Science/Technology Education in Church-Related Colleges and Universities

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Science/Technology Education: an Administrative Perception

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Science/Technology Education: an Administrative Perception

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I believe the liberal arts component of my undergraduate education sustained me during my academic career helping me to think critically and to understand my scientific objectives as they pertain to society and a greater good. Therefore, I am an advocate of a broad, challenging liberal arts and sciences education that includes language, development of writing skills, and substantial attention to ethics and values.

Throughout the years I have heard many references made to C.P. Snow's two cultures, "Literary intellectuals at one pole -- at the other scientists, and as the most representative, the physical scientists. Between the two a gulf of mutual incomprehension -- sometimes (particularly among the young) hostility and dislike, but most of all lack of understanding. They have a curious distorted image of one another." Several years ago, a colleague attempted to persuade me that it was simply this cultural difference that prevented humanities and science faculty from cooperating and reaching consensus on a curriculum matter. However, I would liken such behavior as befitting the man who lost his keys in the bushes at night but persisted in looking for them a half block away under a light post because he could see better. Too often the man's behavior typifies how we search for the keys to a meaningful curriculum. We look only in the areas we know well and neglect or merely tolerate contributions from disciplines that are not close to our own.

On June 7, 1989 Father Peter-Hans Kolvenbach, Superior General of the Society of Jesus, addressed approximately 750 Jesuits and 150 laypersons attending "Assembly '89: Jesuit Ministry in Higher Education" at Georgetown University. In his speech, Father Kolvenbach contended that "it is a pity that an interdisciplinary approach, the only significant way to heal the fracture of knowledge, is still considered a luxury reserved to occasional staff seminars or a few doctoral programs. Of course, an interdisciplinary approach is not without problems: it runs the risk of simply overloading students, of teaching them relativism, of inadmissable violation of the methodology of individual disciplines. But a love of the whole truth, a love of the integral human situation can help us to overcome even these potential problems."

In the matter of general education, or what is referred to as the "core curriculum" at Saint Louis University, scientists at church-related colleges and universities should be especially concerned and knowledgeable about the content and curriculum requirements of other disciplines. They should reinforce their science courses with pertinent subject matter from the humanities and social sciences, and in so doing, contribute effectively to a truly integrated curriculum. Furthermore, science teachers should minimize their reliance on the multiple choice method of testing and require that students express themselves coherently and convincingly when solving problems or responding to essay questions.

At Saint Louis University, we have been working to construct a document that clearly defines what we are and how we go about teaching values. The following is an excerpt from the result of those labors, the recently approved Mission Statement. "The University's undergraduate curriculum makes use of the resources of the humanities, social sciences, natural sciences, and technology in a unified effort to challenge students to make appropriate use of what each area has to offer in enabling them to understand themselves, their world, and God, to prepare intellectually and professionally for the career of their choice, and to make critically informed moral judgments." Although it is somewhat disquieting to me that "hard sciences" were singled out, Father Kolvenbach emphasized

at Georgetown the importance of interdisciplinary cooperation in teaching values. “It is my belief that awareness exists that there is no aspect of education, not even the so-called hard sciences, which is neutral. All teaching imparts values, and these values can be such as to promote justice, or work, whether partially or entirely, at cross purposes to the mission of the Society.”

In addition to serious commitments to values and to integrating science into the required curricula at church-related colleges and universities, there must be a real understanding of the unique needs of the sciences with respect to facilities and equipment. One of my favorite anecdotes is contained in a passage from Ronald W. Clark’s book, *Einstein, the Life and Times*. In this passage Clark describes Albert Einstein and his wife Elsa’s visit to California in 1931. “He was driven up the long circuitous road which winds out of Pasadena and then back to the top of the Sierra Madre, from one of whose summits the Mount Wilson Observatory looks down upon the town. Here Elsa, when told that the giant telescope was required for establishing the structure of the universe, is claimed to have made a reply that may be apocryphal but is in the true Elsa style: `Well, well, my husband does that on the back of an old envelope.”

Using this story I liken Einstein to the scientist from a church-related university visiting his well-equipped counterpart at a state-supported university. The value of Einstein’s contributions to science is indisputable, and Elsa’s attitude is that good science can be done on the “back of an old envelope.” Indeed, I have detected this attitude in more than one administrator from a church-related school.

Often the equipment needs of graduate and undergraduate science programs are dismissed by declaring that it is impossible for a private university lacking state support to provide funds for such behemoths as supercomputers and high energy accelerators. The truth of the matter is that most universities are linked to supercomputers via efficient networks and that high energy physics programs depend upon the facilities at national laboratories to perform experiments. In fact it is scientific equipment costing between ten and a hundred thousand dollars that is most seriously lacking at church-related schools. It is particularly ironic that this is the price range of new sidewalks, building facades, and other minor campus improvements that rise to the top of many lists of priorities. I emphasize emphatically that I believe it is very important that a college or university maintain its appearance. However, I want to make the point that even though scientific equipment and campus improvements have similar price tags, modern science cannot be performed on the back of old envelopes.

Snow, C.P., *The Two Cultures and the Scientific Revolution*: Cambridge University Press, New York (1961), p. 4.

The text of Father Kolvenbach’s address is printed in *Origins*, Vol. 19 (June 22, 1989), pp. 81-87.

Clark, Ronald W.., *Einstein: The Life and Times*, the World Publishing Company, New York (1971), p. 434.

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