# RESEARCH MANAGEMENT REVIEW

The Journal of the
National Council of University Research Administrators



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# Editor's Preface

The articles in this issue of the Research Management *Review* address a nice variety of topics.

First, we have Ardis Savory's gracious introductory remarks pertaining to the award of NCURA's 1995 Outstanding Achievement in Research Administration Award to Tony Merritt. Tony's acceptance address follows. He offers a personal reflection on some of the changes he has witnessed in research administration over the years. He also provides an uplifting message and reminds us of the importance of our work.

Terry May's article addresses the core elements required for the development of effective conflict of interest policies. His analysis begins by giving a succinct history of the NIH and NSF efforts in creating their regulation and policy. He then provides a clear review of the similarities and differences between the two federal initiatives. Terry concludes by reviewing the core elements of some major research institutions' policies and indicates how our institutions can ensure they are in compliance with the federal rules while simultaneously addressing our policies to our unique institutional cultures.

Tom Wilson has contributed an article on conflict of interest that guides us through the next step: the management of real and potential conflicts. The effective management of conflicts is not only required by NIH and NSF, it is vital in the protection of our faculty and institutions. Tom stresses the need for flexible and innovative approaches in the management of conflicts. Finally, he offers a case study which will be valuable to the reader not only as an intellectual exercise, but also as a good training tool at our institutions.

The final article in this issue of the Research Management *Review* was contributed by Jon J. Denton and Frances A. Hunter. The authors are reporting on an excellent study of the variety and multiplicity of factors involved in obtaining sponsored funding. They review the motivational elements which both assist and impede faculty in obtaining project sponsorship. Most fascinating is the

author's review and analysis of faculty perceptions in this area. The Denton and Hunter article offers the reader a different and valuable perspective on what motivates the faculty to seek external funding. The article will impel the reader to think of how faculty are encouraged at his or her institution and how it might be done more effectively.

Stephen Erickson
Editor
May 1997

# NCURA Outstanding Achievement in Research Administration

Introductory Remarks of Ardis Savory
1995 Annual Meeting

It is with great pleasure that I join Dick Seligman' in presenting NCURA's Award for Outstanding Achievement in Research Administration to Tony Merritt. And I would like to introduce two very special people who have joined us today.

> Tony's wife Joan. Anyone who has accomplished as much in this profession as Tony has had to have been gone from home a great deal. Joan, we thank you for sharing so much of Tony with all of us.
>
> I don't know about all of you, but it never crossed my mind that Tony had a big sister until today when I met his sister, Patty Campbell. Patty we thank you for whipping Tony into shape.

This is not an introduction of Tony. Most of us know Tony or have been influenced by his contributions to our profession. Many of us, hundreds of us, have benefited personally from Tony's willingness to share his wisdom, knowledge, and that very special commodity, his time, both as mentor and as a valuable resource. Rather, this is a remembering of professional excellence: a sharing of our appreciation and respect for one of our peers. This is a time to say, "Thank you, Tony, and well deserved."

During the past few days, I have thought often of the words of others who shared their impressions of Tony with me as together we nominated him for this award. I would like to share some of those words with you. In 1982, Tony was President of NCURA. Fred Sudermann, who preceded him as President, says of Tony, 'Tony is a pro. Everyone knows that. He set the standard of a real professional. With Tony, you get what you see." For six years he served on the Board of Management for the Council on Governmental Relations (COGR), becoming the Chairman of the

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Board in 1986. Milton Goldberg wrote: "Tony is one of the finest university research administrators I know, and I say that without qualification." This is strong praise from someone who has worked for many years with some of the best our profession has to offer. Through the years, Tony also worked closely with Marv Ebel who remembers Tony as an invaluable mentor and one whose position papers and articles became "models of clarity" for universities. I think particularly of his 1991 exposition on indirect costs which he wrote for Penn, and his article in the June 1993 issue of The Scientist entitled Academic Research Administrators Should Be Seen As *Scientists'* Friends, Not Adversaries.

Tony has served his institution, the University of Pennsylvania, with integrity, commitment, and innovation since 1968, and today serves as the Executive Director of Sponsored Programs. In the mid-seventies, his boss was Don Langenberg, now the Chancellor of the University of Maryland System. I would like to read you a portion of Dr. Langenberg's letter to me because I think he has captured Tony in a nutshell. After presenting a very impressive and long list of Tony's accomplishments, Don said: "These are some of the externally visible measures of Tony's distinguished performance in research administration. For me, however, Tony's most impressive distinctions are internal and apparent to those who have had the good fortune to work with him. I have had that pleasure for just a few years, but have never forgotten the experience. While I'd like to take some credit for having had the good judgment to place him in his present position, honesty compels me to say that Tony has more than repaid me by teaching me a great deal about managing a complex academic enterprise involving recalcitrant faculty on the one hand and an obstinate federal bureaucracy on the other. We dealt together with a host of issues, including intellectual property, indirect cost, scientific integrity, and many more. Always, Tony was calm, deliberate, knowledgeable, thoughtful, creative, wise, patient, persistent ... and got the job done. I have rarely encountered a colleague in whom I could place such trust and confidence. Integrity should be his middle name."

Well, that was yesterday, twenty years ago that Tony worked with Don, and today, in support of Tony's nomination, the then interim President of Penn, Dr. Claire Fagan, wrote: "The University of Pennsylvania is rightfully proud of the national leadership Tony has exhibited. It as been characteristic of Tony that his vigorous efforts to institute new policies and improve existing ones have always been conducted with great respect for the fundamental values underlying the academic enterprise."

Those are many good and true words about Tony Merritt. He has "been there" and "seen it all" and along the way, he has shaped a good portion of the research administration enterprise. Besides the many roles he has played in NCURA and COGR, he was also a founding member and officer of the Association of University Technology Managers (AUTM), the National Academy of Research Administration, and the Little Eleven Research Administrators.

Finally, Tony in many ways looks out for all of us. The most significant common remark I heard from almost everyone was: "I will always remember when Tony taught me..." or "I remember when Tony helped me understand..." And then each person had his or her own personal story. Jane Youngers called Tony her "silent mentor," and by that she meant that he was always quietly behind the scenes to help when asked. Tony's achievements are reflected not only on paper and in our professional societies, but in so many of us with whom he worked, and planned, and succeeded over the years. It is hard to get Tony to toot his own horn. I have no idea how many presentations, workshops, white papers, program planning ideas, and so forth that he has provided. But, I do know I have benefited from a great many of them and I am pleased to have this opportunity to say thank you in recognition of his outstanding achievement in research administration and as the recipient of NCURA's most distinguished honor.

## REFERENCE

1 Referring to Richard Seligman, NCURA Vice President.

# Outstanding Achievement in Research Administration Recipient Address, 1995

Anthony Merritt

Thank you, Dick and Ardis[1], and all my friends and fellow members of NCURA for this award. I am deeply honored and humbled by this symbol of professional recognition by my peers.

When Dick called me this summer to tell me that I had been selected to receive this prestigious award, he advised me that I would have the opportunity to make some remarks based on my thirty years as a research administrator. After my initial shock at receiving this honor, I told Dick that I was not only flattered by this recognition but I was excited at the opportunity to prepare an appropriately learned oration about this fascinating pastime we call research administration. Unfortunately for me, and fortunately for all of you, Dick quickly responded that we would be on a very tight timetable and I only had ten minutes in which to regale you with some of the wonderful times I've had in this business. So I will keep it blessedly brief.

First, however, I would be remiss if I did not take this opportunity to recognize some of the people without whose patience, wisdom, guidance, and support I would not be here before you today:

- Reagan Scurlock, who taught me the basics of government relations, initiated me into the maze of Washington politics, and gave me the room to grow in this profession.
- Don Langenberg, who had the wisdom to promote me to the directorship of Penn's Office of Research Administration, taught me so much about faculty and the nature of fundamental research, and encouraged me to seek a leadership role in NCURA.
- George Holcomb: friend, mentor, and wise counselor.
- Dennis Barnes, who, much to his regret, with Don Langenberg, and with the help of some good Kentucky sour mash convinced me to run for the Presidency of NCURA. Eric Rude, Milton Goldberg, Marge Hoppin, Ray Woodrow, and the many others

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who were always willing to share their time and expertise with the new kid on the block.

- And my very dear friend George Dummer, who made a very special effort to be here today, but, despite some heroic efforts, could never teach me the intricacies of the ITAR and other arcane federal regulations.

In addition to these many colleagues, I want to thank the staff of NCURA without whose friendship and wise counsel I would never have survived the rigors of national office. I especially appreciate the ever-patient support of Natalie Kirkman and Kathy Larmett.

You should also recognize that anyone who takes on the leadership responsibilities of an organization such as NCURA needs a lot of help back at the office. I could never have done the things I did without the unfailing support of my staff over the years. Finally, I would be sorely remiss if I did not recognize two very important people who are here with us today, both of whom have played very important parts in my life. First, my sister Patty Campbell, who was convinced that her baby brother would never amount to much and was not reassured when I became a research administrator. Patty, I hope today has given you some hope that I haven't spent all these years hanging around smoky back rooms with characters of questionable repute. And last but not least, my loving and lovely wife Joan who has persevered over the years as I went off to some distant spot for yet another NCURA or COGR or SUPA or some other meeting.

Since Dick Seligman called me last summer, I have spent a lot of time thinking about what I might say to you today that would in some way express the challenge and fulfillment I have experienced over the last thirty years as a university administrator for research. While at the same time recognizing the many changes that have occurred and the reality of the frustrations that are part of our business, I thought one way to start would be to look at the program of the first NCURA meeting I went to in 1969. Kathy Larmett was able to dig up a copy of the program. And I love its title which was, seriously, Social Change Haunts the House of Research. While there have been some major changes in NCURA meetings since 1969, (for instance, that year there were less than 300 members in attendance mostly all white men), the program was surprisingly similar to this years. There were sessions on federal legislative and executive issues, programs and problems at large, medium, and small schools, foundations and industry, and BOB (now OMB) Circulars A-21, A-74, and A-88. Sound familiar?

What has changed is the way we do our business, the tools we have come to depend on. When I started in this business the typewriter (not

even an IBM Selectric), was the standard piece of office equipment while the most common supplies were tissue paper and carbon paper since we did not have copiers and made multiple copies of every letter and document. I had a basic black dial telephone with three outgoing lines. There was no fax, no personal computer, no e-mail and no voicemail. Life was a lot simpler! Federal Express had not even been invented, so we relied on the US Postal Service to deliver proposals, although the graduate student on Penn Central (remember that?) was not unheard of when a proposal had to be in Washington on time. Even better, reengineering was just a train crew change at 30th St. Station!

Today we have the tools technology has brought us with the Pentium Chip computers on our desk top that keep us constantly in touch with everybody. We get mail still, lots of it, but now we receive faxes, e-mail, and voicemail, and some of us even wear pagers and carry laptops. We process a tremendous amount of information much of which is at our fingertips through the wonders of the web. Many of our institutions are restructuring, right-sizing, and redesigning our administrative processes. Higher education and health care are under attack from many sides for high costs and failure to deliver services including undergraduate education. The one thing that has not changed is what we do best and most importantly, and that is to provide service to our faculty, our institutions, and our sponsors. As Ray Woodrow said so eloquently in his book Management for *Research in* U.S. Universities, what we do is "provide organizational arrangements that will help research flourish."

One of the most rewarding aspects of our work is the opportunity to work with very brilliant people who are truly dedicated to their academic endeavors. To be able to help such outstanding scholars in even some small way makes many of the less savory aspects of our days worthwhile. Many years ago when I was relatively new to research administration and at a time when the National Endowment for the Humanities was a very recent addition to the federal government array of funding agencies, a senior member of our English Department wandered into the office one day with an application kit he had just received from NEH. He proceeded to tell me that he had in mind a project, I believe about Milton, and he thought NEH would be interested in funding it. However, he found the forms baffling and needed some help sorting it all out. We worked together over several weeks (I, in truth, had never seen an NEH application myself) to put together his proposal and get through the sign-offs and off to the agency. Some months later he excitedly called me to say that the project had been funded. We kept in touch during the course of his project and when the final report was submitted, he wrote to thank me for my assistance. The next year he won a Pulitzer for the book which

resulted from his work. To this day Professor Frye will stop and chat with me and ask how things are going. He to this day believes that what I considered just doing my job was a material contribution to his very successful project. I still feel good about our collaboration and often wonder how much nicer all our jobs would be if more of our faculty recognized our contributions in the way Professor Frye did. But the point of the story is that what we do best is, in the words of Ken Beasley, serve as a "mediator expediter."

Personal relationships are the glue that keeps our lives as research administrators in one piece. Our effectiveness is dependent upon our ability to work with a broad and diverse range of people. Key to everything we do is our ability to work with our faculty. We need to understand and empathize with the academic; to share their goals and aspirations. At the same time, we must be stewards of our institutions' resources and managers of institutional risk. Finally, we must recognize the needs of our sponsors and assure that we fulfill their requirements. In short, we need to walk on water. To accomplish these ends depends in large part on our developing strong personal relationships with all these diverse groups be they scientists, business managers, accountants, lawyers, or philanthropists. As our organizations rearrange themselves to meet the inevitable challenges to be more relevant, efficient, cost effective or what other change is required we need not to lose sight of what we are in business to do.

Get involved. On your campus as a committee member. In your NCURA region. As a panel member at a National Meeting such as this one. When someone calls and asks you to participate say yes! Take some risks. Don't be afraid to try something different or new. Have fun! All of us are stressed in today's busy world, but there is still time to enjoy a few moments of fun.

As I promised, I would be brief and hopefully to the point. Thank you all for participating in this occasion which I will always cherish. And for the next few days enjoy, learn, and above all have some fun. This is an incredible organization and you are a wonderful group of people. Thank you again.

## REFERENCE

1 Referring to Ardis Savory and Richard Seligman, President and Vice-President of NCURA respectively.

# Conflict of Interest Policies: the Essential Components

Terry A. May

## INTRODUCTION

Higher education is loosely comprised of a myriad of colleges, universities, and teaching hospitals with vastly different governing bodies, administrative structures, missions, and academic programs and cultures. Collectively, higher education has flourished since the end of World War II to a large extent due to the initiatives and support of state and federal governments for the public good. Both large and small, public and private institutions have come to rely heavily on public funding to fuel the human and physical infrastructure necessary for higher education to be successful and grow. Simultaneous with the increasing social, political, economic, and environmental complexities of the 1980's and 90's, governments and the public that funds them have come to expect more from their financial investment in higher education. At the same time, they have become more suspect of the standards and ethics under which higher education operates.

As a result, governments have with increasing regularity proposed and implemented guidelines, policies, rules and regulations which establish standards for the conduct of higher education personnel and programs paid with public funds. One such standard relates to conflicts in interests. Simply stated, this standard establishes the expectation that other standards such as honesty, openness, fairness, and objectivity not be compromised with the intent of generating an unreasonable personal gain or proprietary advantage from the use of public funding.

Higher education administrators have recognized for some time the potential for conflicts of interest and have implemented policies to address unique and limited situations. However, it has only been since 1980 when the University of California adopted a Conflict of Interest Code pursuant to the requirements of the Political Reform Act of 1974,

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that higher education has been forced to implement government imposed standards. Nearly 10 years later, the Federal government first indicated their intent to regulate conflicts of interest in 1989 through the then Alcohol, Drug Abuse and Mental Health Administration (Anon. 1989). Dong (1994) has nicely summarized the Federal government's efforts to regulate academic entrepreneurship in Federally sponsored research through 1994 before the proposed regulations were effective on October 1, 1995. Dong (1994) concluded that,

> The latest federal efforts at decentralization in the government regulation of academic entrepreneurship ought to be met now by a new initiative from America's research universities and the nation's high technology business community to provide appropriate, conforming model documents for such conflict of interest policies and procedures, Such model documents would preserve the admirable degree of local autonomy and responsibility suggested in the NIH/NSF/FDA proposals and yet conserve resources and substantially lower the transaction costs for the identification and management of academic conflicts of interest.

This paper makes no attempt to assess the validity of this prediction; rather it summarizes the details of the Public Health Service (PHS) rules encoded at 42 CFR Part 50 (for grants) and 45 CFR Part 94 (for contracts) in comparison with the National Science Foundation (NSF) policy incorporated into the Grant Policy Manual with the intent to facilitate compliance through education and understanding. It describes in a cursory manner how representative, large research universities have implemented these rules within a broader context. Finally, it attempts to illustrate how America's research universities have developed appropriate, conforming model documents for such conflict of interest policies and procedures (Dong 1994), but suggests that conservation of resources and substantially lower . . . transaction costs for the identification and management of academic conflicts of interest (Dong 1994) may be more illusive.

## FEDERAL REQUIREMENTS: OBJECTIVITY IN RESEARCH THROUGH FINANCIAL DISCLOSURE

To this time, only the PHS in cooperation with the Office of the Secretary, Health and Human Services (HHS) and the NSF have pub-

lished documents establishing standards and procedures that must be followed as a condition for receipt of funding. The agencies coordinated their policy development efforts and published their respective positions on July 11, 1995 (60 FR 35810 for PHS and 60 FR 35820 for NSF) to maintain consistency. Still, there are substantive differences including the fact that PHS has promulgated a regulation (Objectivity in Research) while NSF has published a policy (Investigator Financial Disclosure). The difference in titles reflect the philosophical difference between the agencies with PHS stressing the desired end result while NSF stresses the process to achieve this end result.

Appendix 1 compares and summarizes the PHS rule with the NSF policy. Both will be referred to as rules for utility.

**Applicability**

The PHS rule is applicable to all institutions and investigators that apply for PHS grants, cooperative agreements, or contracts for research; however, it specifically excludes Small Business Innovation Research (SBIR) Program Phase I applicants. Applications from individuals, rather than an institution will be handled on a case-by-case basis by the PHS Awarding Component. NSF requires that any NSF grantee employing more than fifty persons maintain an appropriate written and enforced policy on conflict of interest. NSF excludes ownership interests in the institution from disclosure, if the institution is an applicant under the SBIR Program or Small Business Technology Transfer Program. Only the PHS rule directly requires the institution to take reasonable steps to insure that investigators working for subgrantees will comply with the rule. By NSF definition, the rules should be passed on to subgrantees employing more than 50 persons.

**Effective Date**

The effective date for both rules was October 1, 1995. However, the PHS rule was effective for proposals submitted for deadlines on or after October 1, 1995 while the NSF policy was effective for proposals actually submitted on or after October 1, 1995.

***Definitions***

PHS defines “institution” to be any domestic or foreign, public or private, entity or organization (excluding a Federal agency). NSF does not

specifically define "institution" but requires that each grantee institution employing 50 or more persons to maintain an appropriate written and enforced policy. NSF does not exclude Federal agencies.

Both rules define "investigator" to be the principal investigator and any other person who is responsible for the design, conduct, or reporting of research, or proposed for such funding. NSF includes educational activities along with research activities. For purposes of reporting significant financial interests, both rules include the Investigator's spouse and dependent children. Most university policies further clarify dependent children to be according to Internal Revenue Service criteria.

Both rules specify that a conflict of interest exists when the institutional reviewer(s) reasonably determine that a significant financial interest as defined below could directly and significantly affect the design, conduct, or reporting of PHS- or NSF-funded activities. Neither rule specifies nor directly attempts to clarify at what point a conflict of interest should not be allowed to exist. This determination remains the sole responsibility of the institution based upon its own culture as articulated in its published policy,

"Significant Financial Interest" is defined the same by both rules. It means anything of monetary value directly from an organization other than the investigator's institution in excess of $10,000 or more than a five percent ownership interest in any single entity for the investigator, his or her spouse, and dependent children combined. This includes but is not limited to, salary or other payments for services (e.g., consulting fees or honoraria); equity interests (e.g., stocks, stock options or other ownership interests); and intellectual property rights (e.g., patents, copyrights and royalties from such rights). Both rules also specifically exclude:

(1) Salary, royalties, or other remuneration from the applicant institution;
(2) Ownership interests in the institution, if the institution is an applicant under the SBIR Program or Small Business Technology Program for NSF;
(3) Income from seminars, lectures, or teaching engagements sponsored by public or nonprofit entities;
(4) Income from service on advisory committees or review panels for public or nonprofit entities; or
(5) Salary, royalties or other payments that when aggregated for the Investigator and the Investigators spouse and dependent children over the next twelve months, are not expected to exceed $10,000.

**Institutional Responsibilities**

Each institution or grantee must maintain, implement, and enforce a conflict of interest policy that complies with the rules. The key elements of the program specified by the policy include the following:

(1) Designation of an official(s) to solicit and review financial disclosure statements that meet the criteria and exceed the limits specified by the rules. These disclosures must be submitted at or before the time of submission of the application for financial assistance;
(2) Establish adequate enforcement mechanisms and provide for sanctions when appropriate;
(3) Maintain records of all financial disclosures and actions taken as part of the project's complete records in compliance with OMB Circular A- 110; and
(4) Require that all financial disclosures be updated during the period of the award, either on an annual basis or as new reportable Significant Financial Interests are obtained.

**Management of Conflicting Interests**

Once the designated official(s) have reviewed the financial disclosure and made a determination whether a conflict of interest exists, they must also determine what actions should be taken to manage, reduce or eliminate the conflict of interest. Both rules offer the following examples of conditions or restrictions that might be imposed to manage conflicts of interest. They include, but are not limited to:

(1) Public disclosure of significant financial interests;
(2) Monitoring of research by independent reviewers;
(3) Modification of the research plan;
(4) Disqualification from participation in all or a portion of the sponsored project;
(5) Divestiture of significant financial interests; or
(6) Severance of relationships that create actual or potential conflicts.

**Reporting Requirements**

Prior to the Institution's expenditure of any awarded PHS-funds, the Institution must report to the PHS Awarding Component (presumably

> easily defined and recognized since it involves a perceptible reduction of the individual's time and energy devoted to University activities (Yale University).

Faculty self interest is not always as a result of interactions with for-profit organizations or motivated by financial gain. For example,

> The specific responsibilities and professional activities that constitute an appropriate and primary commitment will differ across schools and departments, but they should be based on a general understanding between the faculty member and his or her department *chair* and school dean. Even with such understandings in place, however, attempts of faculty to balance University responsibilities with external activities-such as consulting, public service or pro bono work-can result in conflicts regarding allocation of time and energies. Conflicts of commitment usually *involve issues of* time allocation (Stanford University).

**Guidelines** for Allowable Activities

Most policies provide guidelines for those activities which are allowable. Examples include:

(1) Income from lectures, writings, and published scholarly works. Faculty imposed requirements for students to use or buy materials which will generate income to the faculty must be evaluated carefully;
(2) Income from royalties or license fees generated through the University's intellectual property policy. However, activities on behalf of companies that might generate royalty or license fee income to the university at a later date should be evaluated carefully;
(3) Income from participation in a private practice plan; and
(4) Gifts such as free sample textbooks for future consideration.

**Guidelines** for **Activities Leading to Conflicts**

The following are examples of situations considered as creating mild conflict of interest:

(1) Faculty participating directly on a project that generates income under the university's intellectual property policy; and
(2) Faculty assignment of students, postdoctoral fellows, or other

either the program or grants manager) the existence of a conflict of interest with no other details and assure that the interest has been managed, reduced or eliminated accordingly. Any conflict of interest that the Institution identifies subsequent to the Institution's initial report under the PHS-award must be reported to the PHS Awarding Component as above within sixty days of that identification. Presumably, the PHS rule refers to the disclosure of an additional significant financial interest rather than implying that a negative report must be filed for each PHS award.

NSF requires no similar requirement for reporting of the existence of a conflict of interest, but it does require that the institution make arrangements for keeping NSF's Office of General Counsel appropriately informed if the institution finds that it is unable to satisfactorily manage a conflict of interest.

**Remedies**

If the institution later determines that an investigator has failed to comply with the institution's conflict of interest policy, the institution must promptly notify the PHS Awarding Component of the corrective action taken or to be taken. PHS will consider the situation and, as necessary, take appropriate action, or refer the matter back to the institution for further action, which may include directions to the Institution on how to maintain appropriate objectivity in the funded project.

For situations in which investigators have failed to comply with the institutions conflict of interest policy for PHS-funded clinical research designed to evaluate the safety or effectiveness of a drug, medical device, or treatment, the institution must require the Investigator(s) disclose the conflicting interest in each public presentation of the results of the research.

The NSF policy includes no similar requirement for reporting of noncompliance. The NSF policy also provides more explicit authority for exceptions by specifying that,

> If the reviewer(s) determines that imposing conditions or restrictions would be either ineffective or inequitable, and that the potential negative impacts that may arise from a significant financial interest are outweighed by interests of scientific progress, technology transfer, or the public health and welfare, then the reviewer(s) may allow the research to go forward without *imposing such conditions or restrictions.*

## INSTITUTIONAL CONSIDERATIONS: THE BROADER PERSPECTIVE

The real challenge facing institutions of higher education is not from present or future policies or regulations specifying the implementation of written standards governing conflicts of interest. In fact, Federal requirements are only indicators of deeper and broader issues facing higher education which is dependent upon public support and is, therefore, accountable to the public. The real challenge is for each institution through its leaders, faculty, alumni, and partners to clearly address public concerns and demands for accountability while protecting and fostering the freedom of inquiry that is the core of higher education's mission.

I have reviewed conflict of interest policies of institutions on NSF's list of the twenty colleges and universities receiving the largest amount of Federal obligations for science and engineering (http://www.nsf.gov/sbe/srs/fedsuppt/pubs/dst94/tab/b12.htm). I will quote sections from a representation of that list in order to illustrate that, while the policies are quite different from one another, they contain common threads.

Each university must integrate the Federal requirements with its institutional conflict of interest policy. One difficulty involves the consolidation and integration of the varying rules and regulations into a unified document. Some universities have done this while others have not; the latter choosing to issue simple policies solely addressing disclosure of significant financial interest. For example,

> Given the complexity and diversity of the University, it is not possible for a *single* statement to be all-inclusive, and by the same token any generalization may be overly broad. Any officer who has any *question* about whether a particular *activity* or transaction is permitted or prohibited by this *policy* statement should seek clarification (Columbia University).

All institutions, irrespective of how detailed their policy statements may or may not be, however, must recognize the growing complexities and importance of cooperative relations between the university and private industry.

The university policies I reviewed have generally expanded the definition of conflict of interest provided under Federal rules to encompass all university activities. For example,

> A conflict of interest occurs when an academic employee compro*mises* professional judgment in carrying out University teaching,

> research, outreach, or public service activities because of an external relationship that directly or indirectly affects the financial interest of the academic employee, any family member, or any associated entity (University of Minnesota).

Also,

> A conflict of interest occurs when there is a divergence between an individual's private interests and his or her professional obligations to the University such that an independent observer might reasonably question whether the individual's professional actions or decisions are determined by considerations of personal gain, financial or otherwise. A conflict of interest depends on the situation, and not on the character or actions of the individual (Stanford University).

Enlightened leadership recognizes the advantages and positive results that can emerge from risky and entrepreneurial enterprises.

> Conflicts of interest are common and practically unavoidable in a modern research university. Conflicts of interest can arise out of the fact that a mission of the University is to promote public good by fostering the transfer of knowledge gained through University research and scholarship to the private sector. Two important means of accomplishing this mission include faculty consulting and the commercialization of technologies derived from faculty research. It is appropriate that faculty be rewarded for their participation in these activities through consulting fees and sharing in royalties resulting from the commercialization of their work. It is wrong, however, for an individual's actions or decisions made in the course of his or her University activities to be determined by considerations of personal financial gain. Such behavior calls into question the professional objectivity and ethics of the individual, and it also reflects negatively on the University (Stanford University).

One important determination is whether or not to include conflict of commitment along with conflict of interest.

> A conflict of commitment occurs when the commitment to external activities of a faculty or staff member adversely affects his or her capacity to meet University responsibilities. This form of conflict is

> easily defined and recognized since it involves a perceptible reduction of the individual's time and energy devoted to University activities (Yale University).

Faculty self interest is not always as a result of interactions with for-profit organizations or motivated by financial gain. For example,

> The specific responsibilities and professional activities that constitute an appropriate and primary commitment will differ across schools and departments, but they should be based on a general understanding between the faculty member and his or her department chair and school dean. Even with such understandings in place, however, attempts of faculty to balance University responsibilities with external activities-such as consulting, public service or pro bono work-can result in conflicts regarding allocation of time and energies. Conflicts of commitment usually involve issues of time allocation (Stanford University).

**Guidelines for Allowable Activities**

Most policies provide guidelines for those activities which are allowable. Examples include:

(1) Income from lectures, writings, and published scholarly works. Faculty imposed requirements for students to use or buy materials which will generate income to the faculty must be evaluated carefully;
(2) Income from royalties or license fees generated through the University's intellectual property policy. However, activities on behalf of companies that might generate royalty or license fee income to the university at a later date should be evaluated carefully;
(3) Income from participation in a private practice plan; and
(4) Gifts such as free sample textbooks for future consideration.

**Guidelines for Activities Leading to Conflicts**

The following are examples of situations considered as creating mild conflict of interest:

(1) Faculty participating directly on a project that generates income under the university's intellectual property policy; and
(2) Faculty assignment of students, postdoctoral fellows, or other

trainees to projects that generate income under the university's intellectual property policy.

More serious conflicts include:

(1) Making professional or clinical referrals while acting in the context of a University employee to a business in which the faculty has a financial interest;
(2) Serving in a managerial or leadership capacity (e.g. board membership) for an outside entity while receiving research funding from the entity;
(3) Serving in multiple capacities with a company (e.g., clinical trial director, under a consulting agreement, having a financial interest in the company, in a managerial/decision-making role);
(4) Receiving honoraria by persons in a position of managerial authority;
(5) Purchases of real property from the university;
(6) Receipt of gifts directly or to the university for a designated purpose from companies in which the faculty has a financial interest;
(7) Serving on an outside review panel that would evaluate or fund the faculty's research;
(8) Receipt of research or other support from an entity that has provided an outstanding loan;
(9) Faculty disburses research funds to an entity that has provided an outstanding loan;
(10) Inappropriate use of the institution's name;
(11) Inappropriate use of confidential information;
(12) Conducting research or accepting teaching assignments through a second institution;
(13) Making an incomplete or inaccurate disclosure of a potential conflict of interest.

**Disclosure of Conflicts of Interest**

Full disclosure is the cornerstone for successful implementation of any conflict of interest policy and assumes a shared responsibility by all academic, non-academic, and administrative personnel. The review process to determine the acceptability of a conflict of interest is a subjective determination which should be made from multiple perspectives.

> The responsibility for avoiding conflict of interest or commitment rests, in the first instance, with the individual. An essential step in addressing actual or apparent *conflict of* interest **or** commitment is for the individual involved to make full disclosure of relevant information to *his* or *her* departmental *chair or dean (in the case of faculty* and research personnel) *or* to the senior administrator **of** his or her department *(in* the case of other employees). The person to whom the disclosure is made can then assist in determining whether a *conflict of* interest or commitment *exists, and what should be* done to avoid or manage *it* appropriately (Yale University).

Once disclosure has been made and the conflict of interest has been approved, the institution must vigorously defend the activity. This determination should be guided by.

(1) The potential for restricting the free and open dissemination of research results;
(2) The nature of the project and how closely it fits the mission of the institution in promoting an open academic environment. Routine services of a purely commercial nature should be avoided;
(3) The involvement of students or other trainees;
(4) The potential for faculty responsibility to students to be jeopar-

(5) The potential for the institution's stewardship responsibilities and rights of ownership of intellectual property to be jeopardized;
(6) The need to make available unique facilities to outside users with a subsidy in cost; and
(7) The potential for performance to interfere with other institutional responsibilities and duties.

The ultimate difficulty in considering the acceptability of conflicts of interest is that institutional determinations are based upon subjective judgment. This process is not unlike testing of research hypotheses.
No amount of data can prove that a hypothesis is correct. Data collected can only invalidate the null-hypothesis. Similarly, no amount of reflection or information will prove that a decision to allow a conflict of interest or to prohibit a project involving a conflict of interest is correct. Time can only prove that decisions to allow a conflict were wrong. Therefore, efforts must place a high priority upon freedom of inquiry, understanding, dedication and commitment. Only then will we achieve the progress we seek.

## APPENDIX 1.

| Components | PHS<br>Objectivity in Research | NSF<br>Financial Disclosure Policy |
|---|---|---|
| Applicability: | Institutions/Investigators<br>Grants/Coop. Agreements<br>Subpart F of 42 CFR part 50 | Grantees<br>Any NSF grantee employing more than fifty persons. |
| | Contracts<br>Part 94 of 45 CFR, subtitle A | Grants Policy Manual & Grant General Conditions |
| | Excludes SBIR Program Phase I applications | Excludes ownership interests in the institution, if the institution is an applicant under the Small Business Innovation Research Program or Small Business Technology Transfer Program. |
| | Individuals<br>case-by-case determinations | |
| Effective Date: | October 1, 1995 | Proposals submitted on or after October 1, 1995 must contain the new certifications set forth in the Policy. |
| Definitions: | Institution<br>Any domestic or foreign, public or private, entity or organization (excluding a Federal agency) | Grantee<br>Any NSF grantee employing more than fifty persons. |
| | Investigator<br>PI and other persons responsible for the design, conduct or reporting or research (proposed and funded)/including PI's spouse and dependent children | Investigator<br>Principal investigator, co-principal investigators, and any other person at the institution who is responsible reporting of research or educational activities funded or proposed for funding by NSF (including those of the investigator's spouse and dependent children). |
| | Research<br>Systematic investigation relating broadly to public health, including behavioral and social-sciences research. The term encompases basic and applied research and product development. | Conflict of Interest<br>Exists when the reviewer(s) reasonably determine that a significant financial interest could directly and significantly affect the design, conduct, or reporting of NSF-funded research or educational activities. |

| Components | PHS Objectivity in Research | NSF Financial Disclosure Policy |
|---|---|---|
| Definitions: (cont.) | Significant Financial Interest | Significant Financial Interest |
| | Anything of monetary value, including but not limited to, salary or other payments for services; equity interests; and intellectual property rights. | Anything of monetary value, including but not limited to, salary or other payments for services; equity interests; and intellectual property rights. |
| | Excludes: (1) Salary, royalties, or other remuneration from the applicant institution; | Excludes: (1) Salary, royalties, or other remuneration from the applicant institution; |
| | (2) Ownership interests in the institution, if the institution is and SBIR applicant; | (2) Ownership interests in the institution, if the institution is an SBIR or Small Business Technology Transfer Program applicant; |
| | (3) Income from seminars lectures, or teaching engagements sponsoredby public or nonprofit entities; | (3) Income from seminars lectures, or teaching engagements sponsored by public or nonprofit entities; |
| | (4) Income from service on adivsory committees or review panels for public or nonprofit entities; | (4) Income from service on advisory committees or review panels for public or nonprofit entities; |
| | (5) An equity interest that when aggregated is both not more than $10,000 and is not more than 5% ownership interest in any single entity; or | (5) An equity interest that when aggregated is both not more than $10,000 and is no more than 5% ownership interest in any single entity; or |
| | (6) Salary, royalties or other payments than when aggregated for the next twelve months, is expected to be not more than $10,000. | (6) Salary, royalties or other payments than when aggregated for the next twelve months, is expected to be not more than $10,000. |
| Institutional Responsibilities: | Must maintain a written, enforced policy. | Must maintain "an appropriate written and enforced policy on conflict of interest." |
| | Must insure compliance by subgrantees, contractors, or collaborators. | Not addressed specifically: (see GC-105/94) |
| | | Must require limited and targeted financial disclosure |

| Components | PHS Objectivity in Research | NSF Financial Disclosure Policy |
|---|---|---|
| Institutional Responsibilities: (cont.) | Must designate an institutional official(s) to solicit and review financial disclosure statements from investigators whose financial interests reasonably appear to be affected by the research. | Must designate one or more persons to person(s) to review the disclosures, determine whether a conflict of interest exists, and determine what conditions or restrictions, if any, should be imposed by the institution to manage, reduce or eliminate such conflict of interest and resolve actual or potential problems revealed. |
| | Establish adequate enforcement mechanisms and provide for sanctions. | Must describe enforcement mechanisms. |
| | Provide guidelines to identify conflicting interests and take such actions as necessary to ensure that such conflicting interests will be managed, reduced, or eliminated. | Exists when the reviewer(s) reasonably determine that a significant financial interest could directly and significantly affect the design, conduct, or reporting of research or educational activities. |
| | Maintain records of all financial disclosures and all actions taken. | Must retain records of investigator financial disclosures and of actions taken to manage conflicts of interest. |
| | Certify compliance in each application for funding. | Certify that investigators have provided all required financial disclosures at the time the proposal is submitted; and that all identified conflicts of interest will have been satisfactory managed, reduced or eliminated prior to the institution's expenditure of any funds under the award. Conflicts which cannot be satisfactorily managed, reduced or eliminated must be disclosed to NSF |

| Components | PHS Objectivity in Research | NSF Financial Disclosure Policy |
|---|---|---|
| Institutional Responsibilities: (cont.) | Must require updated disclosures during the period of the award, either on an annual basis or as new reportable Significant Financial Interests are obtained. | Required updated disclosures during the period of the award either on an annual basis or as new reportable Significant Financial Interests are obtained. |
| Reporting Requirements: | Prior to expenditure of funds, the Institution will report the existence of a conflicting interest (but not the nature of the interest or other details) found by the institution and assure that the interest has been managed, reduced or eliminated in accordance with this subpart;<br><br>and; for any interest that the Institution subsequently identifies as conflicting, the Institution shall report, manage, reduce, or eliminate the conflicting interest, at least on an interim basis, within sixty days of that identification. | None for conflicts issues resolved to the satisfaction of the institution.<br><br>Must include arrangements for keeping Office of General Counsel appropriately informed if the institution finds that it is unable to manage a conflict of interest to the satisfaction of the institution. |
| Management of Conflicting Interests. | Examples of conditions or restrictions that might be imposed to manage conflicts of interest include, but are not limited to:<br><br>(1) Public disclosure;<br>(2) Monitoring by independent reviewers;<br>(3) Modification of the research plan;<br>(4) Disqualification from participation in all or a portion of the research;<br>(5) Divestiture of significant financial interests; or<br>(6) Severance of relationships that create actual or potential conflicts. | Examples of conditions or restrictions that might be imposed to manage conflicts of interest include, but are not limited to:<br><br>(1) Public disclosure;<br>(2) Monitoring by independent reviewers;<br>(3) Modification of the research plan;<br>(4) Disqualification from participation in all or a portion of the research;<br>(5) Divestiture of significant financial interests; or<br>(6) Severance of relationships that create actual or potential conflicts. |

| Components | PHS Objectivity in Research | NSF Financial Disclosure Policy |
|---|---|---|
| Remedies: | If noncompliance has biased the design, conduct, or reporting of the PHS-funded research, the Institution must promptly notify the PHS Awarding Component of the corrective active taken or to be taken. | Must include adequate enforcement mechanisms, and provide for sanctions where appropriate. |
| | For non-compliance in clinical research whose purpose is to evaluate the safety or effectiveness of a drug, medical device, or treatment, the Institution must require the Investigator(s) involved to disclose the conflicting interest in each public presentation of the results. | |
| | No similar provision. | If conditions or restrictions would be either ineffective or inequitable, and that the potential negative impacts that may arise from a significant financial interest are outweighed by interests of scientific progress, technology transfer, or the public health and welfare, then the reviewer(s) may allow the research to go forward without imposing such conditions or restrictions. |

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Request for Comment on Proposed Guidelines for *Policies* on Conflict *of* Interest. September 15, 1989. NIH Guide for Grants and Contracts. 18(32):1-5.

*Open Meeting on Conflicts of Interest in Clinical Evaluation of Commercial* Products. Public Health Service. October 31, 1990. Federal Register. 55(211):45815-45816.

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*Developing* Sponsored Research Agreements: Considerations for Recipients of *NIH Research* Grants *and Contracts; Proposed Draft*. National Institutes of Health. June 27, 1994. Federal Register. 59( 122):32997-33001.

Objectivity *in* Research; Notice of Proposed Rulemaking. Public Health Service. June 28, 1994. Federal Register. 59( 123):33242-33251.

Investigator Financial Disclosure Policy; Notice of Changes to Award Conditions and Proposal Content. National Science Foundation. June 28, 1994. Federal Register. 59( 123):33308-33312.

Financial Disclosure by Clinical Investigators; Proposed Rule. Food and Drug Administration. September 22, 1994. Federal Register. 59(183):48708-48719.

*Developing Sponsored Research Agreements: Considerations for Recipients of* NIH Research Grants and Contracts; Notice. National Institutes of Health. November 8, 1994. Federal Register. 59(215):55673-55678.

Financial Disclosure by Clinical Investigators; *Public* Hearing. Food and Drug Administration. June 6, 1995. Federal Register. 60( 108):29801-

29804.

Objectivity in Research; Final Rule. Public Health Service. July 11, 1995. Federal Register. 60 (132):35810-35819.

Investigator Financial Disclosure *Policy;* Notice of Technical Changes. National Science Foundation. July 11, 1995. Federal Register. 60 (132):35820-35823.

Frequently Asked *Questions* Concerning the Department of Health and *Human Services* Objectivity *in* Research Regulations and the *National Science* Foundation Investigator Financial Disclosure *Policy*. Public Health Service and National Science Foundation. July 3, 1996. Federal Register. 61 (129):34839-34841.

## REPRESENTATIVES POLICIES

Columbia University

Statement of university *policy* on conflicts of interest

http://www.columbia.edu/cu/hr/wac/wac24.html#4

Cornell University

Conflicts *policy*

http://www.research.cornell.edu/CRF/Policies/Conflicts.html

Stanford University

*Faculty policy on conflict of* commitment and interest

http://www-portfolio.stanford.edu/100906

Staff *policy* on conflict of commitment and interest

http://www-portfolio.stanford.edu/200122

*University* investments *in* start-up *companies involving Stanford* faculty

http://www-portfolio.stanford.edu/l04031

University of California - San Francisco

*Guidelines on conflict of* interest *pertaining to receiving or disbursing research funds and Disclosure of financial interest ("conflict of interest")*

http://galen.library.ucsf.edu/ih/II.html#IIIb

University of California Systemwide Policies and Guidelines

*1997 Conflict of Interest Code*

http://www.ucop.edu/ucophome/ipsp/coitoc.html

University of Michigan

*Policy and procedures for dealing with financial and outside management conflicts of interest in sponsored projects and technology transfer*

http://www.drda.umich.edu/drda/admin/asp/app-i-conflict.html

University of Minnesota Board of Regents Policy

*Conflict of* interest

http://www.regents.umn.edu/policies/academic/Conflictofinterest.pdf

University of Pennsylvania

A layman's *guide* to conflict of interest

http://www.upenn.edu/almanac/v43/n22/conflict.html

Conflict of interest policy for faculty members

http://www.upenn.edu/provost/handbook/Conflict_of_Interest.html

*Conflict* of interest

http://www.upenn.edu/hr/penninfo-new/Conflict_of_Interest-005.html

University of Washington

Significant *financial interest* disclosure policy

http://www.washington.edu/home/uwin/services/gcs/gim/GIMlOSignificantFinancialInterestDisclosurePolicy12.html

Yale University

*Conflict* of interest and conflict *of commitment*

http://www.med.yale.edu/sciaffr/grants/conflict.html

# MANAGINGCONFLICTS OFINTEREST

**Thomas E. Wilson**

Abstract. When the Department of Health and Human Services and the National Science Foundation published their final rules on Conflicts of Interest in the July 11, 1995 Federal Register there was a sigh of relief in the academic research community. The rules which were proposed in 1989 and later withdrawn had much more rigid guidelines which would have barred HHS- or NSF-supported scientists and their families from owning stock in companies which would benefit from their research. The final rules issued in July 1995 did not preclude scientists and/or their families from entering into these types of relationships with companies, but the rules did require the institutions to assume the awesome responsibility of monitoring those relationships. Two years after the publication of the final rules this paper looks at how institutions can best monitor those relationships which their scientists and their families have with industrial partners and how the institutions can manage the resulting conflicts.

## BACKGROUND

As universities establish relationships with industrial partners, they enter an arena which has the potential for creating conflicts of interest. Individual research investigators and their institutions have the opportunity to gain financially as the result of these university-industry research collaborations by commercializing research results. To ensure that grantees establish policies and procedures to identify and manage conflicts of interest, the Department of Health and Human Services (HHS) and the National Science Foundation (NSF) issued rules which were effective on October 1, 1995.

## CHALLENGE

Clearly, we could eliminate the potential for conflicts of interest by preventing our investigators from performing research for industry sponsors. However, in the real world, where the core of federal research dol-

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lars available to universities is under attack by Congress and the Executive Branch industry dollars are becoming an increasingly attractive source of research revenue for universities. Research funded by industry sponsors at universities in the United States increased from $879 Million in 1991 to $1.4 Billion in 1994, an increase of 55%, while federal research expenditures increased by only 25% over the same period of time'. University-industry collaborations have become integral to sustaining excellence in sponsored research at universities in the United States.

There will always be the potential for conflicts of interest with university-industry collaborations. The challenge is how to manage these conflicts in order not to compromise our universities' research enterprise or the public's perception of academic integrity. The potential conflicts of interest inherent in university-industry relationships can be managed through three steps: Definition, Disclosure and Resolution.

## DEFINITION

The HHS and NSF regulations give applicant institutions the leeway to deal with conflicts of interest on a case-by-case basis at the institutional level. However, this flexibility places the responsibility for developing and maintaining a monitoring system to deal with any appearance of impropriety with the institution. The monitoring system starts with the definition of terms. The HHS final rule, "Objectivity in Research", published in the Federal Register on July 11, 1995, puts the institution in charge of defining conflicts of interest and reviewing potential conflicts. Many state universities have strict rules required and enforced by state statute which define the level of financial interest which may constitute a conflict of interest. Private universities have more flexibility in defining terms, but must use the federal guidelines as a minimum baseline.

Individual conflicts can develop when *a* faculty or staff member is performing basic or clinical research for an industrial sponsor and the individual has the potential to benefit personally from the results of the research. These benefits might include fees received through a consulting relationship, royalties from patents or copyrights, or equity ownership in a new or existing company.

Additionally universities have the potential of developing an institutional conflict of interest through the receipt of royalties or ownership equity in a company. Depending on the circumstances of the relationship, a potential conflict of interest can be classified as:

- acceptable
- subject to institutional review and/or management
- not acceptable

The entrepreneurial environment is different at each institution and each institution must establish criteria to determine acceptable or unacceptable behavior in developing relationships with industry. Some universities are unwilling to accept a research grant from a company if the principal investigator has a significant financial interest in that company. At other universities it would be acceptable if reviewed and approved by the chief executive officer of the institution or a conflict of interest committee appointed by the chief executive officer.

## DISCLOSURE

The HHS and NSF regulations require that investigators disclose significant financial interests' that would appear to be affected by the research that they are proposing to the federal government. Each investigator is also required to disclose any significant financial interest of their spouse and dependent children. The grantee institution is required to:

- maintain a policy on conflict of interest that complies with the HHS and NSF regulations and inform each investigator of that policy;
- appoint an institutional official(s) to solicit and review financial disclosure statements;
- maintain records of financial disclosures and all actions taken to neutralize conflicting interests for a minimum of three years; and
- establish adequate enforcement mechanisms and provide for sanctions where appropriate.

The applicant institution is also required to certify in each application to HHS and NSF that: 1) it has in effect a written and enforced system to identify and manage conflicting interests; 2) it will report to the agency, prior to any expenditure of funds, the existence of a conflicting interest and assure that the interest will be managed, reduced or eliminated; 3) it agrees to make information available to the agency regarding all conflicting interests identified by the institution and how those interests have been managed, reduced, or eliminated.

## RESOLUTION

The designated institutional official(s) is required to review all financial disclosures and determine if a conflict of interest does exist. A con-

flict of interest exists if it is determined that the design, conduct or reporting of the proposed research could be directly and significantly influenced by the disclosed significant financial interest. If it is determined that a conflict of interest exists, the institutional official(s) must determine what actions are necessary to manage, reduce, or eliminate the conflict of interest. Examples of conditions or restrictions that might be imposed to manage conflicts of interest include, but are not limited to:

- public disclosure of significant interests;
- monitoring of research by independent reviewers;
- modification of the research plan;
- disqualification from participation in all or a portion of the research funded by the federal awarding unit;
- divestiture of significant financial interests; or
- severance of relationships that create actual or potential conflicts.

In addition to the types of conflicted financial interests described above that must be managed, reduced, or eliminated, an institution may require the management of other conflicting financial interests, as the institution deems appropriate.[3]

The solicitation and review of disclosures would best be handled by a senior administrative official at the institution. However, the review of the potential conflict and the resolution of the conflict is best decided by a committee of faculty peers appointed by the chief executive officer of the applicant institution. It is very important that a balance be established between policing conflict of interest situations at our institutions and promoting and nurturing university-industry collaborations to advance basic and clinical research.

## CONCLUSION

As research relationships between universities and industry increasingly become a priority, it is necessary to develop innovative approaches to resolving issues and managing conflicts of interest. It is not only important that we adhere to the local, state, and federal regulations regarding conflicts of interest, but that we, as officers of our institutions, accept the responsibility to avoid even the appearance of conflict of interest in accepting and administering research programs while continuing to bring innovations from our research programs into the public arena.

A case study is attached to help in understanding the conflict of interest resolution process.

## CASE STUDY

### BACKGROUND

Dr. Wilson has been a professor at Research University (RU) with a very productive biochemistry laboratory for more than ten years. Dr. Wilson reported a novel discovery to the Director of Sponsored Research at RU last year. A patent application is pending on Dr. Wilson's application and the technology has been licensed to a new company, Novel Applications Incorporated (NAI). Since NAI is a developing company with limited capital, the licensing fee was paid to RU in the form of shares of NAI common stock. RU has distributed half (10,000) of the NAI shares to Dr. Wilson in accordance with its institutional policy regarding the distribution of royalties to faculty inventors. Dr. Wilson has also entered into a consulting agreement with NAI which will pay him $12,000 annually and he has agreed to serve on NAI's scientific advisory committee.

### DEFINITION

RU has not had experience with licensing technology to a startup company prior to Dr. Wilson's case and does not have specific institutional guidelines that are applicable to this case. It is important for the officers of the institution to understand that, since RU is forging new ground with this case, the ultimate in this case decision will establish the precedent for handling similar cases in the future. The decision process must be fair and equitable in Dr. Wilson's case and the procedures and policies established should be consistently applied to similar cases in the future.

### DISCLOSURE

NAI has approached Dr. Wilson with an offer to continue further development of the licensed technology through a sponsored research agreement with RU. Dr. Wilson informed the Director of Sponsored Research of NAI's offer to fund research in his laboratory and asked that she contact NAI to initiate contract negotiations. At his meeting with the Director of Sponsored Research, Dr. Wilson filed a formal disclosure which had been signed by his Dean and Department Chair outlining his equity ownership and consulting relationship with NAI. The Director of Sponsored Research met with the Academic Vice President to discuss Dr.

Wilson's disclosure and to determine if she should proceed with contract negotiations.

## RESOLUTION

The Academic Vice President referred Dr. Wilson's disclosure to the RU Conflict of Interest Committee to review and asked the committee to determine if RU's acceptance of the sponsored research agreement for Dr. Wilson's laboratory could represent a conflict of interest. The Academic Vice President instructed the Committee to determine if Dr. Wilson's relationship with NAI represents a conflict of interest and what actions can be taken to manage, reduce, or eliminate the conflict.

The Conflict of Interest Committee has identified the following issues:

- It is difficult to determine the significance of Dr. Wilson's equity interest in NAI since the company is new and the shares of stock are not publicly traded (NAI has assigned a nominal book value of one dollar a share on its balance sheet).
- It is assumed that the value of the stock will grow beyond the NAI book value of $10,000 if there is a public offering. In an effort to determine the potential value of Dr. Wilson's shares of stock, the committee has requested an audited balance statement from NAI.
- Dr. Wilson's consulting relationship could potentially influence the outcome of his research under the NAI agreement.
- RU's equity ownership in NAI could present the potential for an institutional conflict of interest.

After much deliberation, the Committee has determined that Dr. Wilson's relationship with NAI does represent a conflict of interest. However, the committee feels that the conflict can be managed to allow RU to accept a sponsored research agreement for Dr. Wilson's laboratory. The Committee has developed the following list of possible solutions:

- prohibit Dr. Wilson from trading in the NAI stock until after he has completed his research and published or presented his results;
- place control of the stock in the hands of a disinterested party (the RU Treasurer) with the understanding that the stock would be sold at NAI's Initial Public Offering (IPO) and the proceeds distributed to Dr. Wilson; or
- closely monitor Dr. Wilson's consulting relationship with NAI making certain that his consulting position does not conflict

with the work being performed under the research agreement.

The Committee feels that it is important that any new discoveries made in Dr. Wilson's laboratory under the research agreement remain proprietary to RU and that the new discoveries are not assigned to NAI through Dr. Wilson's consulting relationship.

The Committee has also determined that RU's equity ownership in NAI represents the potential for a conflict of interest and suggests the following in an effort to avoid a conflict in RU's continuing relationship with NAI:

- establish a policy requiring that all similar equity interests be subject to the review of a subgroup of the RU Regents and approved by the full Board of Regents prior to RU accepting future equity interests; and
- place control of RU's shares of NAI stock in the hands of disinterested party, to be sold at NAI's IPO with the earnings distributed at the discretion of RU's chief executive officer.

## CONCLUSION

Now that the RU Conflict of Interest Committee has suggested some possible solutions to this case study, it is left to the reader to determine the "best" course of action based upon their own experiences and the environment at their own institution.

## REFERENCES

1 AUTM Licensing Survey FY 1994 Survey Summary and Selected Data FY 1991-FY 1994.

[2] Significant financial interest means anything of monetary value, including but not limited to, salary or other payments for services; equity interests and intellectual property. The term does not include: 1) salary, royalties, or other remuneration from the applicant institution; 2) any ownership interests in the institution, if the institution is an applicant under the SBIR Program; 3) income from seminars, lectures, or teaching engagements sponsored by public or nonprofit entities; 4) income from service on an advisory committee or review panels for public or nonprofit entities; 5) an equity interest that when aggregated for the investigator and the investigator's spouse and dependant children: does not exceed $10,000 in value as determined through reference to public prices or other reasonable measures of fair market value, and does not represent more than a five percent ownership interest in

any single entity; or 6) salary, royalties or other payments that when aggregated for the investigator and the investigator's spouse and dependent children over the next twelve months, are expected to exceed $10,000.

[3] Department of Health and Human Services, Public Health Service, 42 CFR Part 50 "Objectivity in Research"

# The Multiple Effects of Influencing External Funding Productivity

Jon J. Denton & Frances A. Hunter
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**Abstract.** This inquiry was undertaken to understand and explain how sustained faculty participation produced substantial increases in external funding while contextual issues associated with changes in the college were concurrently eroding faculty morale. Seven mechanisms were developed and implemented to increase external funding by faculty in the college. The tenets underlying these mechanisms are prominent principles in the literature on work motivation.

Fiscal pressure and escalating costs in higher education are changing the roles and expectations of university faculty. Over the past seven years, external funding has become increasingly important for funding public higher education across the nation because state allocations to higher education have decreased by 15 percent.' The press to fund programs and provide new services has led to an array of revenue generating processes. These processes have changed the professoriate dramatically in some institutions. This paper presents an account of strategies implemented to increase funding from external sources in a college and the resulting changes (some unanticipated) that occurred within the organization.

Over the past decade, external funding has increased dramatically as evidenced by Figure 1 and the following observations.[A]

- The success ratio of funded grants compared to submissions has steadily increased, reaching 52% in 1994.
- Over each of the past five years, between 34% and 42% of the faculty have received funding from external sources, compared with 7% in 1990.

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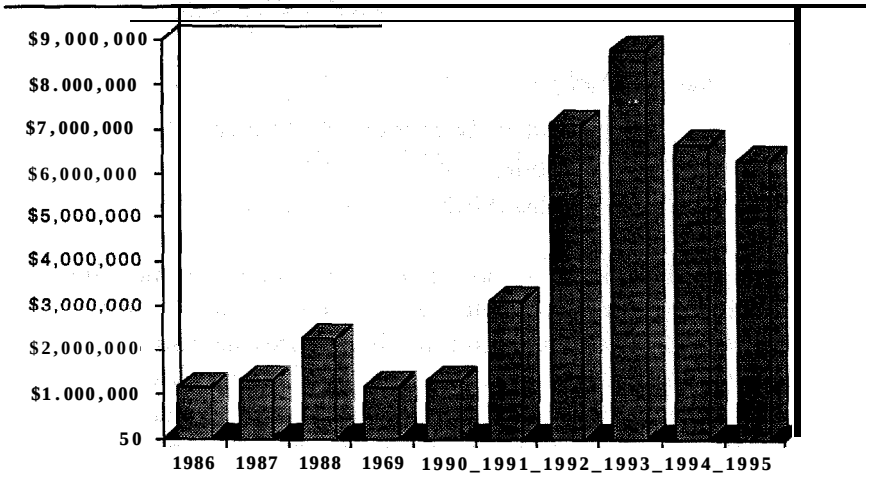
**Figure 1.**

**Total External Funding for the College of Education 1986-1995.**




Although faculty, staff and administrators responded remarkably well in meeting the fiscal challenges facing the college, contextual issues associated with changes in the college were causing faculty morale to drop. Increasingly, initiatives developed by the college's administrators were viewed negatively by the faculty. A survey conducted by Dooley[2] of all of this college's tenured faculty supports this observation. His results drawn from 58 of 106 faculty[B] responding indicate that administrative support perceived to be important for grant-seeking activities were given insufficient attention. The organizational climate became so adverse that a change in the college's administration occurred in June 1995.

Questions about how and why an increase in total funding occurred while faculty morale dropped led to an examination of this set of issues. First, a review of the literature on work motivation is presented that provides a rationale for strategies for increasing external funding. Second, processes that have been instituted were listed as possible mechanisms to increase external funding. These processes were analyzed for both expected and unexpected effects and in one case (establishing a Development Officer for the College) a direct monetary effect could be determined.

Third, perceptions of principal investigators in the college stratified by the level of funding they have amassed are reported. The paper concludes with a summary of the relative effects of the strategies on the college's

external funding and faculty morale and recommendations for future development.

## THEORETICAL CONSTRUCTS

In seeking an explanation for the discrepant events of organizational success with external funding and the demise of that organization's climate and confidence in the leader, a search of the literature on motivation was conducted. Essays by Locke[3] and Katzell and Thompson[4] on work motivation were particularly instructive in providing a basis for explaining the discrepant events of the organization and theoretical perspectives for the mechanisms used to increase revenue from external sources.

Edwin Locke[3] proposed a framework to link key motivational concepts [needs, values, goals, expectancy/self-efficacy, performance, rewards and satisfaction] into a chronological sequence that is influenced by volition. This sequence begins with needs, that which is required for survival and well-being. Drawing on the work of Binswanger[5], Locke notes that the conceptual level of consciousness operates volitionally and that needs are fundamental to why people act and thus are essential to gaining an understanding of motivation. Values bridge needs to action and are thought to be what people consider beneficial to their welfare. Examples include achievement theory[6] that is general and expectancy theory? that is context specific.

Next in the framework are to specific situations. It is Goals, that according to Locke, are applications of values thought that individuals will perform at higher levels if goals are difficult but attainable, specific and attractive. Goals affect the intensity, duration, and direction of action.[3] Locke then describes expectancy and self efficacy as beliefs that affect goal selection that in turn have powerful effects on performance. The ensuing action or performance is thought to be most influenced in a motivational sense by goals and expectancy of the performer, although ability, task knowledge and strategy also directly influence the performance .

Rewards can be experienced as a consequence of a performance. Reinforcement theory suggest that actions that are rewarded are more likely to be repeated than those that are not.[8] A related issue is whether rewards are distributed equitably, that is, whether the rewards provided for performances are perceived to be fair across individual performers. Judgments about whether the rewards are distributed fairly are also thought to affect subsequent performance. Finally, from the work of

Herzberg, Mausner and Snyderman,' Satisfaction has been linked to motivation and is thought to indirectly affect performance.[10] Locke[3] refers to the goal/self-efficacy/performance linkages of the preceding sequence as the motivational hub. This is a generalization about work motivation that states, ". ..what people do is powerfully (though not solely) influenced by their goals or intents and by their perceived confidence in being able to take the actions in question." [p.296]

Katzell and Thompson[4] have identified seven key principles for improving work motivation based on their review of the literature on work motivation. The following principles or motivational imperatives are closely related to the preceding concepts noted by Locke.

- Ensuring that the motives and values of employees are appropriate to the roles they fill in the organization. Two basic strategies for improving work motivation are to select employees whose motives match the employment situation and providing motive training to employees already in the organization.[6,11]
- Making positions attractive, interesting and satisfying to employees. An array of rewards including interesting work, good pay, having sufficient authority to accomplish tasks, friendly and cooperative co-workers and flexible work schedules" are suggested because individuals vary greatly regarding what they prize. It is important to note that the best designs for accomplishing this imperative can be undercut if they are administered inequitably.
- Defining work goals that are clear, challenging, attractive and attainable enhances work motivation as does feedback about the quality of one's work performance." Providing employees with personal, social and material resources will facilitate their effectiveness in accomplishing their work goals."
- Creating supportive environments for employees through effective interpersonal and group processes will enhance work goal attainment.
- Reinforcing effective performances is necessary to maintain future performances. The essence of this principle is not on the reinforcer, but on the linkage of the reinforcer to the performance.
- Integrating all of these elements into a consistent strategy to enhance work motivation is a worthwhile organizational goal that is labeled quality of worklife.[12]

Although these are rational principles, implementing them typically has been very difficult. Resistance to social and institutional change

linked to vested interests, conflicts of interest, tradition, and threats to power or privilege all militate against their use in changing work motivation in organizations.

## MECHANISMS TO INCREASE EXTERNAL FUNDING IN THE COLLEGE AND UNANTICIPATED EFFECTS

- A **Clear Goal** was stated in the college's Strategic Plan for increasing external funding six fold over a five year period. The six-fold increase translated into a target of six million dollars per year. This mechanism draws from goal theory that suggests individuals will perform at higher levels if goals are difficult but attainable, specific and attractive[3]. The six million dollar level of external funding was attained in two years. As a result, the original goal of a six-fold increase was changed to a new goal of a nine-fold increase. The down side of this mechanism was that faculty concerns were expressed that so much emphasis had been placed on external funding that curricular programs and scholarship were being undervalued or ignored.[13,14,15,16]
- **Continued emphasis** was placed on the goals of increasing external funding and on progress toward attaining these goals. The rationale for this mechanism is also drawn from goal theory in that feedback on goal attainment is necessary to maintain the motivational force of the goal." The dean placed a premium on increasing external funding in college-wide faculty meetings and in monthly meetings with department heads. Concerted efforts occurred to communicate how funds obtained from external resources benefited the college and addressed the program goals in the college's strategic plan. In addition, external funding advances were reported to university administrators when strategic plan progress reports occurred and served as the primary justification for additional space being allocated to the college. However, criticism of the external funding goals intensified among some faculty as the dean and associate dean for research continued to underscore the importance of external funding. These concerns were recorded in the meeting minutes of the College of Education Research Council.[17,18,19,20]
- **Recognition was provided to principal** investigators for funding successes. This mechanism is based on the principle that reinforcing effective performances (that is, clearly linking reinforcers to desired performances) is necessary to maintain future performances. The success of this mechanism rests on the assumption that recognition serves as a reinforcer[4]. Strategies for providing frequent and consistent recog-

nition consisted of (a) reporting funded projects in a monthly college newsletter, and (b) providing monthly funding reports that listed the principal investigator, project name and duration, funding agency and award amount to department heads and members of a college research council. Also, a formal annual document, the College of Education External Funding Report[21, 22, 23, 24] that contained the preceding award information was distributed widely to college faculty and university administrators. In addition, personal letters of congratulations were sent annually to all faculty who submitted grant applications during the year.

However, it is thought this concerted effort to recognize successful funding initiatives and active participants in external funding created a sense of disenfranchisement among members of the college whose roles were not associated with external funding activities. These faculty members may have felt their contributions to the organization were not being sufficiently recognized. The recognition they did receive was not as frequent as that of faculty participating in grant activities and thus they may have felt the recognition system was inequitable or unfair. This phenomenon is discussed by Locke[3] who indicates work motivation is reduced among workers who feel they are not being treated equitably. Indirect evidence to support this idea is provided in Dooley's[2] finding that 57 percent of the faculty responding to a survey on factors important to grant-seeking rated recognition in college publications as marginally or not important.

- Client centered grant office operations were developed and implemented. The motivational principle associated with this mechanism is that providing employees with personal, social and material resources increases their effectiveness in accomplishing work goals." The college's administrative organization was revised to establish a position for an associate dean for research whose primary responsibility was to increase, enhance and promote external funding activities. Second, an additional bookkeeper was employed to assist with grant management. Initiatives were developed to serve the client or principal investigator (e.g., seeking and providing white papers on funding initiatives and Requests For Applications to faculty and staff, convening potential grant writing teams on targeted initiatives, providing faculty with travel funds to meet with funding agency personnel, assisting with the preparation of application budgets, obtaining institutional approval signatures, providing technical writer editing service, preparing copies and mailing proposals to agencies).

Additional initiatives were implemented to enhance grant management and to enable the principal investigator, as well as the college and department of the principal investigator, to operate efficiently and effectively once the grant was funded (e.g., providing bridge funding to initiate and/or continue project, establishing algorithms for applying salary savings from grants/contracts to administrative units, providing assistance in completing fiscal and compliance documents and providing half of administrative overhead return to the principal investigator). In spite of these activities and functions, Dooley[2] reported that 54% of the respondents to his survey felt that administrative support was rarely or never provided for proposal preparation. He commented that although a majority of those responding felt that technical assistance was very important for preparing proposals they simply did not take advantage of the services offered to them.

- The Research Council for the college was established to foster research initiatives and provide counsel on issues affecting principal investigators. The motivational principle associated with this mechanism is that creating supportive environments for employees through effective group processes and shared governance enhances work goal attainment.[4] The Council, made up of active principal investigators and representatives from each department, meets monthly to discuss issues related to funded and non-funded research by faculty. The research council has served as a sounding board and initiator for policy development related to proposal development (e.g., instituting computer on-line searches for federal Requests-For-Applications, providing travel funds for faculty to visit funding agencies, establishing an editing service by a technical writer, providing support for gaining institutional approval and actual mailing of proposals), grant management (e.g., distributing policies related to fiscal management of grants/contracts to principal investigators, assisting with providing bridge-funding for timely return policy from grants/contracts incentives, recognition and support development of subcontracts related to grant, grant start-up, developing a salary savings to departments and college) and providing to faculty for research (e.g., establishing the Research Scholars Program, administering the college's "Seed Grant" program, establishing the Research Enhancement Support for faculty, providing support for Research Scholar seminars). According to a faculty survey, all of these issues are considered to be important to grant-seeking activities[2]

- **A development officer** was hired for the college by the Development Foundation [an organization that is associated with but not administered by the university]. The motivational principle associated with this mechanism is to hire an individual whose motives and values are appropriate to the roles this individual fills in the organization.[6] This individual has been directly responsible for the college's success with foundations and individual donors (over 8.7 million dollars in five years). Through his tireless efforts of identifying potential donors, matching the scholarly and research interests of faculty with the work supported by foundations, making direct contacts and personally visiting with the directors of foundations, sharing executive summaries of faculty projects and establishing links between faculty members and these directors, the faculty and college has received substantial awards and gifts. In spite of these continuous efforts on behalf of prospective principal investigators, a survey revealed that 74% of the faculty responding felt that support was rarely or never provided for dealing with prospective sponsors.[2]

- **All faculty appointments** were changed from 12 months to 11 with no change in annual salary beginning in September 1994. This change enabled faculty members to "pay themselves" from external sources months for an additional month. This decision evolved from a conviction that faculty should receive benefits (rewards) as a consequence of their performance.[3] During the year following the adoption of this appointment policy, 40 percent of the tenure track faculty (41 individuals) "bought out" their twelfth month, thus increasing their annual incomes from their faculty appointments by over nine percent. This policy had been discussed with faculty for two years as a desired incentive,[15] and approximately seventy percent of the faculty had agreed to participate voluntarily in this program. An unexpected condition was added when the college sought approval of this proposal. Central university administrators agreed to approve the proposal only if all faculty were put on 11 month contracts. This additional requirement was accepted with reservation by the dean, but a maelstrom resulted and the organizational climate of the college plummeted because this decision had been made without sufficient faculty involvement.

## PERCEPTIONS OF PRINCIPAL INVESTIGATORS

Determining the impact of particular mechanisms on external funding activities has not been determined with the possible exception of the

employment of the development officer. However, perceptions of faculty who have submitted grant proposals during the college's growth in external funding were sought regarding underlying motivational factors that influenced them to participate in grant-seeking processes. What influenced these faculty to participate in external funding initiatives? Perhaps these faculty agree with Bauer[25] who notes, "The prospect of using someone else's money to do what I've always wanted to do, or meet my organization's needs, was real enough for me to pursue grants." [p. 3711. Or, possibly they perceived they were influenced by factors in the framework developed by Locke[3] on work motivation (i.e., needs, values, goals, expectancy/self-efficacy, performance, rewards and satisfaction) and the motivational imperatives posited by Katzell and Thompson.[4]

Drawing on work motivation literature and the mechanisms that have been instituted to increase funding, a non-anonymous questionnaire was prepared. The questionnaire sought a dichotomous response (Yes or No) to whether the following eight factors had influenced their participation in grant-seeking activities [personal satisfaction, recognition, professional responsibility, recruited to seek grants, supported by mentor, high priority college goal, greater professional flexibility, future income enhancement]. This questionnaire was distributed in August 1994 to 78 faculty who had submitted grant proposals over the preceding four years. The questionnaire was distributed again six weeks later to non-respondents. Sixty-five completed questionnaires (83% of the total) were returned by mid-October, 1994.

Because the identity of the respondents were known and extensive awards data were available that had been validated for the annual College of Education External Funding Reports, responses were compiled and stratified by the range of cumulative awards (in dollars). These results are summarized in table 1. Observations and interpretations from these data include:

- Faculty who were highly successful over four years in obtaining grants/contracts reported they were influenced to submit proposals by nearly all of the listed factors (e.g., satisfaction, recognition, college goal, flexibility, income enhancement, responsibility) except they were not recruited to seek funding nor were they mentored on how to obtain grants. This finding is consistent with the motivational hub or goal/self-efficacy/performance linkage proposed by Locke.[3]
- Faculty in the upper two award categories were very experienced and industrious, submitting nearly 5 proposals each year across four years. Although not presented directly in the table, these 11

Table 1.

**Influences Reported by Principal Investigators for Engaging in Grant Activities Stratified by Range of Cumulative Awards Over Four Years (1991-1994)**

| **Range of Awards in $** | lM+ | 500-999K | l00-499K | <l00K | 0 | **TOTAL** |
|---|---|---|---|---|---|---|
| | | | **Related Information** | | | |
| **Number of Principal Investigators** | 5 | 6 | 21 | 29 | 41 | 102 |
| **Successful Proposals** | **96** | 34 | 79 | 49 | 0 | 258 |
| **Proposals Submitted** | 125 | 84 | 156 | 89 | 102 | 556 |
| | | | **Survey Responses** | | | |
| **Satisfaction** | **100%** | 60% | 67% | 59% | 51% | |
| **Recognition** | 80% | 20% | 48% | 31% | 37% | |
| **Recruited** | 20% | 0% | 14% | 10% | 7% | |
| **College Goal** | 60% | 40% | 62% | 41% | 41% | |
| **Professional Flexibility** | **100%** | 40% | 48% | **41%** | 37% | |
| **Income Enhancement** | 60% | 40% | 43% | 21% | 29% | |
| **Mentored** | **0%** | 20% | 19% | 17% | 12% | |
| **Professional Responsibility** | 60% | 80% | 67% | 59% | 46% | |

**principal investigators accounted for** 70 **percent of the dollar awards over this period.** This finding appears to support the observation of Katzell and Thompson[4] that people who think that the causes of their performance are stable, internal and intentional are more likely to have more favorable job attitudes and willing to work on challenging tasks.

- Personal Satisfaction followed closely by *Professional Flexibility and Professional Responsibility* appeared to be the greatest influences on these faculty to submit grant applications. This finding supports the motivational imperative[4] that positions need to be attractive, interesting and satisfying to employees.
- The perceived influence of the college goal for increasing external funding varied from 41% to 62%. This finding provides support that the emphasis placed on this mechanism has influenced faculty to participate in external funding initiatives. Further, these findings are consistent with the idea that goals affect the intensity, duration of effort extended by an employee.[10]
- It is encouraging to note that a substantial proportion of faculty who had not received grants still reported personal *satisfaction* with engaging in the process of submitting grant applications. Providing direct support and assistance to these individuals in submitting applications apparently was appreciated. However, providing mentoring and specific targeted assistance to these individuals would likely increase their success potential. This finding is supported by the work of Katzell and Guzzo[11] who emphasize the value in providing employees with resources to enhance work goal attainment.
- Given the values (0% to 20%) listed under the variable, recruited to *seek* external *funding,* it is reasonable to conclude the college had not actively recruited new faculty to engage in external funding initiatives. Perhaps this should be another mechanism to enhance external funding volume and one that is recommended by Katzell and Thompson.[4]
- While a few faculty reported being mentored in the process of applying for grants, this process has not received sufficient attention. Mentoring strategies need to be systematically developed and implemented across the college as another mechanism to enhance external funding volume. This strategy is also supported by the idea of developing the motives of workers through training.[6]

## SUMMARY AND CONCLUSIONS

This inquiry was undertaken to understand and explain how sustained faculty participation produced substantial increases in external funding while the organizational climate of the college became very adverse. Seven mechanisms were developed and implemented to increase external

funding by faculty in the college. The tenets underlying these mechanisms work motivation. Six of the mechanisms were implemented at or near the beginning of the five year period examined in this inquiry. The change in faculty appointment mechanism was implemented during the fifth year of this period. With the possible exception of the mechanism of establishing a research council to increase shared governance, each mechanism produced faculty perceptions that were detrimental to faculty morale and the organizational health of the college.

While faculty participation and funding increased with the implementation of the mechanisms that are supported by the literature on work motivation, other problems attributed to the college administration (e.g., centralizing resources and managerial control at the college formerly placed in the departments) seemed to foster a negative faculty mind set that may have generalized to negative views of the college's efforts to enhance external funding. The concerns of the faculty about increasing external funding were noted by Dooley[2] when he surveyed the faculty regarding barriers and inducements to grant related activities in 1993.

Finally a survey was conducted to determine whether the implemented mechanisms had influenced faculty who had submitted grant proposals during the college's growth in external funding to participate in grant-seeking processes. Perceptions of principal investigators were noted that support four of the motivational imperatives posited by Katzell and Thompson[4] and four of the mechanisms implemented to increase external funding.

In conclusion, a paradox occurred where the mechanisms designed to increase the level of faculty participation and the amount of external funding were perceived as positively influencing principal investigators, while the organizational climates became more negative. Perhaps the mechanisms were sound, but the implementation of the mechanisms may have been pursued too vigorously. For all but one of the mechanisms, faculty concerns were voiced about the impact of the mechanisms on the well-being of the organization. The college administration buoyed by the realization that the fiscal goals of the organization were being attained, did not sufficiently heed faculty concerns. In retrospect, too much, too soon with too much emphasis may have caused the paradox. Increased participation among faculty with external funding initiatives has been sustained, but it is possible this outcome could have been achieved without the corresponding costs to the college's climate.

## NOTES

A For the first six months of the 1996 reporting period, external funding totaled $8.4M dollars.

B Dooley states in the paper that follow-up contacts with non-respondents indicated that systematic non-response was not a factor in his investigation.

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