

Beyond Boyer: The UniSCOPE Model of Scholarship for the 21st Century

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ABSTRACT

The current system for recognizing and rewarding faculty scholarship shows preference for rewarding basic research and teaching over other forms of scholarship. Faculty and administrators need to develop a creative understanding of other forms of scholarship and how they can be effectively integrated into the promotion and tenure process. Scholarship must be understood broadly enough to adequately address the needs of the professions and the public.

UniSCOPE is a multidimensional model that conceptualizes each of the three missions of higher education—teaching, research, and service—as a continuum of scholarship. The UniSCOPE model suggests that Boyer’s functions of discovery, integration, application, and education are inherent in the three missions, and views outreach scholarship as an integral component of each. The three types of scholarship, with the media for delivery and their audiences, constitute a five-dimensional model of scholarship that can provide the foundation of a structure for identifying, recognizing, and rewarding the specific types of scholarship that apply in all disciplines and professions.

The public expects more from higher education now than ever before to satisfy the growing demands of living in an increasingly complex global society. The information age with its rapidly evolving technology demands a highly knowledgeable workforce and a civic culture of involvement and creativity. The twenty-first century presents major challenges and increased opportunities for academic scholarship. We need to address the need for disseminating and applying state-of-the-art knowledge throughout society. We need to promote integration across disciplines and between the academy and the field. Applications of knowledge to real-world issues need to be addressed in a rapid-response mode. Creativity and flexibility are required in responding to the public’s need for lifelong learning.

At the same time, the current system for recognizing and rewarding faculty scholarship is characterized by an academic culture that shows preference for rewarding basic research and resident teaching over other forms of scholarship. This creates a challenge to the academy as we move into the twenty-first century. We believe that many faculty and administrators need to develop a creative

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understanding of other forms of scholarship and how they can be effectively integrated into the promotion and tenure process. Others need to expand their perspective to recognize the value of outreach scholarship to the academy and to society. If the academy is to continue to provide intellectual and professional leadership, the faculty must have a clearer understanding of the value of outreach as scholarship. Academic scholarship must be understood broadly enough to

adequately address the needs of the professions and public. Criteria and methods of evaluation must be defined to recognize and reward all forms of scholarship equitably.

The importance of addressing these issues is well documented. The reports of the Kellogg Commission on the Future of State and Land-Grant Universities (1999) and the Carnegie Foundation for the Advancement of Teaching (Boyer 1990) are two of the most notable works in this regard. The Kellogg Commission report, *Returning to Our Roots: The Engaged Institution*, recognizes the knowledge, creativity, and capability of our colleges and universities and challenges them to become engaged in addressing community, national, and global issues.

One challenge we face is growing public frustration with what is seen to be our unresponsiveness. At the root of the criticism is a perception that we are out of touch and out of date. Another part of the issue is that although society has problems, our institutions have “disciplines.” In the end, what these complaints add up to is a perception that, despite the resources and expertise available on our campuses, our institutions are not well organized to bring them to bear on local problems in a coherent way. (*Kellogg Commission 1999, vii*)

Themes for addressing unresponsiveness highlighted in the commission's report include the need for a clear commitment to engagement, strong support for infusing engagement into the mission of the institution, diversity and creativity in approaches and efforts, leadership and funding as necessary elements, and accountability "lodged in the right place."

The Carnegie Foundation report, *Scholarship Reconsidered: Priorities of the Professoriate*, also addresses the issue directly:

What's really being called into question is the reward system and the key issue is this: what activities of the professoriate are most highly prized? . . . Ultimately, in the current scheme of things, the nation loses, too. At no time in our history has the need been greater for connecting the work of the academy to the social and environmental challenges beyond the campus. And yet, the rich diversity and potential of American higher education cannot be fully realized if campus missions are too narrowly defined or if the faculty reward system is inappropriately restricted. It seems clear that while research is crucial, we need a renewed commitment to service, too. . . . It's time to recognize the full range of faculty talent and the great diversity of functions higher education must perform (*Boyer 1990, xi, xii*).

What is the UniSCOPE Learning Community?

On March 24, 1998, a small group of faculty and administrators at the Pennsylvania State University formed a learning community to engage in a deliberative dialogue about recognizing and documenting outreach scholarship in the university. We chose UniSCOPE, University Scholarship and Criteria for Outreach and Performance Evaluation, as a title to encapsulate our mission. Our goal was to consider the meaning of scholarship in the contemporary academy and to consider the role of outreach therein. We did this in the context of the Penn State promotion and tenure system to gain a better understanding of its effect on scholarship. We quickly learned that outreach scholarship cannot be examined in isolation, and we broadened our deliberations to consider the full range of scholarship. This article articulates the main concepts of UniSCOPE as a multidimensional model of scholarship that emerged two years later, of which outreach scholarship is a key component. We also discuss our recommendations for action.

Several works pointed the way and established a fertile atmosphere for our inquiry: in particular, the Kellogg Commission report, *Returning to Our Roots: The Engaged Institution* (1999), and the Carnegie Foundation report, *Scholarship Reconsidered: Priorities of the Professoriate* (Boyer 1990). We also drew upon reports and documents from other universities including Michigan State University, *A Guidebook for Planning & Evaluating Quality Outreach* (1996); University of Wisconsin, *Commitment to the Wisconsin Idea: A Guide to Documenting and Evaluating Excellence in Outreach Scholarship* (1997); University of Oregon, *A Faculty Guide to Promotion and Tenure at the University of Oregon* (1994); and Portland State University, *Promotion and Tenure Guidelines* (1999). Penn State reports reviewed include early drafts of the report of the University Faculty Senate Committee on Outreach Activities, *Engaging Tenured Faculty in Outreach Activities* (1999); and *Making Life Better: An Outreach Inventory of Programs and Services* (1998).

What are the premises on which UniSCOPE is based?

A key premise of the UniSCOPE challenge is that all forms of scholarship should be recognized equitably. A corollary is that each form of scholarship—teaching, research, and service—should be recognized for its primary product. That is, if resident education is recognized as a valued product, then extension and continuing education should receive equivalent recognition. If basic research is

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recognized for contributions to knowledge through refereed publications whether or not its insights are applied in the field, then applied research should be recognized for applications in the field whether or not insights from the experience are extended to the literature. This is not to suggest that lessons from applications should not be commu-

nicated in the literature and theoretical insights ought not to be tested in the field. The issue is that while the logical extensions of scholarship should be encouraged, each type of scholarship should be recognized mainly for its own inherent contribution. The following sections summarize UniSCOPE and present models of teaching, research, and service scholarship that we believe provide a framework for significant steps toward meeting the UniSCOPE challenge.

Scholarship is defined as the thoughtful discovery, transmission, and application of knowledge. Academic scholarship is thus a term of the academy; similar activities in the community may go by other names. In this context, scholarship is rooted in the ideas and methods of recognized disciplines, professions, and interdisciplinary fields. Scholarship is informed by current knowledge in the field and is characterized by creativity and openness to new information, debate, and criticism. For scholarly activity to be recognized, utilized, and rewarded, it must be shared with others in appropriate ways.

Publication in scholarly journals or by respected presses, presentation at professional forums, and resident education are contemporary means for disseminating the results of scholarship in the academic disciplines and professions. The creation of applications in the field, active presentation of original works, utilization in practice settings, impacts in public policy, appearance of results in the media, seminars and workshops, electronic publication, technical assistance, and technology transfer are similarly important aspects of scholarship that bring the expertise of scholars to societal groups, communities, corporations, and governments. Qualified professionals may assess the quality of such scholarly activity, regardless of the form, as valued by the academy. Accordingly, evaluators need to consider the nature of the scholarly activity, the appropriate method(s) for evaluation, and the extent to which it effectively reaches the intended audiences or clients. UniSCOPE begins with the Carnegie Foundation (Boyer) report (1990) and extends its rationale.

How does the new paradigm articulated in the Carnegie Commission report relate to the UniSCOPE model?

The Carnegie Foundation report also referred to as the Boyer report (1990), recognizes teaching, research, and service as the traditional missions of American higher education. Boyer's consideration of the current state of the professoriate suggests that the original missions of scholarship have been lost largely due to an unbalanced reward system that favors one form of scholarship over others.

Boyer advocates replacing teaching, research, and service with four "functions" of scholarship. "The work of the professoriate might well be thought of as having four separate, yet overlapping, functions. These are the scholarship of discovery, the scholarship of integration, the scholarship of application, and the scholarship

of teaching. . . .” Boyer’s intent is to create an academic culture that recognizes the “full range of faculty talent and the great diversity of functions higher education must perform” (*Boyer 1990, xii, 16*).

The UniSCOPE learning community deliberated on the three traditional missions of the academy (research, teaching, and service) as well as the four functions proposed by Boyer, and concluded that we should not consider this as an either/or proposition. We propose a both/and model in which the three traditional missions of the academy are analogous to the forms of scholarship and Boyer’s categories identify the functions of scholarship.

How do the three traditional missions of academe express the forms of scholarship?

We believe the traditional missions of the academy express three *forms* of scholarship. Research, teaching, and service define the intrinsic characteristics and hence the forms of scholarly activity (as humans are a form of animal life and democracy is a form of government). These three forms are the fundamental building blocks of a model of scholarship. The Boyer report proposed a paradigm based on four key *functions* of scholarship: the discovery of knowledge, the integration of knowledge, the application of knowledge, and teaching. The first two functions of scholarship, discovery and integration, reflect the investigative and synthesizing traditions of academic life. The third function, application, is the engagement of the scholar in extending and applying knowledge to address consequential societal problems and to improve the quality of life; it is commonly referred to as outreach scholarship.

The Boyer report identifies teaching as a fourth function that involves scholars sharing the results of their scholarship with others. However, Boyer also recognized that teaching “means not only transmitting knowledge, but transforming and extending it as well” (*Boyer 1990, 24*). We thus believe that teaching has discovery, integration, and application aspects and consider teaching to be one of the three forms of scholarship. In its place, we propose to call the fourth function of scholarship “education.” We do this both to avoid confusion between teaching as a form of scholarship and to recognize that learning occurs in all three forms of scholarship. We therefore define the four functions of scholarship in the UniSCOPE model as discovery, integration, application, and education.

In this context and drawing upon Boyer, *discovery* involves being the first to find out, to know, or to reveal original or revised theories, principles, knowledge, or creations. Discovery includes

identifying new or revised theoretical principles and models, insights about how empirical phenomena operate, and original creations in literature, performance, or production in the arts, architecture, design, video, and broadcast media. Discovery may be made manifest through teaching, research, and service. *Integration* involves “making connections across the disciplines, placing the specialties in larger context, illuminating data in a revealing way, often educating nonspecialists, too.” Integration creates new knowledge by

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bringing together otherwise isolated knowledge from two or more disciplines or fields, thus creating new insights and understanding. Integration may occur within or between teaching, research, and service scholarship. *Application* involves bringing knowledge to bear in addressing significant societal issues. It engages the scholar in asking, “How can knowledge be responsibly applied to consequential problems? How can it be helpful

to individuals as well as institutions?” (Boyer 1990, 22). Application may occur through teaching, research, and service scholarship. *Education* involves developing the knowledge, skill, mind, character, or ability of others. It “means not only transmitting knowledge, but transforming and extending it as well.” (Note: Boyer labeled this function teaching; UniSCOPE renames this function education.) Education can occur not only through teaching but also through research and service scholarship.

Although Boyer’s stated intention was to replace teaching, research, and service with broader functions, we believe it is useful to postulate interrelationships between the two typologies. Accordingly, both the three forms and four functions of scholarship provide the fundamental framework for the UniSCOPE model. (This is the both/and relationship mentioned earlier.) The first two dimensions of the UniSCOPE model are summarized as:

- The forms of scholarship: teaching, research, and service.
- The functions of scholarship: discovery, integration, application, and education.

Each of the three forms of scholarship (teaching, research, and service) can be seen to perform all four functions (discovery, integration, application, and education). We see the relationship of the forms and functions as follows.

The mission of teaching is to instruct. In so doing, it needs to carry out education, integration, application, and discovery functions. Teaching is also a form of scholarship in the UniSCOPE model and has the manifest objective of imparting knowledge or skills to the learner and thus carrying out the education function of enlightening others. Teaching others how to use knowledge to solve problems carries out the application function. And to do so we often need to integrate material from different fields or subfields and/or to incorporate new discoveries. Finally, the process of teaching often leads to new insights and thus has a discovery function. All four functions may be manifest through teaching as a form of scholarship.

The mission of research is to establish facts, principles, and creative works through discovery, integration, application, and education. Research is also a form in the UniSCOPE model and has the manifest objective of careful study to establish facts or principles and the creation of new works or applications, thus to carry out the discovery function of creating new knowledge. To do so we often need to integrate ideas from different fields and from observation of applications. Research also has an education function when used as a pedagogical method in scientific and clinical laboratory classes, studio courses, and thesis and dissertation research to teach principles, to reveal meaning, and to stimulate creativity. All four functions may be manifest through research scholarship.

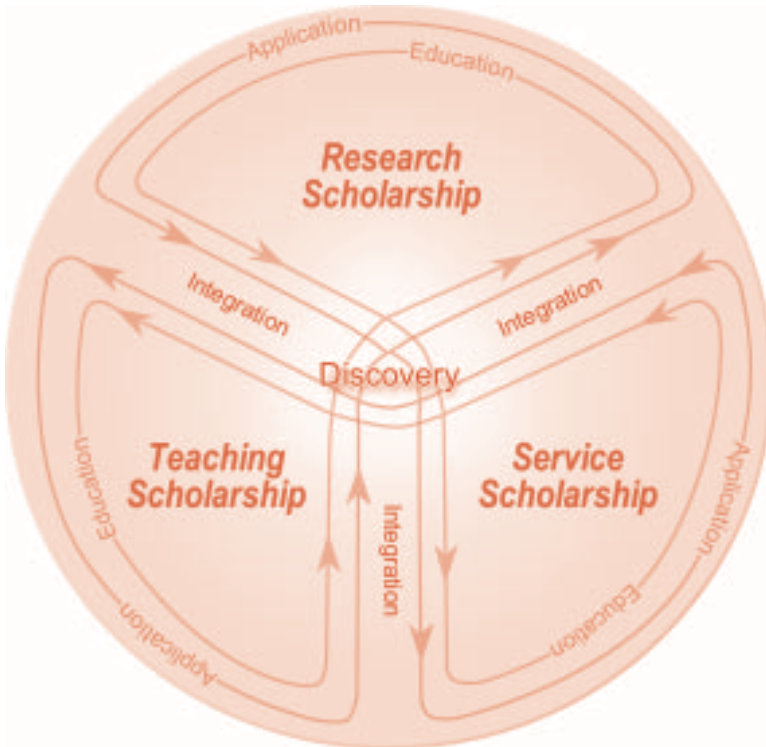
The mission of service is to bring knowledge to bear in addressing academic, professional, and societal issues through education, application, integration, and discovery. Service is also a form in the UniSCOPE model and has the manifest objective of transmitting or using knowledge and academic skills in problem solving, presenting original and creative works, and assistance to others; thus it carries out the education and application functions. Service has problem-solving rather than discipline-specific goals and typically requires integration of knowledge from several fields. As noted by Boyer below, service activities often lead to new insights, the discovery function. All four functions may be manifest through service scholarship.

In these ways, the UniSCOPE model posits that the four functions of scholarship may be manifest in all three forms. Indeed,

Boyer seems to imply a similar conclusion. “The arrow of causality can, and frequently does, point in both directions. Theory surely leads to practice. But practice also leads to theory. And teaching, at its best, shapes both research and practice.” (Boyer 1990, 15–16).

Figure 1 depicts a dynamic view of the four functions of scholarship in relationship to the three forms. The arrows depict the flow of knowledge from discovery and integration to society through education and application. It also shows that application and education, in turn, may lead to the discovery of new knowledge and its integration into one or more forms of scholarship. The UniSCOPE model of scholarship is thus a continuously iterative process wherein the knowledge and creativity of the academy are brought to the field and are, in turn, reinvigorated in the processes of application, education, and integration.

Figure 1. Dynamic View of the UniSCOPE Model



We think the main contribution of the UniSCOPE model emerges when we look at how the three forms and four functions interrelate. The intersections of forms and functions create a logical framework for classifying the traditional and familiar types of scholarship activities. Table 1 is a three-by-four table with the three forms of scholarship on the left axis and the four functions at the top. The cells of the table illustrate how the interaction of form and function creates a framework in which we can locate the full range of scholarship activities. These intersections of form and function create what we refer to as the *types* of scholarship in the UniSCOPE model.

For example, the intersection of research and discovery is what we typically call basic research and innovative creative works. Evaluation research is also a discovery activity. Similarly, the intersection of research and integration includes multidisciplinary and integrative research. The intersection of research and application includes applied and policy research, demonstrations, performances of original works, and technical assistance. Finally, research has an educational function in student laboratories, studio courses, and thesis and dissertation research, all of which use research activities to educate students about fundamental principles and concepts.

The intersection of service and discovery is manifest through faculty participation in problem-solving task forces, think tanks, and similar activities that require the creative use of faculty expertise in problem-solving situations. Service also carries out the discovery function when participation and observation during service activities lead to creative, theoretical, or conceptual insights. Service requiring integration across disciplines can be manifest in academic governance and assistance to corporations, government, and communities. Service applications include leadership in professional societies, peer-review activities, and editorship of journals and professional publications. Service applications also extend to assistance in one's field to groups, corporations, organizations, government, and communities. Finally, service carries out the education function in student advising and career counseling, advising student activities and organizations, and mentoring students. Service education is also inherent in internships and service-learning activities. Finally, expert testimony and consultation, in which the faculty member is transmitting knowledge derived from other forms of scholarship to government, corporations, and community organizations, is an educational service.

Table 1. The Forms and Functions of Scholarship

The FORMS of Scholarship		UniScope			
		DISCOVERY of Knowledge	INTEGRATION of Knowledge	APPLICATION of Knowledge	EDUCATION Transmission of Knowledge
TEACHING Scholarship	<ul style="list-style-type: none"> • basic research • original works • evaluation research 	<ul style="list-style-type: none"> • course innovation • course improvement • conceptual insights from course preparation or discussion • faculty insights from Supervision of theses and dissertations 	<ul style="list-style-type: none"> • cross-disciplinary teaching • multi-disciplinary teaching • integrative courses • capstone courses, e.g., Astro-biology; Science, Technology and Society (STS); Community and Economic Development 	<ul style="list-style-type: none"> • course innovation • course improvement • conceptual insights from course preparation or discussion • faculty insights from Supervision of theses and dissertations 	<ul style="list-style-type: none"> • course innovation • course improvement • conceptual insights from course preparation or discussion • faculty insights from Supervision of theses and dissertations
RESEARCH Scholarship	<ul style="list-style-type: none"> • multi-disciplinary and integrative research • cross-disciplinary teams • triangulation of creative works from several fields 	<ul style="list-style-type: none"> • academic governance • assistance to corporations, government and communities that involves integration across disciplines 	<ul style="list-style-type: none"> • applied research • policy research • performance of original works • demonstrations • technical assistance 	<ul style="list-style-type: none"> • student laboratories • thesis and dissertation research (the objective is educating students about the research process and methods) 	
SERVICE Scholarship	<ul style="list-style-type: none"> • participation in task forces, think tanks and other problem solving activities • creative, theoretical or conceptual insights as a result of service to society 	<ul style="list-style-type: none"> • leadership in professional societies • peer review activities • editorship of journals and professional publications • assistance in one's field to groups, corporations, organizations, government and communities • academic administration 	<ul style="list-style-type: none"> • student advising and career counseling, advising student activities and organizations • mentoring students • internships • service learning • expert testimony and consultation 		

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The intersection of teaching and the four functions also creates familiar academic activities. Types of teaching involving discovery include course innovation, course improvement, conceptual “ah-ha moments” during course preparation or discussion, and faculty insights that emerge during supervision of theses and dissertations.

Teaching integration occurs in cross-disciplinary teaching, multi-disciplinary teaching, integrative courses, and capstone courses. We consider the application function to be manifest in teaching situations where the primary impact is to have people do things differently as a result. Examples include technical, clinical, studio, and professional courses, and workshops. Finally, we consider the

“We conceptualize the ‘types’ teaching scholarship as a continuum from pure academic teaching through variations of what are typically called outreach teaching.”

intersection of teaching and education to occur where the primary impact is on the knowledge and learning skills of the student. Examples include theoretical courses, conceptual courses, and courses that educate students in problem solving, critical thinking, and creativity.

Table 1 provides a simple way to illustrate how the types of scholarship are created in the UniSCOPE model. The reader should also bear in mind that these examples are illustrative and not intended to exhaust the range of types. We expect that elaboration of the types of scholarship will emerge from deliberations of scholars in the various disciplines, departments, and fields of the academy. In the full report¹, we show how the types of scholarship identified through the UniSCOPE approach relate to the various media for delivery and the many audiences and clients for academic scholarship.

What are the five dimensions of the full UniSCOPE model?

The full range of scholarship is a much more complex and diverse phenomenon than described above. We thus conceptualize each type of scholarship as a continuum with many more types of scholarship than are identified in Table 1. Consider again Figure 1, in which the forms and functions are depicted as being continuously interrelated. For example, as research moves from discovery to application and education, it shades into teaching. As service application leads to new insights and enrichment of theory, it takes

¹The complete report, *UniSCOPE 2000: A Multidimensional Model of Scholarship for the 21st Century*, is available at <http://keystone21.cas.psu.edu/uniscope/default.htm>.

on discovery research characteristics. Therefore, the types of scholarship identified in the cells of Table 1 are only some of those that can be seen to exist. Thus, we find it appropriate to conceptualize the types of scholarship as having an infinite set of gradations, as a series of continua.

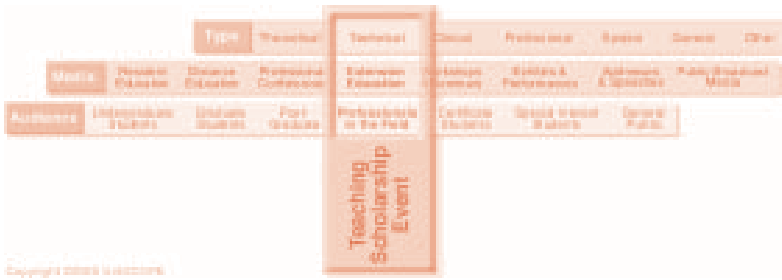
Most accurately, there is a continuum in each of the three forms of scholarship: teaching, research, and service. Moreover, the *media* for communication and transmission of scholarship and the *audiences* for dissemination are also conceived as continua in the UniSCOPE model. The complete UniSCOPE model is thus based on five dimensions of scholarship:

- The *forms* of scholarship: teaching, research, and service
- The *functions* of scholarship: discovery, integration, application, and education
- The *types* of scholarly teaching, research, and service
- The *media* for delivery of scholarship
- The *audiences* or clients of scholarship.

When taken together, these five dimensions create the UniSCOPE multidimensional model of scholarship. These five dimensions of scholarship are also each conceptualized as a continuum. The following sections show how these dimensions create the multidimensional UniSCOPE model of teaching, research, and service scholarship, and in turn, a framework for documenting the full range of teaching scholarship.

What is teaching scholarship in the UniSCOPE model?

We conceptualize the *types* teaching scholarship as a continuum from pure academic teaching through variations of what are typically called outreach teaching. We consider the types of teaching scholarship to include theoretical, technical, clinical, professional, special, and general pedagogy. The *media for delivery* of teaching scholarship may be manifest in formal, residential courses directed primarily to teaching theories, concepts, and practices of a field, profession, or discipline. Teaching scholarship may also be manifest in teaching that extends scholarship to off-campus or nontraditional audiences. Teaching scholarship includes use of instructional technologies and creates access for people at a distance to the resources of the University. The *media for delivery* may include resident education, distance and extension education, professional conferences, technical workshops and seminars, exhibits, performances, addresses,

Figure 2. UniSCOPE Model of Teaching Scholarship

speeches, and public broadcast media. Various *audiences for, or clients of, teaching scholarship* include undergraduate students, graduate students, postgraduates, professionals in the field, certificate students, special interest groups, and the general public. Scholarly teaching may thus be conceived as a multidimensional model of teaching activities.

Figure 2 combines the three continua of teaching scholarship and shows the interrelationship of these three dimensions. On the left end of the model is the teaching of basic concepts and derivations of education theories predominantly researched within the academy. The middle of the continuum recognizes the technical, clinical, and professional education that is essential to the academy. On the right are special and general types of teaching scholarship. The figure also shows the various *media* for dissemination and the several *audiences* or clients for teaching scholarship. This multidimensional model ranges from resident to external audiences, from discovery of theory to public interest education, and from written articles to public addresses. The intersection of the three dimensions of teaching scholarship can be seen as a scholarship event or academic activity that can be documented and evaluated.

The “mix and match” features of the UniSCOPE model are apparent. For example, teaching of theoretical concepts can be delivered as part of a resident education curriculum to undergraduate students. That same theoretical material could also be delivered through extension education or technical workshops to professionals in the field or certificate students. Many other combinations are also possible. We believe this model has the essential

concepts for developing a comprehensive, fair, and equitable approach to recognizing and rewarding the full range of teaching scholarship.

What is research or creative accomplishment and scholarship?

Research scholarship involves the discovery, learning, collection, interpretation, integration, or application of theories and/or facts about a particular subject, and creation of new and original works or applications of knowledge. Research scholarship has several types and is conceptualized as a continuum from basic discovery research, original performances, and creativity through applied policy and action research and technical assistance. The overall objective and expected impact of research scholarship is in addressing conceptual, technological, and social problems and enhancing the quality of life in society. Research scholarship is conceived as a continuum with several types, media for delivery, and audiences or clients.

The *types* of research scholarship are conceived as a continuum from basic research and original works through applied research to expert consultation. We consider the types of research scholarship to include basic research, original works and performances, applied and policy research, demonstration and implementation, evaluations, technology transfer, and technical assistance. Similarly, expert testimony that brings original research findings to the field, and consultation that helps create or apply new knowledge are considered research scholarship (compared to testimony or consultation that has teaching or service goals). The *media for delivery* of research scholarship include traditional channels such as refereed journals, books, chapters, original works, reports to sponsors, and non-refereed publications. Research scholarship may also be manifest in applications created, creative and artistic presentations, demonstrations and pilot projects, competitive grants and contracts, patents and licenses, exhibitions and performances, and other media for bringing research expertise to bear on addressing technological, cultural, and societal issues. Various *audiences for*,

“Research scholarship . . . is conceptualized as a continuum from basic discovery research, original performances, and creativity through applied policy and action research and technical assistance.”

or clients of, research scholarship include colleagues and professionals in the disciplines, journal subscribers, professional and scholarly organizations, corporations and communities, government agencies, and other users of research scholarship.

Figure 3 combines the three continua of research scholarship, and shows the interrelationship of these three aspects. On the left end of the model, research scholarship includes discovery research, which provides for the identification and testing of new and basic concepts and theories, their assimilation and synthesis in a discipline or across disciplines, and academic creativity that involves the creation of new and original works. The middle of the continuum recognizes integration and applications of knowledge and the demonstration and evaluation of new and innovative applications in the field. On the right are types of scholarship that interpret research findings to academic and nonacademic audiences through such activities as technology transfer, technical assistance, demonstration projects, performances, and evaluation of ongoing programs. The intersection of the three dimensions of research scholarship can be seen as a scholarship event or academic activity that can be documented and evaluated.

The “mix and match” features of the UniSCOPE model are also apparent here. For example, the results of basic research can be published in refereed journals for colleagues and professionals. That same information can also be used for creating applications through grants and contracts for corporations, communities, or government agencies. Many other combinations are also possible. We believe this model has the essential concepts for developing a comprehensive, fair, and equitable approach to recognizing and rewarding the full range of research scholarship.

Figure 3. UniSCOPE Model of Research Scholarship



The UniSCOPE model contains three continua for research scholarship, one for each of the main dimensions (type of scholarship, media for delivery, and audience or clients) that reflect what is studied, how research products are delivered, and to whom. Research scholarship events (e.g., experiments, projects, creative works, applications, and evaluations) are a “mix and match” among the three dimensions resulting in a potentially large number of permutations and combinations. Assessing research scholarship requires a system comprehensive and flexible enough to recognize the wide range of possibilities and to evaluate the quality, quantity, and impacts of scholarly results in each. The UniSCOPE model makes it clear that neither the type of research nor the medium for delivery should be defining criteria for assessing research scholarship.

Hence the primary challenge is to extend our collegial creativity in developing appropriate criteria and processes for recognizing and rewarding the full range of research scholarship. We need to initiate a process for creating comparable means of documenting and assessing the many combinations and permutations of research scholarship. The process must recognize the diversity of research in the different programs, disciplines, and units in the academy. The result must be simple, effective, and acceptable criteria comparable to refereed publications for basic research and course evaluations for resident education. This process will implement the new system and lead to all forms of research being valued.

What is service scholarship in the UniSCOPE model?

Service scholarship involves the use of academic or professional knowledge or skills for assisting or enhancing the academy, the professions, communities, government, or society. Service scholarship is informed by current knowledge and is consistent with unit and university/college missions. The objective and expected impact of service scholarship is its contribution to the efficiency and effectiveness of university, professional, corporate, community organization, and societal programs. Service scholarship has several dimensions and also is conceptualized as a continuum from service to students and the academy, through service to professional organizations, service to corporations, government, and communities.

We recognize that service scholarship may have “fuzzy boundaries” that overlap with aspects of teaching and research. In general, service scholarship is distinguished from teaching in that its main objective is to perform or to assist in performing an activity rather than to teach someone how they might do it. Service scholarship is

distinguished from research in that the objective of doing is distinguished from the objectives of creating or testing new applications in the field or learning about what is being done. Like the other forms, service scholarship has several types, has a range of media for delivery, and has several audiences.

The *types* of service scholarship may be manifest in student advising, academic governance and decision making, academic administration, leadership in professional societies, assisting corporations and communities, and consulting based on the scholarly expertise of the faculty member. We consider the types of service scholarship to include advising, academic governance and administration, leadership in professional associations and societies,

Figure 4. UniSCOPE Model of Service Scholarship



assisting corporations and communities, and consulting in the field of expertise of a faculty member. The *media for delivery* of service scholarship include one-on-one assistance to organizations, task force participation, committee work, public meetings, and group or public presentations. As with the other forms of scholarship, faculty service is scholarship inherent in the application of appropriate expertise to an issue or problem and not because of the means by which it is delivered. The *audiences or clients for service scholarship* include individual students, colleagues, and members of the public; service may be performed through work with groups and organizations, as well as governments and communities. Audiences also include resident and nonresident students, colleagues and organizations in the various disciplines and professions, academic departments, colleges, and other units of the university, as well as governments, corporations, private and nonprofit organizations, and communities.

The breadth and depth of scholarly service may thus be conceived as a multidimensional model of activities. Figure 4 combines the three continua of service scholarship. It shows the interrelationship of these three aspects of service scholarship. The types of service scholarship include what are traditionally known as academic service, involving activities that support students, faculty, administration, and the discipline(s) or field(s) of a scholar. Service scholarship also includes outreach service that extends specific expertise and creative capabilities to serve society at large; it may include participation on advisory boards, involvement in technology transfer projects, exhibitions and performances, policy analysis and consulting based on academic programs, or the advancement of a department or unit mission. The intersection of the three dimensions of service scholarship can be seen as a scholarship event or academic activity that can be documented and evaluated.

The “mix and match” features of the UniSCOPE model apply here as well. For example, academic advising and career counseling are often provided through one-on-one assistance to resident students. These services may also be provided to non-resident students. Service involving assisting corporations or communities could be one-on-one, through task forces, or through public participation to organizations. Many other combinations are also possible. We believe

this model has the essential concepts for developing a comprehensive, fair, and equitable approach to recognizing and rewarding the full range of service scholarship.

The primary challenge is to extend our collegial creativity in developing appropriate criteria and processes for recognizing and rewarding the full range of service scholarship. We need to initiate a process for creating

comparable means of documenting and assessing the many combinations and permutations of academy service scholarship. The process must recognize the diversity of service in the different programs, disciplines, and units in the academy. The result must be simple, effective, and acceptable criteria comparable to refereed publications for service to the academy, the professions, and to society. It will provide for implementing the new system and lead to all forms of service scholarship being valued.

“[F]aculty service is scholarship inherent in the application of appropriate expertise to an issue or problem and not because of the means by which it is delivered.”

What about the “fuzzy boundaries” of some forms of academic scholarship?

Many examples of academic activity simultaneously provide one or more of the three forms of scholarship. In other cases, the form of scholarship may be relative to the audience and purpose of the specific scholarly event. For example, applied or policy research may involve both discovery and theory testing simultaneously with service to a government, corporation, or community. Clinical teaching scholarship may also include research involving testing theories and concepts. When multiple activities occur, each should be recognized for its inherent scholarly contributions.

Where is outreach in the UniSCOPE model?

In the UniSCOPE model, outreach is not a separate form of scholarship. Outreach is a concept that describes a wide range of scholarly activities that involve mainly the integration, education, and application functions of scholarship. We also recognize that important discovery events frequently occur in outreach activities; outreach is not synonymous with “service,” nor is it limited to cooperative extension and continuing education. Rather, outreach is inherent in all of the missions of the academy, specifically, teaching, research, and service. As a result, the UniSCOPE model of scholarship includes what has been traditionally called “outreach” as an integral part of the scholarship of teaching, research, and service.

Where do we go from here?

Engagement in addressing both academic and societal challenges has been a keystone of contemporary scholarship. We believe the UniSCOPE model provides a paradigm for engaging the academic community in the full range of scholarship. While our deliberations revealed that no single list of characteristics can adequately encapsulate the disciplinary and professional diversity of scholarship that exists, we offer the UniSCOPE model as a framework on which the disciplines and professions, departments, colleges, and campuses can find common ground and develop appropriate criteria.

UniSCOPE is a multidimensional model that conceptualizes each of the three mission areas of the academy—teaching, research, and service—as the forms of scholarship. UniSCOPE also recognizes that the functions of scholarship—discovery, integration, application, and education—are inherent in these three forms of scholarship and views outreach scholarship as an integral component of each. Finally, the types of scholarship, the media for delivery,

and the audiences for scholarship can each be seen as a continuum. These five dimensions are used to create a multidimensional model of scholarship.

This conceptualization of scholarship as a multidimensional model with continua in all three missions provides a framework for recognizing and rewarding all types of scholarship. We also recognize that establishing specific criteria for the documentation of scholarship is a faculty prerogative that should recognize the similarities and differences of the various academic disciplines and professional fields. It is our belief that the collegiality, dedication, and creativity of faculty will allow a culture to emerge that acknowledges and rewards all forms of scholarship.

President Graham Spanier of the Pennsylvania State University posits the goal as providing leadership in the integration of teaching, research, and service.

This model centers on the integration of our missions, the rapid deployment of our resources, collaboration across disciplines and delivery units and partnerships with a wide variety of public and private organizations. Fused with a number of program priorities in areas that impact greatly on the quality of life—areas such as information science and technology; children, youth, and families; the life sciences; materials science; and environmental concerns—our model will make a significant contribution to the Commonwealth’s economic and community development and make life better for Pennsylvanians. (*Spanier 1998*)

In conclusion, the UniSCOPE learning community challenges our colleagues and the administration to implement a model of scholarship for the twenty-first century that equitably recognizes the full range of teaching, research, and service scholarship. We offer the multidimensional UniSCOPE model as a foundation on which the scholars of all disciplines and professions can build a structure for identifying, recognizing, and rewarding the specific types of scholarship that apply in their fields. Our recommendations are a challenge to the academic community to apply its individual and collective creativity and expertise to refine and implement the UniSCOPE model. We believe the result will be the emergence of a more fair and equitable system for documenting, recognizing, and rewarding the full range of scholarship in the twenty-first century. In this way, the academy will engage society in making life better.

References

- Barrett, Katherine J., Edward Bartlett, Elizabeth Ann R. Bird, Leonard S. Bull, Lorna Michael Butler, Dennis R. Keeney, Richard M. Klemme, Laura L. Lengnick, J. Patrick Madden, and Carolyn Raffensperger. 1998. *Incentives and barriers to public interest research and scientific public service*. Madison, Wis.: Consortium for Sustainable Agriculture, Research and Education and the Science and Environmental Health Network.
- Bonnen, James T. 1986. A century of science in agriculture: Lessons for science policy. *American Journal of Agricultural Economics*, 68(5): 1065–80.
- Boyer, Ernest L. 1990. *Scholarship reconsidered: Priorities of the professoriate*. Princeton, N.J.: The Carnegie Foundation for the Advancement of Teaching.
- Chang, Yu-bi. 1998. *Evaluation of university outreach: Views from Penn State faculty*. University Park, Pa.: Department of Adult Education, Instructional Systems, and Workforce Education and Development.
- Chawla, Sarita, and John Renesch, eds. 1995. *Learning organizations*. Portland, Ore.: Productivity Press.
- Driscoll, Amy, and Ernest A. Lynton. 1999. *Making outreach visible: A guide to documenting professional service and outreach*. Washington, D.C.: American Association for Higher Education.
- Handy, Charles. 1995. Managing the dream. In *Learning organizations*, edited by Sarita Chawla and John Renesch, 47. Portland, Ore.: Productivity Press.
- Kaplan, Abraham. 1964. *The conduct of inquiry*. San Francisco: Chandler Publishing Co.
- Kellogg Commission on the Future of State and Land-Grant Universities. 1999. *Returning to our roots: The engaged institution*. Washington, D.C.: National Association of State Universities and Land-Grant Colleges.
- Kofman, Fred, and Peter Senge. 1995. Communities of commitment. In *Learning organizations*, edited by Sarita Chawla and John Renesch, 33. Portland, Ore.: Productivity Press.
- Lasswell, Harold. 1971. *A pre-view of policy sciences*. New York: American Elsevier Publishing Co.
- Michigan State University. 1996. *A guidebook for planning & evaluating quality outreach*. East Lansing, Mich.: Michigan State University, Board of Trustees.
- Michigan State University. 1996. *Evaluating quality outreach*. East Lansing, Mich.: Michigan State University, Board of Trustees.
- Pennsylvania State University, Senate Committee on Outreach Activities. 1999. *Engaging tenured faculty in outreach activities*. University Park, Pa.: Pennsylvania State University.
- Pennsylvania State University. 1998. *Making life better: An outreach inventory of programs and services*. 1998 ed. University Park, Pa.: Pennsylvania State University.
- Portland State University. 1999. *Promotion and tenure guidelines*. Portland, Ore.: Office of Academic Affairs, Portland State University. (<<http://www.oaa.pdx.edu/OAADOC/PTGUIDE/Introduction/introduction.html>>).
- Ryan, James H. 1997. Creating an Outreach Culture. *Journal of Public Service and Outreach* 2(1): 27–34.

- Spanier, Graham B. 1998. A message from the president. In *Making Life Better: An Outreach Inventory of Programs and Services*. 1998 ed. p. 3. University Park, Pa.: Pennsylvania State University.
- Sullivan, William M. n.d. *The university as citizen: Institutional identity and social responsibility*. Washington, D.C.: Council on Public Policy Education.
- University of Oregon. 1994. *A faculty guide to promotion and tenure at the University of Oregon*. Eugene: University of Oregon.
- University of Wisconsin. 1997. *Commitment to the Wisconsin idea: A guide to documenting and evaluating excellence in outreach scholarship*. Madison, Wis.: Council on Outreach.

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