

A BRIEF HISTORY OF THE COUNCIL ON UNDERGRADUATE RESEARCH: THE EARLY YEARS

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The sky was overcast and light rain fell, but inside the Ramada Inn at the Pittsburgh airport a small group of optimistic faculty from chemistry departments at private liberal arts colleges were meeting to discuss the formulation of a new organization to "encourage undergraduate research". The meeting had been called by Brian Andreen, then Midwest Regional Director for the Research Corporation, following the completion of a nearly single-handed effort to publish a directory, "Research in Chemistry at Private Undergraduate Colleges", which described work in progress by the faculty of 93 chemistry departments along with background data on each department.

Several years earlier Brian had become concerned with the increasing disparity in recognition between graduate and undergraduate chemistry departments. Graduate departments had access to all of the traditional sources of research funding; undergraduate departments appeared to have been left out. Graduate departments were assumed to be centers for research and for the education of most students who would eventually enter the professions; undergraduate departments, with very few exceptions, were thought to be merely focused on teaching in classrooms and formal laboratories. Graduate departments had the American Chemical Society's "Directory of Graduate Research"; undergraduate departments had no such publication that described their performance and productivity.

Although there was little that any one individual could do to address all of the existing disparities, Brian recognized that the publication of a directory for undergraduate departments could go a long way towards building a data base upon which their performance and productivity could be measured. Consequently, in 1978, he organized a small, but representative, team of college faculty, called this organization the "Council on Undergraduate Research", and set each of the 10 councilors¹ to work in advising and assisting him in the development of CUR's first directory.

In the Foreword to the first edition Brian stated what was to become a central theme of this new organization: "Research ... is alive and thriving at a wide variety of undergraduate private colleges ... ". This was occurring despite "heavier formal teaching loads, ... a multitude of extra-curricular campus activities and committee assignments, ... geographic isolation," and "time for only an occasional professional meeting". He goes on to say that the "legacy of excellent students may, in fact, be one of the strongest assets of the undergraduate teacher-researcher", and this sentiment was to become the focus of the Oberlin Conferences in the mid-1980's.

The meeting held in Pittsburgh on September 28-29, 1979, was to establish if the Council on Undergraduate Research should continue and, if so, in what form. Eight of the ten preselected councilors attended and, judging from the outcome, their enthusiastic decision was to formalize the organization and to initiate efforts, such as the

¹ The founding members were, in addition to Brian Andreen, Charles A. (Tony) Arrington, Jr. (Furman University), Michael P. Doyle (Hope College), Heinz F. Koch (Ithaca College), Jerry R. Mohrig (Carleton College), David L. Powell (The College of Wooster), Robert M. Rosenberg (Lawrence University), R. Nelson Smith (Pomona College), James N. Spencer (Lebanon Valley College), Gene G. Wubbels (Grinnell College), and Claude H. Yoder (Franklin & Marshall College).

CUR Newsletter, conferences, and a new edition of the directory, that have become trademarks of the Council on Undergraduate Research. All that was needed now were the individuals to perform these tasks.

Michael Doyle became the first President of CUR, some say because he was willing to be Editor for the *CUR Newsletter*. Jerry Mohrig was named Treasurer, but not because he was unable to attend the Pittsburgh meeting. Brian Andreen was CUR's Executive Secretary, a position that allowed him to guide CUR through its formative years. Twelve Councilors were to make up the membership of this organization with staggered 3-year terms. Until 1989, the Council on Undergraduate Research operated as a self-selecting member organization. Departments were invited to be included in the directory, and individuals subscribed to the Newsletter, but only Councilors were members.

In its first four years CUR was focused only on chemistry departments in private liberal arts colleges. Early attempts to broaden its base were met with considerable resistance, but by 1983, the majority of Councilors were willing to expand CUR to encompass public as well as private undergraduate institutions and to add physics/astronomy and biology to the list of disciplines in CUR. This relatively long delay in the expansion of CUR could be interpreted as being due to a lack of confidence in its future. During this period of time, the structure of undergraduate research was being eroded, and few persons envisioned CUR as an organization which could reverse the losses incurred in 1981.

Since the mid-1960's, the National Science Foundation's Undergraduate Research Participation (URP) program had provided limited funds to selected colleges and universities to support undergraduate students in research, mainly during the summer. The expenditures for this broadly distributed program, amounting to \$1.88 M for 1980 in awards to only 123 colleges and universities, were relatively small, but the impact on the approximately 35 private undergraduate institutions that received these awards was large. In addition, a National Science Foundation program to fund research instrumentation for faculty at primarily undergraduate institutions, with a budget of nearly \$3M in 1980, had become a critical resource for faculty at 4-year colleges and universities since its introduction in 1978. Although the expenditures in each of these programs impacted only a small proportion of the science departments at predominantly undergraduate institutions, their faculty believed that these were the only ones to which they could apply with a reasonable chance of success. Consequently, when they were dismantled in 1981, a shock wave passed through the 4-year institutions that left many of them wondering if there was a future for research in their environment.

This low point in support for undergraduate research actually solidified CUR and set in motion a series of events, initiated by several of its councilors, to challenge the apparent demise of undergraduate research. It also pointed out the deficiencies in communication to and from undergraduate institutions that led to the loss of support from the National Science Foundation. Prior to 1980 when the first issues of the *CUR Newsletter* were mailed to 70 subscribers, information about sources of funding came from individuals at very few institutions who were knowledgeable about funding programs or from the Regional Directors of the Research Corporation, who would pass on this information to college and university faculty during their visits to grantees. Otherwise, infrequent letters from the Independent Colleges Office would warn private college faculty of impending disasters and marshal them to write letters to appropriate representatives.

From its earliest issues, the *CUR Newsletter* focused on "Sources of Research Funding" with a detail of information, including program administrators and their addresses and telephone numbers, not found in other publications. Program descriptions, explanations on what is important in proposal development, and examples of departments that are models of research activity were included. Although quantitative analyses are not available, there is some degree of certainty that this publication served as a critical resource that kept its subscribers aware of funding opportunities, often reporting the first public information on new programs.

Responding to the loss of the NSF's education-related programs and to the relative absence of research support for faculty-student investigations at predominantly undergraduate institutions, CUR submitted a proposal to the National Science Board (NSB) at the end of 1982 requesting consideration of what was to become the Research at Undergraduate Institutions (RUI) program. Initiated by conversations between Jerry Mohrig and NSB member

Stuart Rice of the University of Chicago, this proposal asked that funding be provided for research programs that could be recognized as having high quality but, because of the nature of the undergraduate environment, would necessarily be less productive. This was a new concept, focused on research as education, that has become a central theme of the Council on Undergraduate Research. Previously, undergraduate institutions had worked "outside of the system", relying on political maneuvers to protect the federal programs that appeared to benefit them. Now, CUR was asking that undergraduate institutions work "within the system", and the result has been a rapid and substantial change in federal funding for research at predominantly undergraduate institutions and in the participation by college faculty in decision-making at federal agencies.

A turning point for CUR and for the future of research at predominantly undergraduate institutions occurred in 1983 with the CUR-sponsored Conference on "Critical Issues Influencing Research at Predominantly Undergraduate Institutions" that was held in July at the Spring Hill Conference Center in Wayzata, Minnesota. In addition to CUR Councilors, numbering 18 by that time, Edward Hayes, Director of the Division of Chemistry at the National Science Foundation, Hal Ramsey, Regional Director for the Research Corporation, Joseph Rogers, Program Administrator for the Petroleum Research Fund of the American Chemical Society, John Fuller, President of the Great Lakes Colleges Association, Charles Neff, President of the Associated Colleges of the Midwest, and Robert Gavin, Provost of Haverford College, were conference participants.

This was the first and only CUR conference/meeting that provided travel/ accommodations to conferees, made possible through generous grants to the Council on Undergraduate Research from the Research Corporation and the Petroleum Research Fund. Previously and subsequently, CUR Councilors attended meetings with their own or institutional funds, but not with the same high percent participation.

Individual sessions were addressed to issues such as the current and past research accomplishments at predominantly undergraduate institutions, undergraduate research support and its historical antecedents at selected institutions, current and projected support for research instrumentation, the quality and relative importance of undergraduate research as an institutional and faculty objective, and the relative quality of recent faculty additions or replacements.

The conferees agreed that quality research is capably performed by undergraduates, although not at the level or intensity that is found with graduate students. Of considerable concern then was the competition for extramural funding for this research. The high cost of sophisticated instrumentation remained an issue in undergraduate institutions with limited financial resources. In some cases the maintenance costs alone were equal to the annual departmental budget. This issue was also related to difficulties in the attraction of highly capable new faculty applicants to smaller institutions. Concern was expressed that researchers at undergraduate institutions do not receive the visibility accorded their colleagues at major participated institutions. A survey review of those showed that few, if any, participated in peer review panels or were members of advisory committees for funding agencies, were members of advisory committees for chemistry journals, or participated in award juries.

Public undergraduate institutions formally joined private undergraduate institutions at the 1983 meeting, and the artificial division no longer existed between these two classifications of schools in the chemistry CUR. This action, although discussed at virtually every previous CUR annual meeting, was brought to a head by the Petroleum Research Fund whose grant to support the Spring Hill Conference specified that travel grants be given to representatives of the public sector, and John Idoux (Lamar University), Richard Keiter (Eastern Illinois University), and Leo Ochrymowycz (University of Wisconsin - Eau Claire) attended the Conference and became the first CUR Councilors from public undergraduate institutions.

In 1982, Stuart Crampton (Williams College) had contacted a broad representation of physics faculty about joining the CUR organization, and two (James Cederberg of St. Olaf College and David Peak of Union College) were represented at the Spring Hill Conference in 1983. With physics faculty interest growing, biology received a similar organizational promotion through the efforts of Peter Russell (Reed College) who was joined by Laura Hoopes (Occidental College) and Mary Allen (Wellesley College). The Spring Hill Conference demonstrated a vitality for CUR that attracted requests by physics/astronomy and biology representatives to join CUR as

separate Councils. These requests were formally approved in 1984 and led to further expansion in 1986 to geology and in 1988 to the mathematical sciences.

The Spring Hill Conference brought about another meaningful development that has led to further recognition of the research achievements of faculty at undergraduate institutions. In an impassioned presentation, Mits Kabota of Harvey Mudd College startled conference participants with data demonstrating that one of chemistry's most prolific contributors to basic research, Corwin Hansch of Pomona College, had not received a national award to recognize his research contributions despite the fact that one of his publications was among the ten most cited papers in chemistry. To rectify this situation, efforts were undertaken to gain acceptance of an American Chemical Society Award for Research at an Undergraduate Institution through the ACS Division of Chemical Education and to raise funding for this award. Initially reluctant to approve such a venture the Executive Committee of the Chemical Education Division had to concede its importance when the Research Corporation provided the financial support for this award. It is rumored that the Board of Directors for Research Corporation were so excited with the proposal of an award to a chemist at an undergraduate institution that they also decide to fund a parallel award for a physicist, administered by the American Physical Society. Not surprisingly, Corwin Hansch became the first recipient of the ACS Award for Research at an Undergraduate Institution sponsored by the Research Corporation, and it is fitting that Mits Kabota is this year's recipient of this award.

Many of those who initiated CUR remained with the organization, while others removed themselves from an active role in CUR. New faces replaced those that left their positions as Councilors, and they brought with them new insights and new opportunities. From its beginning until 1983 CUR expanded slowly. Its Newsletter, which began with only 70 subscriptions in 1979, had 170 in 1983. Approximately 300 copies of the First Edition of the chemistry directory (1978) were distributed, and the Second Edition (1981) reached less than 600. But out of these early years grew an organization that today reaches more than 1200 members, produces four widely distributed disciplinary directories, maintains an industry-sponsored undergraduate summer research fellowship program and a recently awarded foundation-sponsored program, supports the Gordon Research Conferences TARP program, provides consulting services to undergraduate institutions, holds biannual conferences attended by 300-400, and supports a National Office to coordinate CUR activities. The Council on Undergraduate Research remains a primarily volunteer organization, so that each new initiative and each new program can be recognized as being of sufficient importance that Councilors and Members are willing to expend their time and energy, without compensation, to facilitate its development.

What will the future hold for CUR? With the enormous changes brought about in recent years, CUR has become a major force in the development of the teacher-scholar environment that now exists in most predominantly undergraduate institutions. No other organization or movement has the impact of CUR in sensing the pulse of the undergraduate community and responding to its needs. However, CUR can exist only as long as its members respond to its challenge. To maintain a National Office requires the support of at least 3000 members, and this means that CUR must add 1800 new members during the next two years. Without this support, CUR will have been a valuable experiment but not a lasting enterprise.