# ABSTRACT

**from the self-study on interdisciplinary teaching and research**
**conducted for the Higher Learning Commission accreditation review**
**October 2004**[1]

The purpose of this abstract is to provide background information for readers of the *Highest Order of Excellence Planning Framework*. Passages have been selected specifically as they relate to the following key questions:

- *What do we mean when we talk about" interdisciplinary activities"?*
- *What is Northwestern's history and current practice with respect to interdisciplinarity?*
- *What are some of the "creative tensions" between discipline-based department structures and interdisciplinary work?*

The selected text has been reproduced here largely without editing, with exceptions where specifically noted or where minor adjustments were needed for clarity.

## The Genesis of the Self-Study

In October 2002 Northwestern University, in close consultation with the Higher Learning Commission of the North Central Association of Colleges and Schools, chose the topic of interdisciplinary teaching and research for its special-emphasis self-study. In November 2002 Provost Lawrence B. Dumas appointed faculty committees to explore in detail four aspects of this broad topic, as follows:

- *Role of Interdisciplinarity in Graduate and Professional Education*
- *Role of Interdisciplinarity in Undergraduate Education*
- *Role of Interdisciplinarity in Faculty Research*
- *Role of Interdisciplinarity in Faculty Career Development*

The Provost requested that each committee conduct an investigation of the current situation in its area, including gathering appropriate data, and make recommendations[2]

[1] The full study may be found at http://www.northwestern.edu/provost/accreditation/index.html.

about ways in which Northwestern could further facilitate and enhance its efforts. The committees met regularly through the calendar year 2003 with a summer hiatus; each committee met seven or eight times in total, depending on the vagaries of the academic calendar. The four committees collaborated on a survey of the entire Northwestern faculty about their interdisciplinary activities and experiences, as well as a survey of the deans of Northwestern's undergraduate and professional schools to probe their attitudes, activities, and investments in interdisciplinary teaching and research. A variety of other information-gathering methods, such as focus groups and individual interviews, were also used.

## Background and Overview on Northwestern University

*Schools.* Northwestern's original school, founded in 1851, is now the Weinberg College of Arts and Sciences. Over the years additional schools were added so there are now eleven. Six of the schools teach undergraduates: the Medill School of Journalism; the School of Education and Social Policy; the Judd A. and Marjorie Weinberg College Arts and Sciences; the Robert R. McCormick School of Engineering and Applied Science; the School of Music; and the School of Communication. Three teach professional students: the School of Law; the J. L. Kellogg School of Management; and the Feinberg School of Medicine. Two schools do not maintain their own faculty, but rather draw on the faculties of the other schools: The Graduate School is the administrative entity that oversees all PhD and many master's degree programs, and the School of Continuing Studies teaches part-time pre- and post-baccalaureate students, some seeking a degree, some not. [3]

The faculties of the nine schools constitute the intellectual capital of the University. They design the curriculum, teach the courses, and carry out the scholarly and creative activities that give a Northwestern education its character and distinction.

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[2] In the interest of brevity, this abstract does not include the recommendations, which are primarily for the purpose of advising the University's central administration.

[3] The School of Continuing Studies has no full-time faculty of its own. Its classes are taught by faculty from the other schools or by qualified part-time individuals. The members of the faculty of the Graduate School all have full-time appointments in one of the schools.

Each school has a largely autonomous faculty and dean. There is an incredibly wide range of scholarly interests represented across the faculties of the schools, as well as within individual schools. To this broad intellectual spectrum, Northwestern adds two potential disjunctures: First, the School of Law and the Feinberg School of Medicine are on the semester system while the other schools are on the quarter system. (The School of Continuing Studies is in the process of switching from semesters to quarters.) Second, the medical and law schools are located in downtown Chicago, some 12 miles from the location of the other schools on the Evanston campus. Northwestern therefore needs to vigorously promote collaboration and interdisciplinary work to bind these units together into an effective whole — a university rather than a multiversity. Interdisciplinary teaching and research are central forces that hold us together.

Just what constitutes "interdisciplinary" teaching and research was often discussed by the committees, and no absolutely perfect definition could be formulated. For the purposes of this report, the committees adopted the simplest possible working definition of "interdisciplinary": teaching or research that involves activities associated with two or more departments, whether in the same school or not. This could include collaboration on a research project with someone from another department, team teaching a course with someone from another department, supervising a dissertation of a doctoral student not in one's home department, submitting a grant application with someone from another department, participating in the activities of a research center, or any number of other activities.

*Departments.* Discipline-based scholarship and teaching is intrinsic to the traditional structure of departments and is recognized and rewarded by and through them. Individuals whose work crosses these boundaries can be viewed as a danger or a loss to the department or as an opportunity to forge new links and develop new knowledge bases. The committees found that most Northwestern faculty members and administrators hold the latter view, most especially its senior leadership. Expressions of support for, and participation in, interdisciplinary teaching and research were widespread and robust; indeed, several newly appointed members of the faculty said that they had joined Northwestern precisely because of the ease with which such matters were handled here.

However, vestiges of former attitudes are still found in Northwestern's departmental administrative procedures and cultures.

*Faculty.* It is impossible to precisely quantify the number of faculty engaged in interdisciplinary teaching and research. Some do so constantly, others sporadically, and still others never. Some departments (for instance, the Department of Materials Science and Engineering in the McCormick School of Engineering and Applied Science) and some schools (for instance, the School of Education and Social Policy) are interdisciplinary at their very foundation; to be a faculty member in such a unit is tantamount to saying that one's scholarship is interdisciplinary. The faculty survey did show that (self-defined) interdisciplinary activity is quite common across Northwestern. For instance, within the past five years: nearly 50 percent of the respondents reported that they had been active in an interdisciplinary center, program, or institute; 47 percent reported that they had co-authored a paper with someone from another department at Northwestern or someone from another discipline outside of Northwestern; 50 percent were involved in an interdisciplinary professional organization; 40 percent published a paper in an interdisciplinary journal; 70 percent had attended seminars or colloquia in a different department. Additionally, more than a third had submitted a grant proposal with someone from a different department or school at Northwestern and a quarter had cotaught a course with a colleague from another department or school. Finally, more than three-quarters of all respondents agreed or strongly agreed with the statement that "my scholarship is interdisciplinary."

Attitudes about interdisciplinary teaching and research were probed in the survey, as well. More than two-thirds of respondents agreed or strongly agreed with the statement that "Northwestern's academic environment supports interdisciplinary research and teaching." However, only slightly more than half agreed or strongly agreed with the statement that "Northwestern's administrative environment supports interdisciplinary teaching and research," while 11 percent disagreed or strongly disagreed and 37 percent were neutral. Indeed, the concern of the faculty about the reward system, particularly at the department level, for interdisciplinary teaching and research was very evident in the open response portion of the survey.

While interdisciplinary scholarship is quite common, the number of faculty with formal joint appointments in two (or more) departments or schools or centers is, in comparison, far smaller. University records show that in 2002–03 about 360 individuals held such an appointment. Research centers are often a way to bring together scholars from different fields to focus on an area or problem that overlaps several fields — for instance, poverty, neuroscience, urban education, or arts criticism. Of those with joint appointments, about 200 had paid joint appointments in either two departments or in a department and a research center in 2002–03. If we omit those with paid appointments in a center, the number drops substantially —to 37. Faculty members within this group, especially those who have not yet attained tenure, are especially vulnerable to department self-centeredness and were a matter of serious concern to the committee on career development, which interviewed some of them along with their deans and the provost.

*Students.* The vast majority of both undergraduate and graduate/professional students at Northwestern complete traditional majors, gaining depth of knowledge and clarity of focus in their academic work. However, there are others who are eager for academic experiences that cross school and department boundaries. Offerings such as the Integrated Science Program, the Music Theatre Program, or the Integrated Graduate Program in the Life Sciences are bright stars in Northwestern's curricular firmament. It was evident to the two committees that looked into education that some of most venturesome and engaged undergraduate and graduate students were excited by and drawn to Northwestern because collaborations across traditional disciplinary lines are fostered and encouraged here. Their frustrations were often that the opportunities seemed far greater than their ability to take full advantage of them. (However, as their reports note, the University itself sometimes erects barriers to these opportunities.)

*A brief history of interdisciplinarity at Northwestern.* In 1948 Northwestern established the Program of African Studies. This was the first such program in the nation and the first interdisciplinary program at Northwestern. What is now the Melville J. Herskovits Library of African Studies, one of the world's great collections of Africana, was established in 1951. The Transportation Center was founded in 1954 as a joint undertaking among the School of Commerce (now the Kellogg School of Management), the Technological Institute (now the McCormick School of Engineering and Applied Science), and the Traffic Institute (now the Center for Public Safety). The Center for Metropolitan Studies (later renamed the Center for Urban Affairs and Policy Research and now the Institute for Policy Research) was established in 1954. The Materials Research Center, one of the first three in the country, was established in 1960 to exploit the intersection of physics, chemistry, and engineering.

Over the next 40 years the number of research centers grew until today we have more than 80, each with a unique mission. Some are large, some are small, some include faculty from many schools, some include just faculty from one department. Research centers play a central role in Northwestern's efforts to achieve distinction in certain focused areas. Among the notable centers are the Robert H. Lurie Comprehensive Cancer Center, with an annual budget of more than $27 million and literally hundreds of people involved in its programs; the Institute for Policy Research, with an annual research budget of $5.4 million and operational costs of $1.8 million; and the Nanoscience and Engineering Center, with an annual budget of more than $3 million.

A recent interdisciplinary program, the Cross-School Initiative, was launched in 1998. This three-year experimental program was jointly funded by the deans of the six undergraduate schools and the central administration. The central administration and the deans allocated $2.25 million to fund proposals submitted by faculty — with the only limitations being that each proposal had to engage faculty from at least two schools and each project had to have an aspect connected with undergraduate education. The deans and the provost received and reviewed 56 proposals; 19 were funded. Several of the projects have had lasting impact.

*The importance and role of interdisciplinarity.* Northwestern's centralized annual budget process puts a premium on the ability of each school to present its own best plans for new recurring funding. Put differently, absent direction from the president or provost, there is little incentive for the schools to develop programs that cross boundaries or to share school resources (course access for students, faculty time, space, equipment, etc.) Twenty or more years ago this direction was absent, and interdisciplinary activity developed on a catch-as-catch-can basis. More recently, however — and particularly under the current senior University leadership — far more emphasis has been placed on cross-school cooperation and financial and logistical structures that support and encourage interdisciplinary activities have been put into place.

In retrospect, this is a more obvious series of steps than it seemed at the time. It flows from the realization that Northwestern is a mid-sized university and can not excel in every area. Strategic choices and optimal use of resources are always operative principles in planning. A focus on emerging areas of scholarly and creative activity allows us to effectively utilize our resources and make significant impact. Such areas often lie at the intersections of established disciplinary fields and thus are interdisciplinary in their very nature.

The importance of interdisciplinarity to Northwestern's future was embodied in the 1998 document "The Highest Order of Excellence," which set out an institution-wide strategic plan. From its first page, it identifies interdisciplinary research and education as one of Northwestern's hallmarks and a foundation upon which Northwestern will build its future. The "Highest Order of Excellence" was a foundation for Campaign Northwestern, the successful $1.5 billion fundraising program concluded in 2003. Many of the capital projects funded through Campaign Northwestern are directly connected to interdisciplinary research and teaching: the Arthur and Gladys Pancoe–Evanston Northwestern Healthcare Life Sciences Pavilion; the Center for Nanofabrication and Molecular Self-Assembly; the Robert H. Lurie Medical Research Center; and Crowe Hall, the new addition to the older Kresge Centennial Hall. The latter two buildings are home to nearly all the humanities departments in the Weinberg College of Arts and

Sciences; their close proximity allows easy access to seminars and other activities. Other funds from Campaign Northwestern completed the reconstruction of the Technological Institute, home to the McCormick School of Engineering and Applied Science, and underwrote part of the construction costs of the Ford Motor Company Engineering Design Center, a new facility for the school. Two cross-disciplinary chairs were funded through Campaign Northwestern: the directorship of the Music Theatre Program (shared by the Schools of Music and Communication) and a chair in organizational behavior that is shared between the School of Education and Social Policy and Kellogg.

[ *Editor's note: Detailed descriptions of "best practice" examples, are available in the full text of the study, found at [ URL ]. Citations include: Program in African Studies; Integrated Graduate Program in the Life Sciences; Mary and Leigh Block Museum of Art; Institute for Policy Research; Alice Berline Kaplan Center for the Humanities; Robert H. Lurie Comprehensive Cancer Center of Northwestern University; VaNTH Engineering Research Center in Bioengineering Educational Technologies; American Studies Program; Music Theatre Program.* ]

## Committee Findings

### I. Interdisciplinarity in undergraduate education

In addition to convening four focus groups of undergraduate students who are pursuing a major or a minor in an interdisciplinary field, the committee analyzed information from the Committee on Financing High Education[4] Senior Surveys of 2002 and 2003 and met with undergraduate academic advisers and with the dean of undergraduate admissions.

The six undergraduate schools coordinate much of their administrative activity: they keep to a common academic calendar (the quarter system) and maintain consistent policies that affect all undergraduate students (add-drop deadlines, procedures to deal with allegations of academic dishonesty, new student orientation, and the like). However, the statutes of the University give sole authority to the faculty of each school to determine its own curriculum and graduation requirements. This has resulted in a curriculum in each school that represents the interests and expertise of its faculty and so, therefore, of its students.

[4] A group of 31 private, highly selective colleges and universities.

This breadth of intellectual outlook and curriculum is at the same time one of Northwestern's greatest strengths and potentially a serious liability.

The "school-centric" outlook manifests itself in several ways. For instance, it is by-and-large the case that the School of Communication, the School of Education and Social Policy, the McCormick School of Engineering and Applied Science, the Medill School of Journalism, and the School of Music have crafted their curriculum to serve the interests of their own field, resulting in first-rate academic and pre-professional experiences and training for majors but sometimes no space for non-majors. Areas where this is especially acute include journalism, theater, radio/television/film, and applied music. The table below shows registrations in academic year 2002–03 in each of the six schools, broken down by the home school of the student.

In looking at cross-registrations for the academic year 2002-2003, we found that Weinberg College courses are far more open to students from the five other schools than is the reverse. Pressure from students to take courses outside their home school is intense and is a worrisome issue; efforts to meet demand have been sporadic. However, the committee applauds the large enrollment in music courses designed for non-majors and the recent addition of a lecturer to the faculty in theater in the School of Communication to allow that department to teach five sections annually of a course on "acting for non-majors."

The Cross-School Initiatives is a recent effort by the undergraduate schools and the central administration to foster interdisciplinarity. A sum of $2.25 million was set aside to fund projects proposed by groups of faculty; each project had to involve faculty from at least two schools and each was required to have an undergraduate component. Eighteen projects were funded with anywhere from $30,000 to $180,000. Several projects have ended; others continue. Among the latter are the Center for Art and Technology, the Institute for the Study of Southeast Europe, the Certificate Program/Minor in Sound Design, and the undergraduate Legal Studies Program.

Northwestern has a significant number of multidisciplinary and interdisciplinary undergraduate programs:

> Majors: American studies, African American studies, Asian and Middle East studies, cognitive science, comparative literary studies, environmental sciences, European studies, integrated science, learning and organizational change, materials science and engineering, mathematical methods in the social sciences, social policy, urban studies
>
> Adjunct majors (completed in conjunction with a departmental major): gender studies (minor as well), international studies, legal studies, science in human culture (minor as well)
>
> Certificates or minors: African studies, art and technology, Asian American studies, business institutions, music business, critical theory, creative writing for the media, humanities, Jewish studies, Latin American and Caribbean studies, leadership, legal studies, music theater, service learning, sound design, transportation and logistics

Four of the schools (Weinberg, Communication, McCormick, and Music) offer students the opportunity to create their own ad hoc major under the supervision of a faculty member and/or a faculty committee. All of these are interdisciplinary by their very nature. Additionally, beyond the formally established programs that result in a major, minor, or certificate, the curriculum is dotted with interdisciplinary courses. Some are the creation of an individual faculty member with wide interests; some are the result of collaborations among several faculty members and may be team taught. Also in addition, students who complete the five year program offered by the School of Music and Weinberg College or between Music and McCormick receive a bachelor's degree from each school.

[ *Editor's Note: Detailed examples of "best practices" provided in the full text include: Business Institutions Program, Cognitive Science Program, Center for Art and Technology, School of Education and Social Policy, Integrated Science Program, Certificate Program/Minor in Sound Design.* ]

*The costs of non-departmental programs.* It is worth mention here that each non-departmental program carries with it administrative costs. First, there is a faculty director who receives a stipend or a teaching reduction or both, perhaps staff support, and an office with telephone, computer, etc. In addition, those non-departmental majors, certificates, and minors that have their own curriculum — and nearly all have at least a few dedicated courses — make use of faculty from department A, B, or C to teach these special courses. Since the number of courses that a faculty member teaches is not flexible (except if reduced!) some portion of the regular curriculum of department A, B, or C is not taught, assuming a University-wide faculty of constant size. This zero-sum game bedevils department chairs, deans, and students alike as courses disappear and enrollment patterns change. It is clear, therefore, that a non-departmental curricular program can only be successful if it has the strong backing of the dean (or deans) in the schools that contribute faculty to teaching its curriculum. That Northwestern has so many such programs is a tribute to the willingness of deans to back up with real resources faculty members interested in curricular innovation.

One other aspect of this issue deserves further mention. When strong demand leads to the creation of a new curricular program, for instance, Asian-American studies, it is typically located within a school. However, the students who will enroll in its courses typically come from throughout the University. That is, students from the other five undergraduate schools benefit, although their faculties don't contribute to the effort needed to mount the new program. Thus, either a package of new recurring resources is needed to establish and maintain this program or we rob Peter to pay Paul.

**II. Interdisciplinarity in Faculty Research**

The faculty survey revealed a staggering number of research projects that crossed department and school lines; both the variety and level of interdisciplinary research activity is enormous. Some of this collaboration is deliberately encouraged, and some arises by happenstance, serendipity, or just plain luck. The committee distinguishes between the former (roughly, a top-down model) and the latter (roughly, a bottom-up model.)

*Leading, managing, and developing interdisciplinary research.* The committee was struck with the importance of the senior leadership of the University in creating structures for exploiting opportunities for cutting-edge interdisciplinary research and scholarship. The interest, engagement, and active support of the president, the provost, and the deans in the success of such ventures cannot be overemphasized. The supplemental resources directed to interdisciplinary areas of scholarship by the leadership of the University and their continual attention to nurturing such enterprises are essential ingredients for success. Steps such as augmenting recruitment packages, providing incentives for cross-department and cross-school collaborations, and appointing deans and vice presidents — especially the vice president for research — who support such efforts are critically important, as well.

Northwestern's structure of decentralized leadership and autonomy in its schools and certain administrative structures present notable challenges to the support of interdisciplinary research, as does the physical separation of the Evanston and Chicago campuses. While there is nothing to be done with respect to the latter other than to point to the campus shuttle, the former raises many areas of concern. In the faculty survey, several issues were repeatedly mentioned as obstacles to interdisciplinary research: indirect cost recovery in those fields that rely on external funding; the importance of appropriately recognizing at the department level research and publication that lie on the boundaries of two or more traditional fields; the need to find mechanisms for allocation of resources (space, graduate student support, administrative support, and the like) that recognize research that is organized across departmental or school boundaries; and the role of centers versus departments or schools — that is, recognition by departments of grants received and work done through centers can be overlooked in department reviews of accomplishments of faculty. There are also what seem to be plain logistical problems that could be solved, e.g. the complexity of multiple review, approval, and authorization procedures when several departments are involved.

*Research centers.* Northwestern now has more than 80 research centers. Sixteen report to the vice president for research, generally on the principle that they involve faculty from

different schools. Other centers are school based, involving just faculty from that particular school; these centers report to the dean of that school. In fiscal year 1994, there was $22 million in external funding for research centers; by fiscal year 2002 this had grown to $41 million; and by fiscal year 2003 it reached just over $43 million. Clearly centers are big business.

Occasionally the work of a single individual or a small group of individuals proves to be so important that funds, external and/or internal, flow into the University to support it, and a research center springs up. This was the case when significant interest (and funding) focused on nanoscience and associated technologies. Sometimes a significant grant from a federal agency results in a new center. A recent example is the Morris K. Udall Center of Excellence for Parkinson's Disease Research, located in the Feinberg School of Medicine and funded by a $5.5 million grant from the National Institute for Neurological Diseases and Stroke.

A few centers "own" one or more faculty lines. For instance, the Program of African Studies has three faculty lines. If a faculty member in one of these lines leaves Northwestern, a search is conducted to fill that position with another Africanist; the new hire may be in the same field — say history — as the one who left, but might equally be in another field — say art history or sociology.

*"Spontaneous" interdisciplinarity.* There are a multitude of less visible but still important collaborations and interactions, sometimes serendipitous, that occur at any research university and that lead to interdisciplinary work. Faculty members from disparate fields meet by chance or by design, discover they have interests in common, and a fruitful collaboration and interesting research flows. Such interactions are often the glue that keeps talented people here and attracts promising young scholars to join us. Examples include the French Interdisciplinary Group and the Classical Traditions Initiative Group. Other potential projects are still in the formative stages — for instance, the "complexity group" meets regularly to discuss areas of mutual interest organized around the topic of complexity. [*Editor's note: During the 2003-2004 "Highest Order of*

*Excellence" planning process, the University moved ahead to provide seed funding for a formal Institute on Complex Systems.]*

Northwestern's two campuses and the many small- to mid-size buildings on the Evanston campus housing a single unit reduce the chances of random encounters of faculty with colleagues from other departments. It is critical that the University maintains or develops structures that facilitate interactions. Recent activities that promote such meetings are the Cross-School Initiatives and the Domain Dinners.

## III. Graduate and professional education

In addition to the faculty and dean surveys, the committee conducted seven focus groups with graduate or professional students and discussed issues with colleagues and department chairs.

*General observations.* Cutting-edge scholarship at the boundaries between traditional disciplines has changed the nature of graduate and professional education. Nanotechnology, the study of the human genome, and the dramatic advances in computation power are all developments of the past 20 years. Fundamental discoveries in the life sciences have recast that field repeatedly in the same period. Professional education in law and management reflects changes in our larger society; subfields of specialization such as intellectual property, cyberlaw, health law, and regulatory law have been added to the law curriculum in recent years. The relationship of business to the rest of society has assumed a larger role in professional education in management. Medical education reflects new insights and knowledge in the basic life sciences that underlie health care as well as new technologies that impact clinical practice.

Professional and graduate students, too, have pushed for changes in what and how we teach. They have often actively sought out faculty with whom they share interests, even when they are in other schools, in order to enhance their professional or graduate education. This interest in cross-department and cross-school opportunities at times directly conflicts with current enrollment policies.

Growth in the underlying knowledge base, new approaches to old material, and the development of new and more powerful technologies demand corresponding changes in graduate and professional education. Change can be very expensive in terms of money, energy, and faculty time; without it, however, education quickly becomes outmoded, stale, and eventually irrelevant.

In response to these dual pressures from students and faculty, Northwestern has added programs that are inter- or multidisciplinary, allowing their students insights in the thinking of two (or more) fields in order to strengthen their future roles as professionals. In addition to the more formally organized programs, considerable cross-disciplinary teaching at the graduate level was reported in the faculty survey.

[ *Editor's note: Examples of "best practices" in the full length report include the following: Interdepartmental Biological Sciences Program, Master of Management and Manufacturing Program; Communication Systems Strategy and Management Program; Medical Scientist Training Program; Learning Sciences MA/PhD Program; Journalism and Legal Studies Program.* ]

The advantages of inter- and multidisciplinary programs depend on the fields involved but clearly among them are the ability of graduate students to access a larger faculty base when choosing a research mentor (from, for example, the Northwestern University Institute for Neuroscience, the Interdepartmental Biological Sciences Program, or the Integrated Graduate Program in the Life Sciences) and, concomitantly, the ability of the department or school to attract excellent faculty and graduate/professional students because of the permeability of department or school boundaries. In the faculty survey some respondents noted that they came to Northwestern exactly because we made it easier for them to carry out these sorts of collaborations. Moreover, when the University's many intra- and interschool research centers are added to department and school programs, the result is an incredibly broad mix of opportunities for students and faculty.

*Survey data.* The most recent survey of Northwestern graduate students was conducted in the fall of 1999. Among the questions asked was one about taking classes outside the student's home department. Although the data is now over four years old, the committee

feels that it is worth presenting as an indicator of the interest of students in taking courses outside their home department. The survey revealed that just over half of all respondents (54 percent) had taken at least 11 percent of their courses from outside their departments. Kellogg students are by far the most likely to take courses outside their department, while those in the social and physical sciences are least likely to do so. Compared to students at peer institutions who agreed to share information with us – MIT, Ohio State, Brown, Duke, and University of Arizona -- Northwestern master's degree students are substantially less likely to take courses offered outside their home department.

*The organization of graduate and professional education.* Northwestern's statutes give sole authority over the educational program of a school to the faculty of that school. This has produced a highly decentralized collection of graduate and professional education programs. Further adding to the dispersion of responsibility, the Graduate School administers all PhD programs and many, but not all, master's degree programs. Professional master's degree programs are created and run by schools and departments, often with the object of producing a revenue stream for that unit. Even Northwestern's School of Continuing Studies has master's degree programs, as well as a multitude of post-baccalaureate programs.

Despite the successful programs discussed above, concerns about interdisciplinary graduate and professional education emerged from our focus groups, in discussions with faculty, and from the faculty survey. The issues the committee identified have just a few basic underlying causes:

- the rigidity of the department and school boundaries and the narrow view that allocation of resources is a zero-sum game
- the formal structure of graduate education imposed by the Graduate School, particularly its rules governing when graduate students can enroll and when they can not
- the inability of students and faculty to readily discover activities (seminars, classes, research opportunities) in areas outside their department home
- calendar (semester versus quarter)
- location (Chicago versus Evanston)

The latter two are matters well beyond the ability of the committee to resolve. However, the others are amenable to resolution and need to be addressed if interdisciplinary and multidisciplinary graduate and professional education at Northwestern is to flourish.

## IV. Career development of interdisciplinary faculty

The survey respondents expressed significant concern about how interdisciplinary teaching and research is assessed and valued, and this issue occupied much of the committee's attention and time. Comments of faculty members show a strong sense among many that scholarly research and/or teaching that crosses departmental (or school) lines doesn't receive the recognition that it deserves. The concerns fall into two main areas: the tenure and promotion process and the annual process connected with salary and other perks, since both processes are department based.

Among the 350 or so faculty who held joint appointments in 2002-–03, some 200 were paid by two (or more) units of the University. Many of these are paid by a department and a research center. This arrangement may be long term and represent a way of recruiting a distinguished scholar to our faculty or, more commonly, it may be a way of providing additional research time to a scholar by temporarily relieving her or him of some teaching responsibilities. Within the group of jointly paid faculty, only 37 were jointly paid by two (or more) schools or departments.[5]

The committee felt strongly that the small group of faculty with joint paid appointments in two departments or schools were both more vulnerable at promotion and tenure time (if junior) and more able to exploit the potential advantages of such arrangements. Hence, we interviewed nine such individuals to hear directly from them about their experiences. In addition, the committee interviewed five deans and the provost to further discuss the same issues. Finally, the committee examined the provost's memo on promotion and tenure concerns for faculty with joint paid appointments.

[5] This number does not include individuals who held paid joint appointments strictly within the Feinberg School of Medicine.

The interviews, along with the information gathered through the faculty survey — particularly the open response questions — raised many significant issues about the careers of faculty whose teaching and/or research is interdisciplinary. The following comments are illustrative:

> … those hired in more than one field often complain, perhaps correctly, that they have twice the number of meetings to attend and twice the number of colleagues to convince that they should be tenured.

> The promotion and retention process must recognize that interdisciplinary work means that the multiple collaborators must attend to their academic advancement, and journal selection and authorship has to be rotated. For example, in evaluating faculty, published work should be recognized in top journals in any of the fields. The journals selected for publications are in a variety of disciplines, the order of authors has different significance. The turnaround time for manuscript review is also much longer because the editors have trouble finding appropriate reviewers for interdisciplinary work, and many reviewers read the papers only from a single point of view, demanding complete rewrites of lit reviews based on their single discipline view of the literature.

> Tenure is based solely on departmental criteria.

> When all is said and done, tenure falls in the hand of just one department.

> While we manage interdisciplinary teaching in ___, it is not easy to get people credit for it. It is much easier for them to teach solely in their own departments.

> The perception [ is ] that the push towards interdisciplinarity is at the expense of discipline-based activities; the perception [ also is ] that 98 percent of all academic positions are NOT interdisciplinary so our efforts to produce such PhDs are premature.

Budgetary pressures force the Schools to demand more and more from their own faculty and discourage us from moving across the University.

Given these responses, the committee focused its recommendations on mechanisms that will help to give more recognition to interdisciplinary teaching and scholarship.

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