center. Somewhat hidden, but written with golden letters we can read on a wall: "If we dream it, we can make it." There is no more eloquent way of saying: "we are gods." Was not this what produced the confusion of tongues in the Old Testament? "Let us make a tower and become famous." That was the arrogance that brought down God's wrath. They were not working for the glory of God at the service of humanity, but for their own glory in oblivion of humanity, showing their superiority to others.

And yes, probably some individual astronauts have manifested their desire to show the "fingerprints" of God on the moon, as Dr. Meijknecht's article says. But I doubt very much that the whole race for a man on

the moon was a *glory-to-God* affair. I think it was more a Tower of Babel construction, in the spirit of political power, fame, prestige and the cold war between USA and the former USSR.

I have very serious objections to the optimistic interpretation given by Noble and (apparently) by Meijknecht himself, with respect to the fabrication of the A-bomb. I do not mean the decision to bomb Hiroshima 53 years ago, (to the date, August 6th, 1998). I will not enter into that political and moral issue because I find it too complicated. I do question, however, the whole involvement of physics with the military from 1939 to 1945 (the secret Manhattan project). Let me expand a little on this.

As a physicist I have studied the question from different points of view and have to conclude that the A-bomb, or more precisely, the quick and *war-oriented* development of *fission* nuclear energy, is an example of a *counter-creative* use of science and technology. In contrast, the more positive, environmentally clean and economically promising *fusion* nuclear energy, that has been investigated both by USA and Russia for almost 50 years, at the expense of many billions of dollars, is almost at a standstill. The latest development was that the planned ITER, (International Thermonuclear Experimental Reactor) to be sponsored by Japan, Europe, Russia and USA, was canceled a few weeks ago! [Its present status is currently being debated again.]

Why? At bottom it is easier to destroy than to construct. It is easier to *smash* the uranium or plutonium atoms, than to fuse together two heavy hydrogen atoms into helium. I remember a Methodist theologian one time defending the *goodness* of atomic (fission) energy, on the premise that this is what God has established precisely in the universe as sources of energies: the stars and suns are nothing but nuclear bombs, he said. But there is a slight (and crucial) imprecision in this vision: the suns and stars made by God, are not fission "bombs," but are fusion "bombs." In the latter case, hydrogen is turned into helium, an element whose name means precisely "sun." It called that because it was first discovered in the sun by spectroscopic analysis. In short, if man had really imitated *the ways of God and of nature* technologically, we would have clean, cheap fusion nuclear energy in our present day world, not the hellish, radioactive, polluting, warlike *breeder* fission reactors, ready to explode like 3-Mile Island or Chernobyl.

All the developments that led to the A-bomb were all *fortuitous* and accidental. There was nothing *scientific* about them, much less a connection with Einstein's



$E=mc^2$ . As Heisenberg says, it is a common misunderstanding to believe that atomic energy comes from a *transmutation* of mass into energy. It does not. It comes from ordinary electrostatic repulsion between the protons of the nucleus. The real *inventor* of the atomic bomb was a rather obscure Hungarian exiled physicist named Leo Szilard. He was inspired by reading a science fiction novel of H.G. Wells of 1914 entitled, "The World Set Free." Based on that book, Szilard *dreamed* that a single airplane dropping a single bomb would destroy a whole city. Szilard even dreamed in 1933, while crossing a street in London, that maybe a *chain reaction* might trigger such a bomb. You can imagine how frantically crazy he became when he heard that, unexpectedly, two chemists discovered such a chain reaction in 1939 — in Germany! Thus, he moved heavens and earth to have President Roosevelt initiate the Manhattan project. He, and Teller and Wigner drafted a letter which Einstein merely signed — almost under duress — and the rest is history.

Where is the *salvation of history* brought by the A-bomb? Even if there had never been a Hiroshima or Nagasaki, even then, the mere way that energy is exploded in the fission process and its radioactive consequences has nothing to do with the way God designed nuclear energy to be a useful source of life on earth. Here is a point that goes to the intrinsic *content* of science and technology. I claim that, besides all social applications, services, economic justices or injustices, the very content of science and its reflection in technology, should be in *tune* with God's will, with God's design, plan, purpose, and way of dealing with the harmonic development of nature and the world. Otherwise, we become Promethean dreamers, dominators and destroyers of nature and of our fellow men. Szilard is just an example. We know he repented at the end. The Pope has said that scientists are not responsible for the abuses of science. Yet, Oppenheimer, certainly not suspect of being too Christian, once said: "After Hiroshima, physics has known sin." Let each one think what he wants on this. I surely disagree with canonizing Prometheus.

No. In his place we have to put the true worker under the will of God. And this patron saint cannot be a Greek myth. It has to be a Christian and real personal being, no other but St. Joseph, patron saint of workers. Next to him I would suggest St. Albert the Great, patron saint of scientists by decree of Pope Pius XII of 1942. St. Albert constructed mechanical automatons in his times. He discovered the chemical arsenic. He studied experimentally the development of eggs.

Besides this general criticism of "St. Prometheus" I

cannot fail to mention the positive aspects of Dr. Meijknecht's article. Perhaps the most important one is the revealing data of Lynn White Jr. about the Christian roots of technology in the Christian West a millennium ago. This thesis is similar to Fr. Stanley Jaki's demonstration of the Christian roots of modern science. (See his book: *The Saviour of Science*). I want to thank Dr. Meijknecht for this contribution.

Another revealing aspect of the article is the vivid description of the engineers' incapacity to articulate any kind of human thought. This, is not only a psychological or academic or cultural trait. I think it goes down deep into the very *content* of what an engineer and a technologist has to learn and digest as truth, as taught to him by the established authorities. This is a complicated problem, because it has to do with the epistemological value of modern science itself, (a topic full of difficulties and not few disagreements even among Catholic scholars).

Is modern mathematical-physics a true science of nature, or a mere art — for control? V.E. Smith, for example, thinks that all science, (which he calls "empiriology" following Maritain) is aimed only to control things, not to know them in their true natures. In fact, science is aimed at satisfying *homo faber* not *homo sapiens*. It might satisfy human physical needs, (food, energy, health, etc), but not spiritual needs, one of which is the need for truth — to know. Typically, for example, Smith ends a chapter saying more or less: "Empiriology can make airplanes, pills, air conditioners, etc ... But philosophy makes something more important; it makes ... sense."

Is this the *idleness* that Noble condemns as a "reborn Francis Bacon" (in Meijknecht words), "scolding science and philosophy for their idle speculations and their refusal to elevate or assist mankind"?

If this is so then we are at the origin of the very crisis of communication among engineers and even other specialists and scientists. In their biased judgement that *words* and *concepts* are mere idle *speculations*, they fail to realize that the substitution of words and concepts by mere symbols and numbers, for the sake of *practicality*, is capable of obliterating, completely, the capacity of a human being to think in a human way. This is another example of *subversion* of the scale of values, of man becoming the *slave* of the machine and of technology, instead of his master. (The *machine* in this case is the mathematical grinding machinery). It is as if the spirit and soul of man became *materialized* by his prolonged contact with the world of matter and physical artifacts. But especially this is due, (and I go back to Smith and Maritain) to the *evacua-*



tion that mere mathematical analysis has made of the intrinsic philosophical meaning, value and destiny, of the natural world. The ignorance of *being*, even at the level of the *atom*, is the essence of the violence and destructiveness that is linked so easily to our technological world. If this is so here, it is even more dramatic at the level of biology, of psychology and of ethics. Then it is no wonder that *abortion* is not seen as a horrible crime, but as some sort of *negotiable* and *legalistic* procedure as done in Holland, according to Meijknecht.

I cannot agree with the author in using this evasion from moral responsibility as done in Holland, to *appease* and *ease* our emotional fights with respect to the issue of abortion. This is not an *emotional* problem, even though it creates so many conflicts. This is a highly ontological, moral, and fundamental problem. We are touching here a law of nature and a law of God which not even the Church can change. Of course we cannot fight each other over this issue, much less kill abortionist doctors. That would be as criminal as abortion itself. What we have to do is to realize that the *emotions* indicate that we have touched the very core of reality, the origin and sacredness of human life. If in the name of *peace* we do not condemn abortion, then we have never understood the phrase of Jesus: "Do not think I have come to bring peace over the earth." A peace obtained at the expense of ontological truth and morality is a pseudo-peace, ready to explode at any moment like a hidden bomb. It is the peace of the cemetery, where all life has already disappeared. Certainly this digression into the *procedural* legalism in Holland to ease the abortion crisis, is about the weakest point of Meijknecht's article. But I think it was only an unnecessary digression from the theme of the article.

Everything else he wrote before inserting Noble's ideas is fine, acceptable, revealing, Christian, etc. But the Noble contribution I think was catastrophic. Take one more example. He says: "Although the fall into sin had troubled man's mind, with technology's aid much, if not all, of the original clarity could be restored. Man could be made to look God in the eye." I have never read such a pretentious, childish and

simultaneously arrogant phrase about technology before. This is precisely to elevate technology to the role of a new Messiah, when in reality, the opposite is true. I have just shown the detrimental effect that technological methods have upon the mind of man. The only way to avoid and counteract this is with sufficient wisdom, humanistic and religious background in the technologist to avoid the materializing effect of technology.

Faith alone is not enough. That would lead to technological fideism. For the scientist and the technologist a more than ordinary education in humanities, liberal arts, ethics and philosophy of nature, is needed. If we have known Christian engineers that, sadly, think of the Trinity as a sort of tri-phasic current, or of God's power as a sort of electromagnetic induction, it is no wonder some people consider engineers as *savage technicians*. There is a "shortage of vocations" for scientific and engineering careers in this country and Great Britain. Scientism has backfired. Science is admired; even *feared*. Students prefer to get straight A's in other courses.

But it need not be and should not be like that. The first step to avoid this apathy is not to create false optimisms, much less fall into that technolatri whose consequence is, precisely, the subversion of human values that might endanger our civilization. We should recognize, and teach, the correct intellectual hierarchies: that truth is more valuable than control; philosophy higher than science/technology, and theology lies above everything else as a reflection of God's Love over the whole of creation. When we respect and *live* this scale of truths and intellectual values, then our technicians will become educated, and society at large will be better organized and served. The greatest service we, either technologists and scientists or philosophers and theologians, can offer to humanity is showing the truth of nature, of man and of society as a creation of God. Yes, children have to be saved, fields have to be plowed and watered, bridges have to be constructed, cities urbanized and communications established. If our first source and ultimate aim is not God's truth and salvation then "in vain the builders are constructing." They are missing the cornerstone.

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#### REPLY OF DR. TON MEIJKNECHT

I was very pleased with Francisco Muller's reaction to my paper about Saint Prometheus. He interpreted my text in such a way that I could still recognize what I had said. It is out of gratitude that I make my two following remarks.

Muller does not seem to be aware that David Noble is a convinced Luddite. The religious feelings about which Noble writes in his book *The Religion of Technology* are not at all to his own liking. He is as much opposed to the "if we dream it, we can make it" attitude as Muller. Hardly any technolatri flows from



Noble's words. On the contrary, Noble wants to disconnect technology from its religious roots, because according to him, they alienate people from humble human needs. It is my point of view, however, that the religious roots of technology deserve a positive appreciation. Technology is deeply religious, because it is a creative reaction of a believer to the eternal cry for help: "I was hungry, etc.

2. My second point is more of a question. Muller is not very much in favor of Charles Taylor and his book, *The Sources of the Self*. He does not need Taylor's attempt to retrieve the words that have been lost. The Pope has already done the job in a much better way. I appreciate every word from the papal Encyclical, *Laborem exercens*, and from the Vatican document, *Gaudium et Spes*. But my problem is that hardly any technologist knows those documents. Nor

does any technologist know philosophers of technology like Ian Barbour, Frederick Ferré or Dan Ihde. What does Muller suggest that I do? To sit down and teach the uninformed lay people? I would like things to be that easy. I think our predicament is not so simple that better information could bridge the gap. At least my 23 years as a Roman Catholic campus chaplain in Holland (not the USA!) have given me the conviction that explanation is not sufficient. We may have to assist people in asking the right questions. There may be a meaning in the lack of knowledge and fluency we meet everywhere, indeed. Why has so much been lost? That is where Taylor and his central concept of retrieval come in: make people conscious of the implicit values of the technology they are practicing. I am aware that this is a very complicated question. I wonder if Francisco Muller would give his opinion on that point. Do we need to teach or to search?

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## THE THEOLOGICAL TASK

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It is, undoubtedly, quite clear from the talks already presented this weekend that there is a theological task of major proportion facing the Church. It is my estimate that the religious implications of the advances in science, especially in the life-sciences, are of the same magnitude as those of the Christological and Trinitarian controversies of the fourth and fifth centuries. To appreciate better the theological task it would not be inappropriate to look first at both the function and the scope of theology.

First of all dogmatic theology is not revelation, nor is it merely a psycho-sociological estimate of reality. It is not a model-making operation, in the sense that that notion is used in the physical sciences. It is not an observational-inferential system of describing reality, and therefore it is not a logic. Although dogmatic theology depends in part on the contribution from all the other human modes of inquiry it is not merely the integrated sum of those ways of knowing. Finally, dogmatic theology is not concerned with concrete application, that is, it is not a problem-solving discipline in that sense. This "negative theologizing" about dogmatic theology is not meant to be

exclusive, but it will help us to clarify the issue somewhat.

All modes of human inquiry are based on some suppositional premises. In all non-theological modes of inquiry, the suppositional base of the art or science is some epistemological stance or other. The science forms a logic-system. In theology, however, the suppositional base, if I may put it so, is not "thinking" but "living." A true dogmatic theology is a "lived-science," not a "thought-science." It requires the fundamental stance of faith, of credal commitment. This says, in effect, that a non-believer cannot be a Christian theologian. This is true of, say, the Buddhist who may indeed think and write about Christian theology, but is incapable of being a Christian theologian. Faith is the necessary but not sufficient source of the work of Christian theologizing. We shall return to the "necessary-sufficient" distinction later. Suffice it to say here that credal faith is the *sine qua non* of the dogmatic theologian. This is merely a restatement of the role of the theologian as *fides quaerens intellectum*, the believer seeking understanding. The emphasis is on believer.



The credal base of Christian theology grows from the revelational faith experience of the Christian community. This, of course, embraces the scriptural and traditional expression of faith in Christ. The credal commitment is not the faith-acceptance of a series of propositions, as has so often been asserted. It is not belief in an ontology or a metaphysics. It is faith in Jesus Christ as expressed in human modes of understanding. Credal expressions do change. This is immediately clear from a comparison of early creeds with each other and with the more fully developed credal statements of the early ecumenical Councils. There can never be the absolute best credal statement. But to move into an analysis of creeds would take us afield at this point.

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*Theology is more than just a sophisticated statement of personal faith. It is an attempt to understand reality in the light of faith. Faith has been said before to be the necessary but not sufficient source of dogmatic theology.*

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The base of any Christian theology is belief in a person, Jesus Christ, and a response to him on a personal level. Theology is the Pauline *koue-apokoue*, (hearing-responding) on an intellectual-moral level. This *koue-apokoue*, even on a personal level, however, does not occur in a vacuum; it occurs within the community of believers, within the People of God. The People of God has a history, even an "intellectual history"; it is this that we call doctrinal tradition. The "hearing-responding" of the dogmatist must occur in the framework of the historical "hearing-responding" of the faith-community. Without this acceptance of the tradition, one can write about Christian theology, but only write about it. One can show, for example, how one theological position flowed from or reacted to another. Or one can show the effect of a specific theology on the society of its time. But the former is history, the latter social theory; neither is theology.

But the theological task was earlier defined as *fides quaerens intellectum*. If faith is the basis, already a graced situation, mind and heart are the vehicles. Theology is more than just a sophisticated statement of personal faith. It is an attempt to understand reality in the light of faith. Faith has been said before to be the necessary but not sufficient source of dogmatic theology. To be sufficient, theology cannot be divorced from its contemporary milieu. Were Christianity a religion that looked only to the past, faith and theology would be equivalent. Were Christianity concerned with only the problems of the present, then faith would be a hindrance to our understanding of reality. But Chris-

tianity is basically oriented to "eschaton." Therefore it cannot be separated from the past nor unconcerned with the present, since it is only in the historical continuity of past and present that the future can be addressed. In this sense, Christian dogmatic theology is temporally co-terminus with the Incarnate God who existed, exists and will exist. The Incarnate God cannot be understood, even approached, as simply past or present. He will be clearly known only in eschaton and it is toward this understanding that the theologian must proceed. But for the person (and hence the theologian), as presently constituted in essential not-knowing, the only approach to the ultimate future is in terms of the present and past which one can know partially although inadequately. Until mystery yields to vision this is the constituted order of things.

Yet this constituted order is not static, nor is it an equilibrium situation. Our attempt to know God, our task of hearing-responding is not amenable to a "steady-state" situation. Insofar as the reality of the whole Christ, head and members, as Paul tells us (Ephesians 4:12-13), is growing, so too must our understanding. It is a commonplace to say that the theology of the fourth century is inadequate to the twentieth century. It is also to say that the theology of the twentieth century will be inadequate to the twenty-third century. All this means is that the reality toward which theology looks is an organic, growing reality. The theologian is hung, consequently, on the cruel dilemma of the present-past as referents to the future. He must look to the unknowable term of the growing reality while being a part of that growth at a given historical moment. He cannot remove himself from the limited perspective of a moment of growth nor can he abandon his organic relation to the term of the growth. He is caught in the web of a continuity-change-matrix which spans effectively the history of the people of the Incarnate God.

In terms both of theology itself and of its relation to the types of scientific change that have been so ably put before us this weekend, the real problem is that of change in continuity or in continuity with change. The faith-basis of Christian theology remains what it has always been, the Incarnate-God revealed to us in revelation, in scripture and tradition. But at the same time our understanding of creation, and therefore our approach to God, does undergo change. The expression of the truth of revelation, to remain itself, must change.

The problem of change within continuity is not new to the Christian theological community. Gregory Nazianzen fifteen hundred years ago made the following assessment: "Here (in revelation) perfection is reached



by additions. For the matter stands thus. The Old Testament proclaimed the Father openly, and the Son more obscurely. The New manifested the Son, and suggested the divinity of the Spirit. Now the Spirit himself dwells among us and supplies us with a clearer demonstration of himself....you see lights breaking on us gradually, and (you see) the order of theology, which it is better for us to keep, neither proclaiming things too suddenly nor yet keeping them hidden to the end. For the former course would be unscientific, the latter atheistical (Ord. Theol. 5, nn. 26, 27; *Nicene and Post-Nicene Fathers* 7, 326).

What is the model for change in theology? Is it the scientific notion of "breaking the paradigm"? Is it a "quantum leap," a type of change that was suggested at the Villa Cavalletti (1972) ITEST meeting last September? Or is it an assimilation-accommodation type model? It might be worth briefly considering each of these models for change. Let us begin with "breaking-the-paradigm" model. It has been said (Alvin M. Weinberg, "The Axiology of Science", *American Scientist*, Vol. 58, No. 6., Nov-Dec 1970, p. 613-615) that "paradigm breaking is better than spectroscopy." This is used in T.S. Kuhn's sense: "scientific progress' is punctuated by 'revolutions' which break existing patterns; in between such revolutions, scientists add details within an existing paradigm - this I call 'spectroscopy.'" If we consider, for instance Newtonian physics as the paradigm, then Einstein's relativity theory shattered the paradigm. The work done since the teens of this century in both special and general relativity would come under the heading of "spectroscopy." Can we legitimately expect such a "paradigm-breaking" to occur in Christian dogmatic thought?

I believe we should not expect such a breakthrough. This I say for one particular reason: there is a world of difference between the logical model-making and model-breaking of the scientist and the theological experience of the Christian community. Christianity is not a logic; it is a history. There is, for example, little, if any, continuity between the Copernican model of the solar system and the Ptolemaic model, little continuity between quantum mechanics and classical mechanics on the deepest levels of supposition. Although it can be shown that classical mechanics is a special case of quantum theory, compare the basic suppositions, the total determinacy of classical physics and the indeterminacy of modern physics. This represents more than merely a greater sophistication. It involves a contradictory view of basic physical reality. Can this happen in dogmatics? It seems not, short of a new revelation. The faith-supposition of Christian theology (and doctrine) must remain intact. What can be done in a logic cannot be repeated in a history.

Let us look to the notion of "the quantum leap" in theology, as a model of theological change. I was not in the group at Cavalletti in which this model was offered as perhaps valuable to our understanding of theological change. As a physicist I cannot accept the term in view of the physical analogy it suggests. To a physicist, a quantum leap is process-less. If, say, an electron in energy state A makes a "quantum leap" to energy state B, there is no process involved. That means that the electron is in either state A or state B; it is never in-between these two states. This model may sound absurd to the non-physicist, but this is the parent model of the term "quantum leap." Now, it may be that all that was meant by the term was a leap of intuition. If so, I do believe the intuitive leap is possible in theology, but it is more likely to be found in mystical theology than in dogmatic theology. The strict meaning of the phrase "quantum leap" cannot be applied to Christian dogmatics precisely because it implies complete discontinuity.

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The final model I would like to propose is that of assimilation-accommodation in the sense of Piaget. In the process of assimilation an organism takes in something other and changes it to the extent that it becomes a living part of the organism. In accommodation the organism changes and adapts to the other. These two processes imply a tension and, in a healthy organism they work in a counterpoised equilibrium. This analysis has several features that are valuable. It stresses the organic continuity that a dogmatic must have. It includes the notion that what is brought into the organism is that which is favorable to its preservation and growth. This organic analogy is quite appropriate for understanding the patterns of change and continuity in dogmatics. Vincent of Lerins used it long ago: "Let the soul's religion imitate the law of the body, which as years go on develops indeed and opens out its due proportions, and yet remains identically what it was. Small are a baby's limbs, a youth's are larger, yet they are the same" (*Commonit*, 29). John Henry Newman, in commenting on this remarks: "The unity of type, characteristic as it is of faithful developments, must not be pressed to the extent of denying all variation, nay considerable alteration of proportion and relation, as time goes on, in the parts or aspects of an idea .... the butterfly is the development, but not



in any sense the image, of the grub." (*An Essay on the Development of Christian Doctrine*, p. 161.)

In summary, there is change needed in dogmatic theology to handle the questions that are arising from the new scientific discoveries. The faith-content must be preserved. The changes must represent an organic assimilation of and accommodation to this new state of human affairs. In our present situation we can be sure there will be no new revelation. It becomes a problem of searching the faith-content for those aspects of revelation that are most directly valuable in understanding and assimilating the new human situation.

In order to come to a real dogmatic position, it is vitally important to understand and to state accurately the theological question that is being asked. The question is obviously enough concerned with the relationship between humans and between humans and God. The former network of relations on both the human-human and human-God levels will be altered by those discoveries that come under the designation of the "new biology." I propose that the theological question here is this: is man's effort to seize control of human biological development (and, consequently, human development) compatible with his worship of God in history? If so, how is it compatible and to what extent?

Any approach to God is made in history. This, obviously, is not meant to imply a dichotomy between the human and all the things we classify as "nature." Nature, too, has its history and its covenant with God: "When the rainbow is in the clouds I shall see it and call to mind the lasting covenant between God and every living creature of every kind that is found on the earth" (Genesis 9:16). The important thing, however, is not to forget the free historicity of the Christian and of the growing Kingdom of God. It is within this history, as a part of this history, that the dogmatic task must be carried out.

The dogmatist's task in the present theological crisis is not the providing of practical answers to the practical questions of concrete human behavior either individually or collectively. The task is, rather, to provide a vision of reality that is truly Christian and truly one with the faith. The dogmatist must weave from the thematic threads of tradition a new understanding of revelation. It is not for him or her to say that such an act is good or bad, that such a social experiment is timely or untimely. It is for him or her, if it may be so stated, to incorporate the present problematic into the unchanging faith.

Perhaps we can best illustrate the dogmatic task by the use of an extended metaphor — please remember

it is only a metaphor. In its totality, doctrine, of which theology is the speculative expression, becomes vision in eschatological completion. Then we shall have the clear and unmistakable grasp of reality, the entire picture in all its unity will be clear. But at present we have a situation not unlike a large jigsaw puzzle, mostly unassembled of course. We have a large number of pieces, all seemingly shaped at random, all merely bits and splashes of color, meaningless at present in terms of the ultimate texture and beauty of definitive reality. Where does the dogmatist start?

Certainly the first thing to be done is to form the edges of the puzzle. In dogmatic terms this would effectively delineate the edges of the problems, give the constraints within which a solution is to be sought. This process is not vastly different from boundary-value problems in physics. Take, for instance, the problem of the vibrations of a drum. There is a whole system of constraints that have to be considered, the shape of the drum, the tension in the drum-head and so on. These form the boundary within which the problem is to be solved.

The edges or values of the dogmatic puzzle we mentioned are what Cardinal Newman would call dogmatic principles. They form the framework within which doctrine (and theology) can develop. One of these constraints would be the Lordship of Christ and the co-Lordship of man. Any dogmatic approach that would, for instance, deny man any place in the development of the human race or in the growth of the full Kingdom of God would have to be discarded. The reverse is also true: any dogmatic approach which considered man as autonomous in his activities, here in the life sciences, would have to be eliminated since it denies the absolute Lordship of Christ.

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Another of the constraints is the dogmatic principle of the ultimate capability of participation in God of all of creation, including non-human creation. Any dogmatic position, therefore, that relegates the human body or material reality to the level of means only would have to be rejected. No dogmatic that stressed the spiritual nature of the human and of eschatological reality to the exclusion of the material would fit within the constraint system. And so on.



What then are some of the major themes that a dogmatic consideration of the new biological revolution would develop? We shall devote the rest of this development to a brief sketch of the dogmatic context. It would not be inadvisable here to remark that what is being stated here is only the context of the beginning of the dogmatic task, not its conclusion. We are establishing, in admittedly broad statements, the position out of which a dogmatic exploration can proceed.

✓ The story of development of creation is embodied, typified, by Abraham, who gave up his home, went into the unknown to follow God. He gave up security, lived as a stranger in a foreign land. This he did with good grace and humor. All creation, like Abraham, looks to future fulfillment, a fulfillment that is at present unknowable. Creation is not an event, it is a saga to be sung with exaltation and human good grace. Creation is the saga of God's redeeming activity, redemption from sin, death, decay, dissolution. The revealed progress of redemption history discloses God's Lordship over all that he has made. It has been revealed also that, in time, God entered so totally into history that this unique entrance can be dated in terms of the history of the Roman Empire. The historically unique events of the years zero to thirty of our era are determinative of the history of all creation. All creation, man and cosmos, owes its beginning to the Word made flesh and finds its fulfillment in Him.

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Christ's Lordship is a radically totalitarian claim: there is no other Lord. Creation has no meaning and no destiny apart from Christ. Therefore any and all dualism between creation and redemption is inadmissible. In Christ-still-man "history" and "nature" become one, are equivalent. The fact that the Son of God became flesh is central in the unfolding destiny of all creation. But the Son of God has retained his human nature, his flesh, in resurrection and ascension. As man, Christ is Lord of all. In the Incarnation-Resurrection unity, God has definitively revealed his will for creation: he has joined all creation to himself in the human nature of his own divine Son. God has definitively and absolutely ratified his initial judgment of creation — that it was good. But more than this, in Christ the entire cosmic reality has become holy,

consecrated to God and capable of participation in the Trinitarian life of God. In terms of the Greek Fathers, God has declared all creation to be divinizable. Christianity proclaims the holiness of the human body, the holiness of the entire cosmos. The Christian cannot dismiss the cosmos as irrelevant, meaningless or evil. The Christian cannot ignore the material world nor can he exploit it without regard for the Lordship of Christ over it.

The above affirmations contrast sharply with modern culture, which does not assign to the human any dignity higher than that of a technologically-oriented animal, nor any destiny greater than the few years he has to manipulate matter. In such a culture, human success is judged by what he or she can acquire by manipulative genius. Thus, devoid of any meaning except the present, the human cannot afford to take himself seriously and a fortiori cannot allow material creation to be taken seriously. Our culture has ended up denying the value of matter, making creation merely something to be manipulated by the only animal capable of manipulating it. Nothing has any true value except to be used. The cultural situation has to be truly gauged in any honest dogmatic approach. For the Christian, however, the orientation must be toward the respect for the holy character of creation and to worship of its Creator.

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Both Harvey Wheeler ("Bringing Science under Law", *Center Magazine*, March 1969) and Lynn White, Jr. in his now famous article ("The Historical Roots of Our Ecologic Crisis," *Science*, 155, 1967, pp. 1203-1207) stress Christianity's role in the secularization of nature and society. There, of course, is some truth in this position insofar as the "sacred" mentioned by Wheeler and White did die with the advent of Christianity. The "sacred beings" who died seem to be those "elemental principles of this world" mentioned by St. Paul (Gal. 4:3). Christianity denied the sacredness of nature insofar as it depended on the mastery of elementary spirits. It rejected the sacredness of any society that depended on the "divinity" of political leaders. Anything that derogated from the total Lordship of Christ was absolutely rejected. Now granted that the Christian message denied the sacredness of nature that had been attributed to the elemental spirits, it recognized in nature and in history a different sacredness. Nature and history took on an aspect of divinity, i.e., was



holy, because God, in Christ, had entered history and became a part of nature.

Christianity teaches that nature is not only holy, it is also sacramental, a point totally missed by both Wheeler and White. The created order is a symbol of the definitive Kingdom of God. The cosmos, corrupt and subject to decay, is an effective symbol of the final Kingdom of God, in which material reality will be liberated from its bondage to decay. (cf. Rom. 8:20). This process, sustained in the Body of Christ, is sacramental in nature. In Ephesians (1:22-23) and Colossians (1:17-18)<sup>1</sup>, Paul equates, in the final state of things, the Church, the Body of Christ and the cosmos. The human effort to incorporate reality into Christ, both in himself and in nature and history, is symbolic effectively in bringing about the final state of reality to which Paul refers in Ephesians. This occurs in the Church, as Rahner points out (*The Church and the Sacraments*, New York: Herder and Herder, 1963, pp. 18-19):

The Church is the abiding presence of that primal sacramental word of definitive grace, which Christ is in the world, effecting what is uttered by uttering it in sign. By the very fact of being in that way the enduring presence of Christ in the world, the Church is truly the fundamental sacrament....

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In the present age of the world, in the interim between the First and Second coming of Christ, God in Christ abides with us under a sacramental mode in the Eucharist. It is in and through the Eucharist that the cosmos is being transformed into the state which will be apt, at the fitting time (the Kairos), for the final and absolutely definitive return of Christ. It is not possible for us to conceptualize fully what the Eucharistic consummation of all reality means since this is the center of the mystery of the eschatological fulfillment in Christ. The Eucharist, since it is the center of the life of the Church, is the center of the continuing mission of the Church to bring the rebirth given in the Spirit to all of creation. The further probing of the Eucharist as the center of the cosmic transformation

is one of the most important parts of the present dogmatic task. The Eucharist stands, if you will, midway between the continuing stewardship of Christ who stands, human-divine, at the right hand of the Father and the growing stewardship of humans, struggling to grow into the fullness of Christ's mission and life. Dogmatic consideration of the recognition of the centrality of the Eucharist in the development of a more explicit concept of co-lordship is greatly needed.

The above are merely some of the dogmatic positions that form the basis of further dogmatic reflection on the issues raised by biological discovery. They are, however, essential to that reflection. The dogmatic task is to probe these mysteries — and let's not forget we are dealing with mystery — in the context of the modern situation. The above dogmatic statements are necessary insofar as no truly Christian approach to man's control of and use of these discoveries can be developed without them. At the risk of being anti-climactic, it must be stated that little more can be said at this time. The dogmatic work is just beginning.

The Christians' concern with and involvement in history is their worship of God. This worship is the expression of their free historical activity in the ongoing living out of salvation history. The attempt, more specifically, to cope on the dogmatic level with the new powers of the human is a part of that worship. To the dogmatist belongs the duty of developing the Christian realization of the place of these new discoveries in the building of the Kingdom of God, which is and must be prime and really only concern of the Christian. The theological question can be repeated: Is the human effort to gain control of human biological development compatible with the worship of God in history?

The crisis facing the Church today can be summed up in a statement of Newman's (*An Essay on the Development of Christian Doctrine*, p. 29) "The assailants of dogmatic truth have got the start of its adherents of whatever Creed; philosophy is completing what criticism has begun; and apprehensions are not unreasonably excited lest we should have a new world to conquer before we have weapons for the warfare."

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(1) Jerusalem Bible, p. 331, footnote to 1:23: "fills all in all." The Church, as the body of Christ can be called the fullness insofar as it includes the whole new creation that shares (since it forms the setting of the human race) in the cosmic rebirth under Christ its ruler and head.



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