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Science As Community

IT IS INDEED a great privilege to be called upon to give the opening address of the Academic Symposia commemorating the Centennial of the founding of Iowa State College. The land-grant college is one of the truly great ideas in education, and Iowa State over the past 100 years has pioneered the conversion of this idea into the significant actuality which we all know today. Not only is it the first institution to participate in the benefits of the Morrill Act, but ever since then it has opened up paths for other institutions to follow by making evident practical ways in which Senator Morrill's vision could be realized in concrete educational processes. In a very real sense the Centennial of Iowa State is also the Centennial of the land-grant idea in American education. When seen in this perspective, the present symposia acquire a place of such importance and significance that an invitation to participate in it is not only an honor but a most important challenge.

The role given me by the committee which planned the symposia was that of portraying the integration of science and faith in past and future social development. This is indeed a tremendous assignment, and I shall only be able to approach it in this one lecture from a single vantage point. Yet it is clearly central to the vision which must inspire Iowa State and her sister institutions as they enter the second century of the development of the land-grant idea. During the first century they have, to a greater extent than any other kind of institution, brought science down to the level of the common man and placed it in his service. At the same time they have carried out this task with a student population which, to a greater extent than that of any other institution, has been energized and supported by that sturdy Christian faith of the common American man and woman on which the greatness of America has been built. Even if not explicitly planned to do so, science and faith have in fact worked hand in hand to produce the rich and manifold contributions of the land-grant college to the social development of this country.

In the conclusion of his recent book on the land-grant idea in American education, Dr. Eddy summarized this idea in the following way:

Born out of America's worship of education, the land-grant colleges strengthened that worship. Partially through their efforts, higher education came to be regarded as not so much a luxury as a national necessity. Before long, America had taken for granted the assumption that each individual, regardless of his economic or social status, should be given the opportunity to develop his innate abilities to the ultimate benefit not only to himself but to the nation. Each man was worth educating as a person and as a citizen in keeping with the Judeo-Christian and democratic belief in his dignity and worth.¹

¹ Edward D. Eddy, Jr., *Colleges for Our Land and Time*, Harper and Brothers, New York, 1957, p. 285.

Thus the land-grant college, which in its program is so much concerned with science, is in its ideal equally concerned with faith and firmly rooted in the Judeo-Christian heritage of Western civilization. Yet at the same time science and religion are today widely believed to be inimical to each other, and there is in fact much actual tension between them in contemporary thought. Quite clearly, therefore, a discussion of these two areas of human thought and endeavor is appropriate and even central to the occasion which we are celebrating.

Wherever science and religion are discussed, it is usually the subject matter or factual content of each which is contrasted. Or, on occasion, it may be the techniques, methods, or basis for validation of truth in the two fields which is contrasted. Since my ordination several years ago, I have been under pressure to speak and write on these vitally important issues out of my own experience. For some time my response to such pressures followed this usual pattern of concern with the factual and conceptual content of the two fields. I would strive to perceive the unity and coherence between the theoretical picture of reality as I had come to know it through science, and that which I had come to know through theology. Or else I would strive to understand and express the differences in the ways in which truth may be established and reality known in physics and in Christianity.

In all of this activity, however, I experienced a growing sense of dissatisfaction with such approaches. Something important was clearly being overlooked. It was not a matter of lack of success or of failure to deal meaningfully or significantly with the issues involved. On the contrary, I sometimes was able to achieve what seemed to me some real insights into the structure of a knotty problem which had been

worrying me and to have the satisfaction of discovering that others found my resolution of it meaningful and illuminating. The real trouble lay elsewhere. Mainly it consisted in the recognition of the seemingly unavoidable circumstance that both I and my hearers were standing apart from our discourse, and viewing it in a detached way from our several vantage points. Each one could agree or disagree, be interested or bored, enthusiastic or antagonistic, without its making a great deal of difference. The subject under consideration was a thing apart, and the difficulty was that there was no obvious or essential way in which it really had to do with any of us. What then about my mode of response to the pressure upon me to speak out of my joint *experience* first as a physicist and later as a priest of the Church? Could any amount of discourse about the contrasting subject matter of physics and Christian theology ever really get at what was evidently being demanded from me?

One clue to the problem raised by such questions came to me early, although I did not then understand its full implications. This was the simple fact that all of my writing and speaking on science and religion came well after my full involvement in and commitment to the Church. None of it could possibly have been undertaken by me at all until, in a sense, it was already too late for me to have done anything about it. Christian theology is something which can be fruitfully engaged in only by already fully-committed Christians. This, however, was not in any sense new to my experience. It had previously been just the same way with physics. By the time my first paper in physics was published in *The Physical Review*, I had already sometime since become a fully involved and committed physicist. To be sure, I was young and inexperienced in the field and it was not then clear

either to me, my professors, or my fellow student physicists whether I would turn out to be a good or only a mediocre physicist. But by then it had become quite clear both to me and to them that, for better or for worse, I was already one of them.

A thought such as this naturally leads to the question of how it is that anyone becomes either a physicist or a Christian in the first place. The common notion, I suppose, is that one first learns all about the subjects of physics or Christianity, their factual matter, content, methods, and ways of knowing, and then on the basis of all this knowledge decides whether or not one wishes to become a physicist or a Christian. But I am convinced that this widespread popular impression is completely erroneous. I do not really know or understand the process which led me as a young man to become interested in physics and soon to decide that I wanted to be a physicist. But whatever this process was, it was not based on a knowledge of physics. On the contrary, I am convinced that until I had made that decision, I could not even begin to really learn physics. In the same way the process which led me into full involvement in the Church is equally mysterious to me. It certainly was not the result of an exhaustive study of Christianity. Indeed it is now clear to me that only after I had made such a decision did I have a secure enough platform on which to stand to make it possible for me to grapple at all meaningfully or fruitfully with tough theological questions. This, however, is just another way of expressing the central theological affirmation that it is by grace, not works, that one becomes a Christian. To this affirmation I would add that it was also, in a completely analogous way, by grace, not knowledge, that I became a physicist.

This early clue received its needed impetus and clarification from a lecture given by my close friend and associate, Dean Harold K. Schilling of Pennsylvania State University, during a Danforth Foundation seminar for college teachers of science which we jointly conducted several years ago. In this lecture he developed the idea of physics, or for that matter of any science, as community rather than subject. As I listened to his remarkably clear and cogent development of this idea, I realized with considerable excitement that here was the key I had been groping for to the problem which had been gnawing at me. With full acknowledgment of my indebtedness to Dean Schilling for many of the insights and ideas which I have borrowed from him, it is this theme which I propose to explore with you today in the light of my own experience as an active member of two communities of inquiry and understanding: physics and the Church.

There are a number of ways in which it may be seen that any science is much more distinctively a human community than it is a body of subject matter or a particular methodology. One way is to try to formulate an adequate and satisfactory definition of a given science in terms of its subject matter. This must somehow be attempted at the beginning of an introductory course in the science. The students who have registered for it expect to be told at the outset what the subject is about. The instructor, however, in trying to formulate some adequate statement for meeting this natural and apparently quite proper need generally finds himself in difficulty. How, for example, can a boundary be staked out in the natural world which will clearly and adequately distinguished physics from chemistry? The deeper one goes into this task the more difficult and complex it is seen to be. Every definition of either subject which recom-

mends itself is soon seen to have numerous loopholes. The fields overlap each other and the boundaries continually shift with new progress in each science. Many who have faced up to this problem have in the end suggested in desperation that the best definition of physics is that it consists of everything done by physicists. From the standpoint of physics as subject matter this definition is facetious, but from the standpoint of physics as community it is profound.

In actual practice little effort or interest is expended on such definitions. In time as the course goes on the students will come to acquire a feel for what physics is. In part this comes from the content of the textbook, lectures, experiments, and examinations as the course unfolds. But this is only in part. Even more important is the character and structure of the life which goes on inside the physics building or the chemistry building. Each is distinctive and recognizable. Although it may be difficult to tell the difference between physics and chemistry as subjects, there is no trouble at all when it comes to telling the difference between a physicist and a chemist. They are clearly members of two different, distinct, and contrasting communities. The student, along with the rest of the university, comes to think of physics as that which goes on in the physics building, whereas chemistry takes place in the chemistry building.

Another way to see science as community is to consider the history of each science. When we do this what immediately stands out is the unity and coherence of the men and women who have been engaged in it. Physics, for example, has changed radically in subject matter content over the years. First it was interested in the laws of motion of bodies; later with the properties of substances, heat, energy, and light. Then in the last half of the last century, electricity

and magnetism were the dominant interests. With the discovery of the electron the center of interest turned to atoms and molecules, and more recently to atomic nuclei. Now the growing family of strange unstable particles produced at ultra-high energies is the center of interest. None of the early physicists could possibly have foreseen the course of this path of inquiry. Yet physicists today can still read the papers of Newton, Joule, Hamilton, Faraday, and Lorenz and feel at home with them. Whatever the subject under investigation, the peculiar combination of attitudes, values, judgment, and discipline which uniquely pervades the community of physics is recognizably present. These are clearly kindred spirits and fellow physicists, even though the content of physics has become for us something vastly different than it was for them.

Ancient Greece produced a few isolated instances of genius, such as Democritus and Archimedes, who investigated physical problems. But it did not produce physics. Only when such isolated individual sparks caught fire and spread so as to draw men into a communal enterprise did what we know now as physics emerge. When this happened, a community came into being possessed of a unique power of inquiry into nature. Its members were seized with this power and shared in the dynamic vitality and enthusiasm of it. The spirit of this community has been the same ever since in spite of the way in which the objects of its inquiries have continuously changed and spread. It has throughout commanded from its members a common loyalty, imposed upon them a common discipline, and conferred upon them common rewards and satisfactions. So too it has been with the other sciences which have emerged in the last few centuries. Each owed its birth to the formation of a special community

of inquiry peculiar to itself. One man is not enough, no matter what his genius. Only when others catch his fire and his vision and join him to labor in a common quest for understanding does a science come into being.

The same aspect can be seen in the educational process by which each science reproduces itself and maintains itself from one generation to another. This process is very different in nature and character from what is commonly supposed. Many people look upon science as a sort of vast impersonal mechanism which people can be trained to operate as they would a lathe or a locomotive. It is thought to be a self-correcting procedure which automatically generates infallible information about nature by the application to phenomena of a mechanical process known as "the scientific method." Nothing could be further from the truth about science as it is known from the inside to those who live it and do it. Education in a science is a gradual process of incorporation into a community. The process, to be effective, must expose the student to the spirit of the community so that he becomes infected by it. He must, of course, master a large body of factual material and acquire many specialized instrumental and intellectual skills. But much more than this, he must somehow come to share the characteristic viewpoint and attitude toward phenomena of his science. Through intimate continued contact with his professors, he discovers how they react to the frustrations and ambiguities of research, becomes aware of the sources of their confidence in the ultimate fruitfulness of their enterprise, and learns how to subject himself to the rigorous discipline which the enterprise entails. He must hear too about the great personalities in his science, and this must include not only their scientific achievements but also tales and yarns about

their foibles, personal peculiarities, and escapades as well. Gradually he comes to share in the sense of adventure, the excitement of discovery, and the hope in triumphs to come which energize the community. Ultimately he reaches the point at which both he and his professors recognize that he has become one of them. He is a physicist, or chemist, or psychologist. Not only does he feel himself to be one, but when he goes to a professional meeting he finds that others instinctively respond to him as such. He has been incorporated into the community.

Those who look on scientific education as a purely mechanical process of imparting information and skills often fail to see the importance of research and to argue in favor of dispensing with the thesis requirement. But when we think of graduate education as incorporation into a community, this matter emerges in a different light. For it is only in research that the student can be confronted directly with nature on his own and, under the watchful guidance of his professors, discover whether he too really can possess the intuitions and ingenuity, the discipline, and the confidence and faith which give the community its power to grapple with nature and emerge with new understandings. It is only in carrying out research on his own that the student can feel, and others can realize, that he has indeed become himself one of them, a full participant in the life and power of the community.

These examples will perhaps serve to make it clear what I have in mind when I speak of "science as community." The idea is summed up cogently and effectively by Dean Schilling: "Science is communal. The science community has the usual attributes that characterize other kinds of communities. It has its own ideals and characteristic way of life;

standards, mores and conventions; language and jargon, signs and symbols; professional ethics and moral code; authority, controls and sanctions; institutions and organizations, means of communication and publications; creeds and beliefs, orthodoxies and heresies; politics, pressure groups and maneuverings; schools of thought, divisions and schisms; personal loyalties and rallying cries, jealousies and hatreds; fads, fashions, and fancies.”²

A number of the contrasts which are frequently made between science and religion are seen to be either wrong or irrelevant as soon as the true nature of science as community is recognized. Consider, for example, the common assertion that anyone can demonstrate the truths of science for himself, but the tenets of religion have to be accepted blindly on faith. Anyone who has ever taught a science knows how few people there are who can really demonstrate a scientific truth to their own satisfaction. How many, for example, can demonstrate to their own inner satisfaction that the acceleration due to gravity is 32 feet per second per second? A long, hard educational process is required during which a person must freely submit himself to a rigorous discipline and ardently desire and believe in its outcome before he can acquire for himself the power to demonstrate the truths of science to his own satisfaction. Indeed this process is none other than that which we have just described as the process of incorporation into the community. Only by becoming a physicist can he possess for himself the capacity to demonstrate the truths of physics to his own satisfaction. But this indeed is precisely the same case with Christianity. The Church too is a community whose distinctive life and unique

² H. K. Schilling, chapter in preparation for *Teacher Education and Religion*, project publication.

power of understanding can only be shared by those who have subjected themselves to the full process of incorporation into that community. Only those who have really done so can know the profound truths to which she bears witness. Only Christians can demonstrate the truths of Christianity to their own satisfaction.

The truth of this simple fact can be seen by considering the problem of popularizing science. There is a radical difference in communication when I as a physicist present a paper to fellow physicists at a meeting of the American Physical Society, and when I give a popular lecture on some aspect of modern physics to a general audience. In the former case a minimum of words suffices for a maximum of communication. Nothing can compare with the high level of appreciation which such an audience has to offer for a really good piece of work well done, nor with the incisive and penetrating criticism which it exercises in response to poor work. But in the latter case no amount of ingenuity or care can achieve any real sense of having really put across the point. Most particularly it is quite impossible to convey to a general audience the peculiar mixture of tentativeness and confidence which physicists instinctively feel about the knowledge they have gained. This situation is, however, in my experience not confined to science. In exactly the same way I experience the same contrast when I speak concerning the Faith to, on the one hand, a group of fellow clergy or theologians, or, on the other, give a lecture on Christianity to a random academic audience. Such experiences have convinced me that the only way to really know the truth of physics is to become a physicist, and the only way to really know the truth of Christianity is to become a fully-committed Christian.

This last point suggests another contrast which is frequently made, namely, that science deals with public knowledge, while on the other hand religion is confined to private, subjective knowledge. This again reflects not so much an insight into the proper nature of either, as it does a prejudice peculiar to the twentieth century cultural context. It is true that when I give a popular lecture as a physicist, I can count on having an audience which is completely sold in advance on the validity, importance, and undeniable truth of the enterprise of physics as a whole. Moreover, the idea that I might speak of a private physics of my own would not even occur to them. I have never yet been called upon by a modern audience to defend myself or explain what possessed me to embrace physics. It is equally true that whenever I give a popular lecture on a theological topic, I can count on having an audience equally convinced in advance that religion, although possibly proper, respectable, and even admirable, is nevertheless a private peculiarity of individual people and therefore essentially unreal and invalid. Here the idea of a catholic faith which is the common public witness of the whole body of the faithful through the ages is alien to contemporary ways of thinking about Christianity. I can almost always count on being called upon by puzzled people to explain what possessed me to embrace such a faith with the degree of seriousness implied by my taking Holy Orders.

In this sense it is true that in the twentieth century science is public knowledge, and religion is private. But it has often struck me that, had God given it to me to live in the sixth century or even the twelfth instead of the twentieth, the situation would have been exactly reversed. Then when I spoke on Christianity my audience would have

been convinced in advance of the complete validity and universal truth of what I represented, and it would have seemed completely natural that I should want to be a priest of the Church. On the other hand, if I then spoke as a physicist no one would have thought it important or real, and it would have seemed quite unaccountable that a man should throw himself whole-heartedly and zestfully into such an enterprise. In the sixth century Christianity would have represented public knowledge and science would have been called private knowledge.

Another way in which these two fields are frequently contrasted is the assertion that science is based on facts whereas religion must be taken on faith. Such an assertion is quite as untrue from the standpoint of the basis on fact as it is from that of the dependence on faith. In the first place I can bear witness from my own experience that I had just as much sheer factual material to learn and digest in my preparation for Holy Orders as I did in obtaining my doctorate in physics. The range of subject matter from modern Biblical scholarship, through church history and liturgics, to moral and dogmatic theology represents a most extensive factual base upon which Christianity rests. It requires prolonged and disciplined effort to achieve a thorough grounding in Christianity.

Faith, on the other hand, is just as essential an element of science as it is of Christianity. This is perhaps a much more difficult point to grasp adequately than the other. The reason, I believe, is the common misconception of science which regards it as a self-regulating mechanism which automatically produces information when the crank of scientific method is turned. Very little faith would, of course, be required for the operation of such a mechanism. But

science, as we have seen, is not at all that kind of affair. The investigator confronting nature directly finds nothing resembling the smooth, ordered, lawful behavior depicted by the textbooks. What he finds instead is, in Conant's apt phrase, the downright "cussedness of nature." A crucial experiment successfully performed is a major achievement which only fellow scientists who themselves have met nature face to face can fully appreciate. Scientific research is a tough and unrelenting business. Only those who enjoy a firm and unshakable faith in the ultimate intelligibility of the chaotic torrent of phenomena in terms of underlying laws and universal principles can possibly stand up under it and carry through with it successfully. Often students discover when they leave the textbook stage and try to grapple with nature directly that they simply cannot believe that they can derive anything orderly and dependable and sure from their experiments. When this happens all they can do is change fields. Without such an abiding faith, it is simply not possible to become a part of the community. The acquisition of such a faith is the prime requisite for the process of incorporation into the science community which we described earlier.

It is a mistake to think of apparatus smoothly grinding out data in accordance with the regularity and dependability of natural law. The common experience with apparatus is rather that one could only conclude that it was under the control of gremlins bent on defeating the experimenter. The inexperienced may even develop a psychological block against making a run on even very fine apparatus for fear that it will not really work for them. In contrast there is a wonderfully inspiring quality about the really competent investigator in the sure and confident way in which he can

throw a piece of apparatus together, get the bugs out of it with an intuitive feel for them of the most extraordinary sort, and soon have it working and giving data which surely reveal hidden and unsuspected regularities in nature. He is light-hearted and confident about his work and can approach the laboratory with an air of sure mastery which is wonderful to behold. The faith on which this confidence rests is clearly a gift which others may catch from him as they would an infection, but which otherwise cannot in any way be mechanically taught as one might teach a subject or a technique. But this is precisely the reason why physics is in its essence much more a community than it is a subject.

It is much the same with that community of the faithful in Christ called the Church. The world as we experience it directly does not seem at all the kind of world which the Christian God would create and govern. In the torrent of events in which we are all caught up there is such a mixture of evil, misery, cruelty, and injustice that disbelief in the Christian assertions about the nature of the reality which lies at the heart of events is easy. Yet here, too, faith in the God of goodness, mercy, and love — and of wrath and judgment too — who has revealed Himself in Christ, is the prime requisite for incorporation into the Christian community. To those within this community who have been given such a faith, the world takes on a different aspect and is seen with new eyes. It provides them with a firm foundation on which to stand and a fresh vantage point from which to look out upon events. Just as the faith which is essential to the fruitful pursuit of scientific inquiry endows one with the power to uncover and make manifest an underlying order and regularity behind the surface turbulence of events which subjects them to the rule of universal law, so also does

the faith which is essential to the fruitful pursuit of the Christian life endow one with the power to know and respond to the hand of God behind the same events which subject them to the rule of His providence and judgment.

One of the assertions in Dean Schilling's description of the characteristics of the science community which I have found to cause the greatest resentment is that this community has its own creeds and beliefs, orthodoxies and heresies. Let us see in what way this is true of science. In my own field of physics it is a common experience to receive privately published papers which develop all kinds of strange and bizarre theories about everything from the electron to the universe as a whole. When I was a professor at the University of Tennessee, the department kept such communications in a "quack file." To the non-physicist they have as bona fide a ring as a paper in the *Physical Review*. But to physicists they are immediately recognized as fundamentally different. They constitute in the strict sense of the word unorthodox or heretical physics. In subtle ways impossible to describe clearly to the world at large, they violate everything which has given the physics community power to slowly and painfully acquire real and dependable insights into the nature of things. They are lone wolf enterprises unchecked by the discipline of the community and unsupported by an essential loyalty to the enterprise of physics as a whole. Most often the authors of these papers are completely oblivious to these elements and suffer from a deep sense of persecution. They cannot see why their theories have not been given an equal hearing with those of accepted physicists. They cannot understand why the community consistently and repeatedly rejects them.

Orthodoxy and heresy are words which have acquired

bad connotations in modern ears. As a result their nature and meaning has been widely misunderstood. Every community must have them in order to be a community at all. Even a street-corner gang has a collection of crucial loyalties, values, beliefs, and standards which represent orthodox behavior for members of the gang. A heretic who fails to share any of these and rebels against the communal requirement of assent to them must be expelled from the gang. If he is not, the gang will soon disintegrate and disperse. So too with both science and the Church. There are certain essential attitudes, loyalties, convictions, and devotions without which either community would lose its special source of power, vitality, and integrity. These represent the orthodoxy of the community. These are really crucial to the health and welfare of the community. If it fails to preserve them, it will degenerate into a mere institution or organization, powerless and ineffectual.

Every science has had its heretics. For the most part, as in the case of Christianity, they dry up and disappear, being powerless to attract others into their fold. Science is not yet old enough to have produced many heretical offshoots with power to grow into significant schismatic bodies. But this was true of the Church too. It was only in the fourth, fifth, and sixth centuries that the great Arian, Nestorian, and Monophysite heresies arose. There are, however, two very apt examples of such scientific heretical movements today. One is represented by the osteopaths as a schismatic heretical body attached to orthodox medicine, and the other is the science of parapsychology devoted to the investigation of the so-called psi-phenomena which is a heresy of orthodox psychology. A study of either of these two contemporary movements can be very illuminating in revealing the true

character of heresy in general. For example, the long struggle waged by the osteopaths in state legislatures to achieve legal equality with medical physicians has many parallels in the legislative history of the struggle for religious toleration. In the case of parapsychology, it would be most illuminating to those who like to think of science as an impersonal mechanism which automatically follows wherever the evidence takes it, to study the reaction of orthodox psychology to this field of investigation.³ A number of leading psychologists in writing on the subject clearly indicate that their objections to telepathy and other psi-phenomena are based on something deeper than mere statistical evidence, so that even if the evidence were proved statistically sound and unimpeachable they still would not believe it.

All of this has a bearing on the widespread notion that religion necessarily imposes a rigid straight jacket on the intellect in contrast to science which is intellectually free and unhampered by any authority. In my own experience of incorporation into both communities, such a notion is completely false. In both cases it was necessary first to accept and willingly conform to the discipline of the community and to respond to its authority before the community could bestow upon me its power of liberating the intellect to carry out really fruitful inquiry. The tendency is to completely underrate the toughness and difficulty of really fruitful intellectual activity in either science or theology. Without a firm foundation on which to stand, one simply cannot grapple with experience in the tough and sturdy way which is required for real understanding. But such a platform cannot be had apart from the discipline and authority of

³ A study of the group of articles in the January 6, 1956, issue of *Science* (Vol. 123, pp. 7-20) will be found most instructive in this connection.

the community. A completely free intellect operating in a lone and isolated self cut free from every tie which binds into community is an impotent thing tossed to and fro by every wind and wave. I could not even begin to do physics until I had given myself fully and freely to physics. Neither could I begin to do theology until I had given myself fully and freely to Christ in His Church.

The authority and discipline which every community exercises over its members represents at once the primary source of its power and vitality and at the same time its most fearful danger. When the community is dynamic, vigorous, and full of vitality, its authority and discipline are so gladly and spontaneously accepted by its members that they are scarcely conscious of it. This is the case with science today, and it has been the case with the Church in all of its past periods of greatness. The vitality, genius, and brilliance of the intellectual activity of the Church during the fourth and fifth centuries matches that of theoretical physics in the nineteenth and twentieth. If one wishes to really understand authority, discipline, dogma, and orthodoxy in the Church in a way which brings out their necessary character and fruitfulness, one must turn to such a period in Her life as that.

The nineteenth century enlightenment had a corrosive effect on the Church, and we are just beginning to emerge from the deadness and sterility which resulted. The great difficulty in talking about Christianity today is that it is this nineteenth century image and vision of the Church which is predominant in the minds of contemporary audiences. When the power and vitality is sapped out of any community so that there is left behind only an empty institutional shell, the imposition of its authority and discipline

and the maintenance of its dogma and orthodoxy does become an evil and obnoxious thing, stultifying the intellect and imprisoning the soul. But it is then no solution to simply discard all these elements, for to do so will only leave the community powerless to bestow any powers or capacities at all upon its members.

I trust that this brief review of the elements of science as community may have served to introduce to you an essential aspect of science, and of Christianity too, which is widely ignored and neglected in many contemporary discussions of science and religion. The factual and conceptual content of each of these fields is certainly important and relevant. Indeed, the resolution of the tensions and conflicts between these two bodies of knowledge is perhaps the primary intellectual and scholarly task and challenge of our time. Moreover, it is a task of such difficulty and magnitude that several generations of dedicated effort by the best minds we have to offer may be required for its completion. The point of my remarks here has not been to underrate or gloss over in any way the importance or relevance of this task. But at the same time I am convinced that the task simply cannot be carried out at all if we continue to ignore the surprisingly close analogies between the two communities of inquiry and understanding by which these subject matter contents have been produced. My plea is simply that one must recognize first, before even starting on the task of content resolution, that in its most essential and elemental nature science *is* community and Christianity *is* Christ and His Church. If I have succeeded in even suggesting the possibility of the truth of this assertion in this brief address, I will have achieved my objective.

