



Science/Technology Education in Church-Related Colleges and Universities

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Session 7: General Discussion

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Session 7: General Discussion

BERTRAM: When you receive the printed transcript of the discussions of this conference, you'll be impressed at how articulate everybody was thanks to the work of the Holy Spirit and Bob Brungs who can somehow improve on us. Watch for how often in the course of the two days someone has thrown out -- you can tell them by retrospect -- rather provocative suggestions that were not taken up for further discussion. As a friend of mine would say, it felt like bird dogging into the porridge, you know, just swallowed up and never heard from again.

If we had pursued all these leads, we might have made the world a better place. I was reminded of that during the coffee break. One of you said that you had noted that an almost unchallenged term in our parlance here has been the term church-related college, as though that were some univocal given, when in fact we all know out of the other side of our heads that there are church-related colleges and there are church-related colleges. You'll remember how yesterday morning Fr. Brungs had the floor for a moment and made, as he called it, a very modest observation, that he assumed that church-related colleges are related to the church. Now, perhaps as a provocation, that was rather subtle, but I know Brungs well enough to know that he really meant to get a rise out of us.

We promptly proceeded to breeze on ahead on our merry way. That's one instance of many. I know that several of you -- I could tell by the twinkle in your eye as you spoke -- couldn't wait to get finished with your statement and then sit back and savor the response that you would get. It was never forthcoming. That's probably part of the sheer givenness of the free creator about whom Don Keefe was talking. We don't always pick up on those gifts.

ACKER: I think that one of the reasons that church-related colleges were so effective in promoting research was the vow of celibacy. I don't know how provocative that's going to be. It's related to John Cross' point about service. It takes a great deal of time to ready a student in research, especially an undergraduate. Research is brand new to them, and this takes an untold amount of time. You can give it only because you have time yourself. I speak from experience. At the risk of sounding arrogant, I've had 14 Westinghouse Science Talent Search winners in the past. I'm no longer in the church-related college where I did that work, but I did the work in a very "highfalutin" high school where I had to start freshmen out with research -- 14 year olds -- in order to have them reach Westinghouse caliber by the time they were seniors. You can take those tests only when you're a senior. These were all girls whom I directed from about 1959 until 1978 when my last one, before I left high school teaching, went to the international fair in San Francisco and got the biggest prize there, a trip to the Nobel Prize ceremonies in Stockholm. The service was available because I had the time. I gave my life to that. I did not have another family. This was my life. That's one reason why church-related colleges were in the forefront in the research.

BERTRAM: First, you just disproved the statement I made a moment before you spoke. One of the provocative leads that I thought had been quickly overlooked was John Cross' comment about servanthood this morning. I think he thought so too. John made another provocative comment yesterday about communication which I'm still waiting to have responded to. But right now he's batting 500. Some of you may not know that my wife and I live in St. Louis and I teach in Chicago. I spend half a week up in Chicago and half a week here, so I'm a part-time celibate. I've the best of both worlds. You've heard it said, there's nothing like being a little pregnant. Well, it's something like being a little celibate.

MURPHY: I want to add some of the reasons why I feel the church-related schools or at least schools who had a positive attitude toward research for undergraduates were fairly successful. One of the factors is size. If it's not the size, it's the human environment rather than the physical environment with its instrumentation, equipment and library resources. The human environment important here is the fact that the students and faculty knew each other and interacted closely. In other words, the students had a mentor or guide who was in fairly close contact with them. When it came to needing someone to direct their undergraduate requirement, they had someone that they could look to. Whatever the advice and whatever the direction, it was adequate. The research may not have been world shaking, but it was an authentic research experience. These factors are somewhat responsible. Even in large universities, if anyone has gotten turned on in their major because of an undergraduate research experience, it's due to a fairly close contact probably with a faculty member.

Also, one of the problems with getting authentic research going with an undergraduate is that the faculty members themselves do not and maybe have not had an authentic experience. Their only research may have been in graduate school. It may have been holding on to get this done, because it was part of the degree requirement; if they had had their druthers, they wouldn't have chosen that topic at all.

We should help faculty to know what is or isn't authentic research. Most times people really don't stop to think what goes into research and what would make that experience authentic. I had the advantage of eight years in industry before I started teaching. Research and projects may have been easier for me. But the longer I've been in higher education, the more I realize that there are faculty who never knew what they should have been doing. We have to go back to the first principle of science. We should teach science for wherever we are. In other words, in a rural area we teach it for a rural area. In San Diego, we teach it from the beach. In Maine, we teach it in the snow. We have to have that kind of a perspective. Some higher education faculty aim for something beyond the students. They, the undergraduates particularly, need something beyond them and challenging, but not so far beyond that it turns them off.

As it turns out, the undergraduate experience in research is usually very good. But if the faculty member is not comfortable with this or hasn't the time for it, we should look at the attitude toward research in itself and at what kinds of projects would be appropriate for an undergraduate. If we look at these two questions, we might have an easier time of putting the two together.

BERTRAM: The theologian in me still asks, perhaps overasks, whether some or all of these people in close contact with their professors owe any part of their inclination toward close contact from growing up with a God who is willing to be in close contact with them in Christ. That may be stretching things. Is part of the thrill, the satisfaction of research, the thrill of surprises, imbedded in a God relationship which has taught us to expect the most outrageous surprises? That, too, might be stretching things, but theologians are in the business of stretching things.

FORD (NY): We've been circling around a subject dear to my heart, probably reflecting my Presbyterian/Quaker/Methodist origins and a long string of family members who have engaged in preaching and teaching. When I started out, my goal was to be a teacher. I failed miserably. If I had been successful, I'd be in Cape May, New Jersey watching birds. I landed in teacher education by choice.

In making these remarks I'm influenced by several conversations I've had about the condition of teacher education, Fr. Brungs' concern for the future, and a little anecdote about Msgr. Cassidy, a Dominican, who used to teach at Providence College in the federally funded program focused on young scientists. He taught either Fauci or Gallo -- the one of them who heads the National Cancer Institute. He took great pride in describing that Providence College experience to a group of us at Pope John XXIII Institute in Braintree, with which my college was meeting to discuss a possible alliance. That typifies what a church-related college is and what undergraduate teaching is. As learned and insightful as we may be, it doesn't matter unless we follow Benedict's notion that, if it's important, we'd better bring the young into the picture.

I've been out of direct involvement in teacher education for 20 years. I was a professor of higher education at St. Louis University, and I was reluctantly the director of student teaching. It was a route to becoming a professor of higher education in my first love, the history of American higher education. I'm may be wrong in what I'm going to say. Teacher education has its ups and downs, good times and hard times, for many reasons, part cultural and part the view (and behavior) of departments of education. They have a tendency to alienate in a discipline which is not a discipline.

Being in a medical college and having been raised on a farm, it's easy for me to compare agriculture, medicine, and education and their vaster disciplines. They don't exist in themselves. They are rooted in basic disciplines. The education of the teacher is a function of psychology, philosophy, theosophy, sociology, and from our perspective, theology. That distinguishes us in the church-related college from the non-church-related college.

I'd like to make an important sub-point on that. It may help the church-related question on the board. When I was director of student teaching, I was struck by the difference in placing teachers in Lutheran and Catholic and public and private schools in Missouri and Illinois. I directed a program that grew rapidly and attracted the best students. This was followed up in my experience at Fontbonne College. It was apparent to me, without any solid study of the subject, that the private or the church-related educated teacher had characteristics distinguishing them from those who went to college somewhere in rural Missouri. With all due respect to the state college system, they were old Teachers' Colleges. There were no business schools. There wasn't much science. They were very narrowly conceived then. They're better now. The dedication Sister Joan mentioned, as well as what's required to become a good teacher, made the church-related colleges' teacher a better teacher. Their state in life didn't matter, because they had an infusion of the apostolate of teaching. Somewhere they picked up the Augustinian notion that Christ taught through them, that they were voices of the Spirit.

I live in Bridgeport, Connecticut, and we disarm our students as they enter school. One of the local football coaches was just murdered. The schools are centers for drugs. Teachers and students sell drugs. There's a new superintendent in the city of New York -- I'm very much involved by virtue of our college and the city of New York and its problems -- chosen from Miami Dade in Florida. He's Hispanic; he's a dropout; he understands. We hope it works. He's got a tough assignment. First, he has to disarm the school. Then he has to restore teacher morale. He has to create school boards, and so forth.

It's nice here on the banks of the Mississippi, but let's go back to our campuses and look at our responsibility as deans, physicists, psychologists, theologians, philosophers, and look at our teacher education departments. I'd like you to go home and embrace your teacher education department. If they are pariahs on your faculty, bring them back into the mainstream. If they've been pushed to the physical periphery of your campus, bring them back to the center. Force them, lure them, shake them and cajole them to play their part within the ITEST mainstream that Fr. Brungs and his group represents. Here we're talking only about science. We could say the same thing about international studies. What we don't know about the rest of the world, or about the humanities or about language or about history or about how to read and write a new mathematics and so on!

There seems to be a resurgence of interest in teacher education and new ways to prepare teachers to enter our public and private school classrooms. In Connecticut, for example, one does not need to have a certificate to enter the classroom. There's an alternate route. Of course, the educators and the bureaucracy are fighting it. What else does a Ph.D. in anatomy do but go out and teach anatomy to the rest of our people? So we're all, regardless of the institution, involved in teacher education. I've painted a narrow, uninformed and perhaps too dismal a picture of teacher education. If I've touched a glimmer of truth in any of your campuses, I hope that the point sinks in. Not much will matter unless we serve by going out into our schools.

Fr. Maurice McNamee, now 80, former chairman of English at St. Louis University, called me one day many years ago and said, "Charlie, all of our English majors, who want to be teachers and are very good students, know nothing about teaching English, teaching grammar and about the role of teaching itself." So McNamee, Ford, and others coordinated a course taught by members of the faculty of the English department who gained a pedagogical sense from the pedagogues in the education department. I hope that we produced better English teachers. There was a professor of English who went to a department of education. I hope professors of biology, chemistry, physics, and mathematics draw their educators back into the mainstream of teacher education.

JABLONSKI: One of the things that should characterize our church-related institutions -- and gatherings like this as opposed to our professional scientific meetings -- is our realization that we're led by the God of the covenant who continues to speak to us and to lead us. With that kind of trust, we're doing more than sharing our views. We believe there's something within and beyond us, and therefore, in our institutions as well. When we design a mission statement we state how we're being led within that institution. Perhaps one of the important things for us as scientists is helping to articulate the theology of a science ministry. There's a lot of discussion about the lay ministry and a theology of ministry. What is the theology of a science ministry? We can look at it

from a Christological basis in terms of our ministry as complete professionals. That term means some kind of relationship with God, relationship to self and self-knowledge in a holistic way. It includes a service dimension.

It's going to be the Christian laity who will carry out this ministry. We are going to have to enable our lay colleagues with the skills for communicating with theologians in order to have that understanding and to continue it into the future. We don't expect people who haven't had church experience to jump in and start being a member of any of our churches. There are formation programs, such as the rite of Christian initiation for adults. Why not formulate a rite of "science Christian initiation" to help them into an apostolic way of thinking?

Some experiences and frustrations lead people to alienation or misunderstanding. They need help in affirming what they are doing, how they are educating, how they are working in science. This is part of the Christian mission. This is ministry. This is the way we live in the community.

ORNA: I'd like to pick up on what Leanne (Jablonski) and Joan (Acker) were saying. I'm continually struck by the mystery of our profession. Sitting here, I realized that the opposite of love is not hate but fear. What I've heard today of the Galileo debate points to a fearful church reacting to a threat. I heard from many of you that science has nothing to fear from theology and vice versa. That's a great breakthrough in the 20th century and something on which we might base our discussion on and our theme.

We here are obviously all persons dedicated to our profession; we are servants; we view ourselves as serving those to whom we minister. I don't know that my vow of celibacy has anything to do with the time and effort that I put in. I am at times humbled by the tremendous dedication, the time and effort put in by my lay colleagues at the College of New Rochelle. I'm humbled by the effort and time put in by Marie Sherman, who has a family yet spends many hours taking students on field trips and directing research. It points to the mystery of our dedication to our purpose. This is something we are committed to and take the time to do.

SKEHAN: I'll mention what may be unique but certainly is distinctive about the church-related institutions. It follows closely on Leanne's statement. It was brought home to me by a Jew who joined our department of geophysics and geology a few years ago. He has been ecstatic since he came to Boston College. He is a devout Jew, one who likes to talk about the religious matters and other matters of values, including the science. He is able to talk about these things very freely in the present atmosphere. He had been at Columbia University as a full time researcher and did his doctoral studies at the New York State University at Stony Brook. When he came to our campus, he was blessed by surprise because he never expected the freedom to talk about the things that were of greatest value to him. We have a unique resource that many of us take for granted. We don't capitalize on this enough. We are an oasis where we can speak about things that are of greatest value to us. We can speak not only in our field of science but also of our other cherished values, particularly religious values. It's something that we ought not to take for granted.

WHARTON: Two of the groups last night reported on the contribution of church-related schools to science education. Let me go over the similarities of those two reports. One talked about the atmosphere which permeates the church-related institution. The other emphasized the person-centered characteristics of a church-related institution and the greater freedom we have to express our religious views and to integrate our Christian worldview in a holistic way. Those two statements go together. Number one also dealt with issues involving the future of the human race. The third point of the second group emphasized science as a service field with responsible citizenship. Those two ideas go together.

Also, the third point of the first group was the value focus in courses. That ties in with the third point of the second group as a service field and its functional citizenship. But it also ties in with counteracting a negative view of science. Of course, with value focus you can look at either the negative aspects or the positive aspects of science because science has both positive and negative aspects. But with the value focus, I would prefer we concentrate on the positive aspects of science. Question was raised about the uniqueness of church-related schools. One unique thing that ties in with all these is our constituency of students who want to come to church-related schools. If we

aren't going to reach out to them, no one else will.

I was talking with Marie Sherman who pointed out that we can't force students to go into science or to become involved, but we can create opportunities to stimulate their interest. We can advertise what can be done in science in the service field -- even if they don't go into science, they need to study science to be responsible citizens -- and present a positive view of science to our constituents.

SMOLARSKI: Many church-related schools have not taken the opportunity to foster interplay between religion, art or humanities section of curricula and the scientific. At Santa Clara there's been a team taught course with a professor in the English department and a professor in the Math department. Students sign up for sections of Calculus I and English I. They must take both. They're both taught by both professors. I don't know how an English prof can teach Calculus I and Calculus II or how a mathematician can explain the literary qualities in English I and II, but they have to do it.

Can we encourage science faculty to get release time to participate in a beginning freshman theology or religious studies course? That might lead to a team taught approach from their perspective as scientists on these questions. If that could be officially concretized in various schools -- at least credit and incentive given to a faculty member to sit in on a course not in their discipline -- it may eventually contribute to the training of theologians in the sciences and scientists in theology.

Earlier, someone mentioned ministering in our schools to the students who have math anxiety or a more generalized scientific anxiety. How do we break down the barrier preventing them from being whole individuals? Students equivalently deny that this area is necessary for their future as human beings and also as believers. We haven't challenged that.

Many church-related schools don't have a strong science department or a strong math curriculum. Yet we state that this is an important aspect of a liberal education. We haven't begun to think about that as a curriculum question or a paradigm question. That needs to be addressed.

COLICELLI: My institution is 90 years old and we've had undergraduate research for just about that whole time. The tradition of Catholic women's colleges (and Catholic colleges in general), filled a need to enable a group of people who were held back. We knew then, and still do, that sometimes women scientists must be better scientists than their male counterparts. We did a lot of extra things but we still needed to do the science. I hope our colleges continue to realize their obligations to enable other under-represented groups in society, especially the Hispanic population. It's tied to our Christian base.

FORD (NY): I address the comment just made about anxiety in mathematics and science. My present provost of the diocesan university dealt with a blue collar student population with a lot of anxieties. Those anxieties are addressed in several strategies. The full answer is a strategy encompassing a core of people willing to leave their departments several hours a week to assist the students who have anxieties in grammar, math and science. The departments can set up introductory courses to address that problem, monitor it and network with other departments so that the student is watched and assisted in a variety of areas. It's a bureaucratic strategy to identify the anxiety and get people willing to work on it. It's an apostolic endeavor to get them over the anxiety and help them move on. I've seen anxious young folks come into our graduate school and leave as super post docs five or six years later because caring people work with them, significantly lessening that anxiety. That is our second line of defense. The first line of defense is in the secondary and elementary schools. We have no choice in that matter. If we don't participate longitudinally in the educational process, we're going to get what we asked for. It will continue.

SHEAHEN: Take the question on the board about the unique contribution of church-related schools. Some of the things I've heard this morning are starting to converge. In Washington, D.C. we joke about the building of the National Academy of Sciences and call it the Science Temple. You go there and you worship. You put out a government report that asks for money. That's the kind of sacrifice that's offered.

The general origin of math and science anxiety is what Elena said a few minutes ago. They fear man, not science. They fear what we've come to know as secular humanism. The perception is that science is the flagship, the wave of the future, of secular humanism. People innately reject that because they innately have a common search for God but they can't get a handle on it. Their flight from secular humanism turns into a flight from science, a math anxiety. As Dennis Smolarski said, we haven't challenged the assumption that science is necessary to overall life.

Jim Skehan's idea that the religious universities are oases in which we are free to pursue our inward feeling for faith represents a unique contribution. Church-related schools are the one place where we can proclaim: "Science is not the flagship of secular humanism. Science is a gift from God. Come into our building and we'll tell you how it all fits together."

BERTRAM: Are you saying that to translate mathematical sciences from "not God" to "gift from God" is not to dethrone them but to promote them?

SHEAHEN: You bet.

FORD (ST. LOUIS): I find Tom's statement intriguing but I'm going to offer a comment on what might be unique about church-related schools that takes a totally different approach. I'm being a little provocative here. When I advise part-time faculty who teach for us in the evening, I point out that teaching is a vocation of justice rather than mercy. We are not merciful in the sense that we do not give grades as gifts. We judge an eye for an eye and a tooth for a tooth. I tell students that we're a church-related institution and that makes it easier to flunk those who get F's. In a secular institution, where science is the be all and the end all, you might succumb to the notion that your worth is determined by the grades you get, by your achievements and such measurements. That may be the way that our society measures worth and value, but not ours. The F I'm giving you has nothing to do with your value as a human being. It has nothing to do with your potential as a human being. It has everything to do with your performance in this class in these few months, and that's it. I'm not saying anything about you, the person. Perhaps you goofed off too much, but you'll be the judge of that. I'm not the Judge. I'm just a judge with a small j. The framework of our university makes that easier for me to do. So church-related institutions can morally flunk anybody.

Let me make an aside here. I don't want to make light of math anxiety. I had math anxiety when I was doing my Ph.D. Can I measure up to that? Is this attainable? Math anxiety is part of the human condition.

CONNELL: I have the same sort of thought. Some students have math and science anxiety. Somewhere along the way, they missed something that they needed, and they truly need help. More of them seem to have grade anxiety -- not just not flunking but getting a B instead of an A. If you've been in a church-related institution, it isn't always possible to say, "But you don't have to get all A's" and have it really penetrate.

EAGAN: I want to pick up on something that Fr. Skehan said, because as a non-Catholic, a non-Christian, a non-Jew, I want to attest to something about freedom in these institutions which we will call church-related. My father was a free thinker, but he insisted that I go to a Jesuit undergraduate college because he felt that genuine intellectual discourse took place in such an institution and that it was free discourse. I have taught and gone to school in every other type of higher education institution in the country. I would underscore that my father was correct. The Jewish colleague of Fr. Skehan's is correct. Free intellectual discourse is much more attainable, much more secure in the church-related schools I know than the many state or secular institutions I'm familiar with.

As I look at what ought to be the unique contribution of church-related schools, I try to understand and explain why I feel that there is more genuine intellectual or scientific discourse in the church-related institutions with which I am familiar. That's why I would insist that the notion of church-related institutions or schools be taken in its broadest terms. Years ago, some wag in my discipline pointed out that it's interesting to look at the history of organizations that are still alive and well in the world since the Protestant Reformation. There are three institutions that are still in existence that were existent when Luther pounded the nails. One is the Roman church, of course,

and the Protestant tradition or Protestant church. The third example is the parliament of the Isle of Man. That parliament is still pretty much the same as it was then. All the rest of the institutions, 58, are universities, most of which, if not all, were religiously founded. Many have long since dropped close familiar religious ties, but Oxford University's colleges still bear the names that attest to their foundation as does Cambridge.

When I try to figure out what protects what I see as my ultimate goal, free intellectual discourse and pursuit of understanding of the universe, I find it in the church-related institutions. I want to take it broadly because that free discourse I'm talking about does occur in places like Harvard and Southern Methodist University. It probably takes place at Southern Cal; it takes place at Northwestern. All of these were founded in the religious tradition. I urge all of you to keep that notion of religious-related schools very broad. I'm familiar only with Jesuit institutions in terms of this orientation. The first words the last president of John Carroll University spoke to our faculty were: "We are first a university, then Catholic, then Jesuit." Some might disagree with that, but that's the tradition I knew at Canisius College a long time ago.

BERTRAM: That brings us to the end of our list. I was almost going to say the end of our rope. We ended with Pat Eagan's returning us to a point on which we began. I remember Dan McLoughlin's provocative remark which was later picked up by his straight man, Charles Ford, asking an apparently embarrassing question. Why is it that church-related colleges don't show up among the top hundred, at least as far as science education goes. I'm provoked to a kind of puckish observation that, at least in North America, the same thing that is said about church-related schools slipping out of the top hundred with respect to science education is true with respect to intercollegiate sports. Yesterday's victory for Notre Dame in a way proves me wrong, but when we look at all the other top hundred teams the church is slipping also in that league. What might seem even more ironic would be for me to say there is a similar phenomenon, not quite as dramatic, with respect to, would you believe it, the profession called theology.

If you ranked theology and its achievements in North America the way in which people might be inclined to rank science education or to rate intercollegiate sports -- in terms of publication, name recognition, how many people are reached by a given theologian -- more and more of those theologians are showing up in non-church-related schools. These schools have more and more provided themselves with faculties of theology or religious studies. That might at least suggest the provocative tentative conclusion that the "church-based" in the so-called First World today is destined to be poor. I don't mean poor in quality, but poor financially. Intercollegiate sports and main line professional publishable theology and the teaching of science and research in science are destined to be expensive. That seems to price the church out of those markets.

The purpose for making a statement like that is largely provocative, but there might be some embarrassing half truth in it. That may bring us back to something that Sr. Rosemary said early in our sessions. This wasn't the way she put it, but it had the effect of picking up on something that Archbishop Camara once said, namely, that the age of miracles is by no means over for Christians. Every Christian is privileged to be able to continue to perform the miracle of making adversity into prosperity. I took you to be saying, Sr. Rosemary, that maybe the very fact that church-related colleges are from one point of view being marginated may only challenge their God given resourcefulness and imaginativeness to make the most of what they seem to have little of. Someone else called that making a sow's ear into a silk purse.

I've been reminded by several things that have just been said in the last hour of a favorite document of mine in the New Testament, the first epistle of Peter. We've talked over and over again about fear. In the first epistle of Peter, the Christians who are under duress for being Christians, some evidently quite explicitly being persecuted for their faith, are told in the Greek *timate* often mistranslated in English to "fear" the emperor, to "fear" the king, to "fear" the slave master, and so on. That's a bad translation. A more adequate translation would be "to respect" or even "to revere," perhaps. That is distinguished in the first epistle in Peter from another Greek verb which should be translated "fear" and that's the word *phobein* our word phobia.

In that epistle, though the Christians are urged again and again, the Christian wife, for example, who for all we know may even be tyrannized, possibly abused by a pagan husband, is told to respect him. But she is told not to fear him. No one is ever, in the first epistle of Peter, told to fear anybody except *theos*, God. That is quite remarkable. In that problematic passage where the advice is to the wife, the author says that the very fact that she might respect this disresponsible husband but not be terrorized, never allow herself to be frightened by him -- that very phenomenon might seem so different that he himself will be forced to inquire what makes her that way. More than halfway through the epistle comes a sort of throw away line amid advice to Christian citizens, Christian slaves, Christian wives, Christian husbands. The author says, with respect to the non-Christian environment, the fact that you lose respect for association with those people should not make you fear them. Fearing only God may provoke in them the curiosity to ask a question for which you should all be ready. All of you should be ready to give a reason for the hope that is in you. Very low key evangelization, by the way! Always be ready to give a reason of the hope, in case anyone should ask! The author then adds for good measure, "do that with gentleness and respect."

We've not talked much about evangelization. We have talked about research. We talked about surprise. We talked about curiosity. I suppose listening to people like us talk makes me wonder whether you yourselves don't become objects of curiosity among your colleagues and your students who may at some point, not because your Christianity is that manifest but your goodness is that manifest. Might they be provoked to ask of you the reason of the hope that is in you? I suppose in good theater talk, that may be your one chance for your one good walk-on line. I take Peter to be saying to you, "don't blow it!" In case anyone should ask, be ready to give the reason of the hope that is in you, that you yourself become an object of research. I suppose you can't do that unless you are curious about your colleagues; respectfully you're curious about what makes them tick. You see them as gifts given by a freely giving creator. I can imagine that that would prompt them to ask what makes you care, what makes you keep going, what makes you work long hours in order to keep undergraduate research going.

I wish you every blessing. I've been grateful for your hanging in there, being as participatory and responsible as you've been.

BRUNGS: Bob Bertram has mentioned hope. And I remember, Bob -- I may not have the quotation exact - that at one of our meetings about 20 years ago, you quoted Horace Bushnell to the effect that power follows the direction of hope. It does not follow money nor fear, but hope. Who should have more hope than we? At our second meeting in March, 1970 we brought together people interested in areas between science and faith. One was Dr. Donald Shriver, at that time teaching theology at Emory. He had an engineering background. He's presently President of Union Theological Seminary. He said: "You know, I always thought I was out there alone in a foxhole. After this weekend, I find out that there are 35 or 40 other people up here, each in his or her own foxhole. Now that I know I'm not isolated and you know you're not isolated, isn't it time to start digging slit trenches so we can communicate?" One of the basic functions of bringing together 50 people like yourself is the digging of slit trenches. It's been alluded to more than once that the primary effect of such a meeting takes place in the lounge, on the grounds, and in the dining room. The one-tenth that shows up in the Proceedings is the least important one-tenth. The alliances formed, the partnerships and the friendships formed, will lead us on in our hope to serve the Lord through our science, our theology and ourselves.

I want to thank you for coming. I hope that you've all enjoyed yourself. I hope you've been stimulated by each other and by our paper writers. Finally, I wish you Godspeed on your return home.

Science/Technology Education in Church-Related Colleges and Universities		
ID	Article Title	Author
BK022-001	Table of Contents	
BK022-002	Foreword	Father Robert Brungs, SJ
BK022-003	Keynote Address	J. A. Panuska, SJ
BK022-004	Reflection: Imaginative Learning in Theology, Science and Technology	J. Cross, C. Ford, G. Magill
BK022-005	A Pilot Study of the Present Condition of Undergraduate Science and Technology Education in Church-Related Colleges as Perceived by Department Chairpersons	Charles E. Ford
BK022-006	Feasibility of Developing Adequate Natural Science Programs in a Church-Related School	J. Richard Chase
BK022-007	Why Church-Related Institutions Should Be Involved in Science/ Technology Education	Sr. Rosemary Connell, CSJ
BK022-008	Science and Technology in Jesuit Education	Robert A. Brungs, SJ
BK022-009	Science/Technology Education: An Administrative Perspective	James Bundschuh
BK022-010	The Ideal and Reality of Science Education in Catholic Colleges and Universities	Thaddeus J. Burch, SJ
BK022-011	In What Ways Can Science/Technology Education Enrich the More General Liberal Arts Emphasis of Many Church-Related Schools?	Sr. Mary Virginia Orna, OSU and Sr. Angelice Seibert, OSU
BK022-012	The Role and Importance of Research and Publication in Church- Related Schools	James W. Skehan, SJ
BK022-013	Developments in Science/Technology/Society Curricula at the Secondary Level and How Colleges Can Connect and Continue	Marie Sherman
BK022-014	STS: A New Opportunity for the Re-Integration of Christian Concern into American Academic Life	Rustum Roy
BK022-015	Session 1: Discussion after Keynote	
BK022-016	Session 2: General Discussion	
BK022-017	Session 3: General Discussion	
BK022-018	Session 4: General Discussion	
BK022-019	Session 5: Small Group Reports	
BK022-020	Session 6: General Discussion	
BK022-021	Session 7: General Discussion	