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The authors argue for integrating Boyer's four domains through the pursuit of public scholarship.

The Public Scholarship: Reintegrating Boyer's Four Domains

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The case that all dimensions of academic work, not just research, should be valued has been well advanced by the articulation of multiple domains of scholarship, specification of how to evaluate them, and investigation of the extent to which faculty engage in them and administrators evaluate them. There may be hidden hazards to articulating and evaluating the domains of academic work separately, however. The more that academic work is conceived as separate tasks, the less likely it is that faculty may be able to accomplish their professional work as an integrated whole (Colbeck, 2002). In this chapter, we argue for public scholarship as a professional model of academic work that resynthesizes the scholarly domains, while valuing their interdependent contributions to the whole. Public scholarship is

> scholarly activity generating new knowledge through academic reflection on issues of community engagement. It integrates research, teaching, and service. It does not assume that useful knowledge simply flows outward from the university to the larger community. It recognizes that new knowledge is created in its application in the field, and therefore benefits the teaching and research mission of the university [Yapa, 2006, p. 73].

Because public scholarship integrates all domains of faculty work, it must meet the criteria for scholarship articulated by Hutchings and Schulman (1999): it involves systematic inquiry and results in publicly

observable community property that is open to critique and available for others to use and develop. The concept and practice of public scholarship evolved from the land grant university mission of developing, disseminating, and applying knowledge as part of enlightened and effective participation in democracy (Cohen, 2001) and recent reconceptualizations of faculty work (Boyer, 1990; Kellogg Commission on the Future of State and Land-Grant Universities, 2000).

Labeling and Evaluating Different Domains of Academic Work

Concerned that the core teaching, research, and service purposes of academic work are increasingly fragmented and unbalanced, authors of two national reports renamed these purposes in an effort to reframe faculty work. Ernest Boyer, then president of the Carnegie Foundation for the Advancement of Teaching, proposed in 1990 that faculty work should be understood in terms of "four separate, yet overlapping functions" (p. 16): the scholarships of discovery, integration, application, and teaching. Similarly, the authors of the Kellogg Commission *Reports on the Future of State and Land-Grant Universities* argued in their sixth report (2000) that such institutions describe their responsibilities as learning, discovery, and engagement to renew their covenant with the public.

When the four domains of scholarship were articulated in *Scholarship Reconsidered* (Boyer, 1990), many higher education administrators and faculty were pleased with the well-reasoned argument that several dimensions of faculty work should be evaluated, and therefore valued, as much as research or discovery. Boyer asserted that "the full range of faculty talent must be more creatively assessed" (p. 34) because the scholarships of integration (interpreting and making interdisciplinary connections), application (engaging in the solution of socially consequential problems), and teaching (transmitting, transforming, and extending knowledge) might remain undervalued if ways to evaluate them fairly remained ambiguous.

Glassick, Huber, and Maeroff addressed the problem of how to bring clarity and some degree of uniformity to the evaluation of all four domains of scholarship in *Scholarship Assessed* (1997). Their criteria for evaluating the scholarships of integration, application, and teaching mirrored long-accepted criteria for evaluating the scholarship of discovery, commonly known as research. They asserted that work in each domain is scholarly to the extent that the scholar has (1) stated important and achievable goals, (2) demonstrated adequate knowledge of relevant literature and skills, (3) applied appropriate methods effectively, (4) achieved goals that add to knowledge in the field, (5) presented results clearly and with integrity, and (6) critically reflected on the value of the work. Although communicating the results of scholarships of discovery, application, integration, and teaching need not be

restricted to refereed publications, Glassick, Huber, and Maeroff insisted that scholarly work must be documented to allow for peer review.

Various ways of documenting discovery, application, integration, and teaching were explored by Braxton, Luckey, and Helland (2002). They investigated the extent to which each of the four forms of scholarship has become institutionalized using documentation of faculty activities, unpublished scholarly outcomes, and publications as evidence. Their 1999 survey of nearly fifteen hundred faculty at five types of institutions showed that despite efforts to value all domains of academic work, the scholarship of discovery is still perceived as the most legitimate and important domain.

Consequences of Differential Evaluation of Work Domains

An unintended consequence of teasing apart the various domains of faculty scholarship may be reinforcement of a trend to divide the synergistic complexity of faculty work into distinct and ever more separable components. Boyer acknowledged that there might be some danger in dividing "intellectual functions that are inseparably tied together" (p. 25). Separating discovery, application, integration, and teaching into distinct categories for evaluation may do as much to fragment faculty work as the traditional distinctions among research, teaching, and service (Colbeck, 1998).

Faculty tend to allocate more time and attention to the tasks they believe are most closely evaluated (Dornbusch, 1979). If they believe that the evaluation of research has the most impact on their rewards, for example, they will spend more time on research at the expense of other scholarly activities. Similarly, service, variously called outreach (Lynton, 1995), the scholarship of application (Boyer, 1990), or the scholarship of engagement (Checkoway, 2001), is often perceived as distinct from and less important than research or teaching; therefore, faculty devote less time to this domain (Ward, 2003).

The most innovative and vulnerable faculty may be particularly susceptible to the dangers of depicting their work in ways that differ from conventional separate categories. Even when a college or university has reconsidered scholarship along the lines advocated by Boyer (1990), assistant professors find it necessary to communicate their academic accomplishments in separate research, teaching, and service categories in their promotion and tenure dossiers. Huber (2004) compares experiences of junior faculty engaged in chemistry education in two universities. One chemist allocated his many integrated activities into the traditional categories recognized by his university and secured tenure with ease. The other initially "tore out the dividers still labeled 'teaching,' 'research,' and 'service' and reorganized her material to emphasize the integrated nature of her work" (Huber, 2004, p. 5). Although her university had recently emphasized the

integration of academic work, this chemist was promoted only after she separated her academic accomplishments to fit the conventional categories.

Separation of academic work into distinct categories also risks its devolution into bureaucratic division of labor. Complex work can be managed by dividing tasks among individuals who specialize in one area (Scott, 2003). An ever increasing proportion of faculty have teaching as their primary or sole responsibility, and most of them are ineligible for tenure (Gappa, 2000). Tenure track faculty, especially at research and doctoral-granting universities, experience ever more pressure to spend most of their time on discovery and publication. As faculty spend less time on service or the scholarship of application, nonfaculty student affairs and outreach professionals have assumed more responsibility for performance of college and university community service obligations. Perhaps because faculty do not have enough time to accomplish the many demands of each separate domain of their work satisfactorily (Fairweather, 2002), academic labor is being subdivided among various specialized workers who are increasingly managed by administrators and thereby deprofessionalized (Rhoades, 1998).

Public Scholarship Reintegrates the Domains of Academic Work

Academic work need not be subdivided. While bureaucratic organizational structures deal with complexity by subdividing labor, a professional model for organization relies on the performance of highly educated, flexible, complex workers who are able to handle nonroutine problems independently and draw on their expertise to make connections across different elements of their work (Scott, 2003). Individual faculty may conduct academic work in an integrated way, using their research to inform their teaching, their service and teaching as sources of ideas for their research, and their teaching as opportunities to provide service to the community as well as foster student learning. Judith Ramaley, now in her third university presidency, asserts that "it is possible to blend" all domains of "intellectual activity into a distinctive whole" (2000, p. 11).

Empirical research shows that as faculty enact their work on a daily basis, they often engage in tasks that combine two or more domains, whether the domains are labeled "research, teaching, and service," "discovery, application, integration, and teaching" (Boyer, 1990), or "discovery, learning, and engagement" (Kellogg Commission, 2000). In two studies involving daily observations of faculty, Colbeck (1998, 2004) documented that twenty-five assistant, associate, and full professors of English, chemistry, and physics accomplished teaching and research purposes simultaneously between 8 and 34 percent of the time they devoted to work activities.

Public scholarship involves faculty accomplishing academic work in a way that integrates service/application/engagement with discovery/research

and teaching/learning. According to Jeremy Cohen (2001), associate vice provost for undergraduate education at The Pennsylvania State University, "Public scholarship is a means of conceptually organizing the way we think about the integration of civic participation, research, and general and domain based discovery through teaching and learning" (p. 242).

Public scholarship is not a separate faculty role, so does not add further demands to an already overworked faculty. Instead, public scholarship *is* academic work, reframed as a unified whole, enabling faculty members to accomplish multiple scholarship goals simultaneously and thereby improving the overall efficiency and effectiveness of their academic work. The following conditions for public scholarship are essential (adapted from Glassick, Huber, and Maeroff, 1997):

Faculty, students, and community members together identify clear goals and research questions for inquiry into a problem that addresses a real-world issue.

The inquiry is grounded in a thorough review of relevant prior research.

Appropriate investigative methods are used for systematic inquiry that addresses the research questions.

The results of the inquiry are presented in a form suitable for review and critique by peers of the faculty, students, and community members.

Faculty, students, and community members have opportunities together and separately to reflect on the contribution of their efforts to their own and one another's learning and to the ideal of developing and sharing knowledge as a public good.

Public Scholarship at The Pennsylvania State University

A growing group of faculty and administrators at Penn State are conducting public scholarship, approaching their work as professionals who integrate all scholarly domains. Originating in 1999 with five faculty led by Jeremy Cohen, the Public Scholarship Associates articulated a set of goals to recruit other faculty, create opportunities for meaningful participation, develop a center to foster public scholarship, and share public scholarship in ways that recognize faculty members' integrated scholarly contributions.

Within two years, the number of Public Scholarship Associates had grown to forty faculty from geography, philosophy, electrical engineering, rural sociology, political science, communications, and higher education departments. Small grants funded by various campus offices and the Pennsylvania Campus Compact were offered to faculty who incorporated public scholarship into their undergraduate courses. Awardees also became Public Scholarship Associates.

The group meets several times each semester to interact with community representatives, plan an undergraduate minor in civic engagement, and

explore the meaning and practice of public scholarship, along with under-graduate poster exhibitions and day-long seminars on public scholarship. "The creation of Public Scholarship Associates bestowed a sense of institutional legitimacy to the people who are striving to broaden a grass roots constituency for promoting public scholarship, both within the university and beyond" (Cohen and Yapa, 2003, p. 7).

Public Scholarship Associates at Penn State find ways to integrate all domains of their work. Examples of public scholarship in psychology, geography, and architectural engineering show how faculty enrich their teaching with their research, inform their research with lessons learned from the community, and involve their students in research with community partners for the benefit of the public good (Colbeck, 2002).

Psychology as Public Scholarship. Children and adolescents' development of social competence is the focus of Jeffrey Parker's discovery/research. This associate professor of psychology investigates friendship, loneliness, and bullying behaviors among middle school students. Parker also teaches an undergraduate course focused on adolescent social competence (Parker and Walker, 2003). In the course, undergraduates work in teams to provide local middle school students with workshops on social skills, bullying, and school violence. In weekly sessions with Parker, undergraduate participants review and critique the theories and research about factors that place children at risk and about effective interventions. They also present their proposed workshops to get feedback from Parker and their peers before presenting them to the middle school students. Undergraduates in the practicum engage in scholarship as they write process notes, relate their experiences in schools to relevant literature, and prepare case study analyses of the needs and progress of particular children, which are available for review by their peers and Parker.

Parker's research informs his teaching of the course, but the experiences of the undergraduates also inform his research. Parker acknowledges that ideas learned from his undergraduate colleagues provide new ideas and insights for his own discovery and publications, which are often coauthored with students (see, for example, Parker, Low, Walker, and Biggs, 2005). Parker has also received funding from the National Science Foundation for his public scholarship course.

Three principles guide Parker's public scholarship. First, the focus is on serious intellectual engagement rather than on volunteerism. Second, the learning goal is improving students' understanding of how "rigorous scientific inquiry can inform efforts to improve children's lives, and vice versa" (Parker and Walker, 2003, p. 19). Third, the service is designed to be sustained and to improve children's lives. A recent evaluation of the project in the schools showed that more than 90 percent of the 180 middle school students involved in the intervention program found it helpful.

Public Scholarship to Address Causes of Poverty. Lakshman Yapa, professor of geography, announces on his Web site that his current research project "is an academic program that integrates research, teaching, and service learning in West Philadelphia" (Yapa, 2005). Weaving together theories of economics, postmodern discourse, and geographical information systems (GIS), Yapa argues that economic solutions fail to address poverty. Yapa works with undergraduate and graduate students who participate in his project and course for academic credit, "Rethinking Urban Poverty." During summers in West Philadelphia, they work with neighborhood residents to explore causes of poor nutrition, quality of life, and ill health. Commuting costs, for example, depend on the geographical distribution of residences and jobs, available modes of transport, and insurance rates. Finding ways to reduce transport costs of inner-city residents becomes a way to increase their effective income. Improving the sense of personal agency for students and neighborhood residents is a goal of Yapa's integrated work. He asserts that "while public scholarship and service learning benefit the community, they also help the university tremendously by producing a different kind of graduate capable of critical thinking with a high sense of civic responsibility" (Yapa, 2003, p. 51). Yapa encourages students to use their specialized academic competencies to serve the community in ways that are proportionate to their power. In addition to Yapa's own recent publications on geography, globalization, and poverty, his project Web site includes publicly available evidence of students' scholarship: their abstracts of projects on topics ranging from computer mapping of neighborhood resources to community nursing centers to street poetry and music.

Engineering for Sustainability. Public scholarship for architectural engineer David Riley involves green building, sustainability, environmental awareness, and engineering education. This associate professor brings industry experience and a commitment to sustainable living to his work as an integrated professional. Riley's American Indian Housing Initiative (AIHI) involves a partnership with Chief Dull Knife College of the Northern Cheyenne Nation. Undergraduate and graduate students participate in a year-long three-part program. A spring lecture course combines information about American Indian culture, history, and sociopolitics with information about sustainable building technologies (Grommes and Riley, 2004). During the summer, students collaborate with tribal members to build a green home or community building on the reservation in Montana using straw bale construction, including a center for the general equivalency diploma program, a technology center, and a day care center for the college. Informal feedback from the Northern Cheyenne includes expressions of gratitude for the partnership, especially because the AIHI group returns every summer, unlike other research teams.

A concluding fall semester course engages students and instructors in critical reflection on the summer experience and on future application of sustainable technologies for the Northern Cheyenne and themselves. Riley is engaged in an intensive scholarship of teaching effort to understand how public scholarship about sustainability affects learning for students, instructors, and tribal members. He has presented peer-reviewed results of his scholarly inquiry into this community teaching effort at national and international conferences (Grommes and Riley, 2004; Riley, 2004). He is working with engineering colleagues at Penn State and other universities to explore the relationship between public scholarship and sustainability education and other community partners. In addition, Riley publishes results of research conducted about the construction in engineering and education journals.

Interdisciplinary Collaboration: The Enfranchisement Project. Public Scholarship Associates at Penn State have also fostered interdisciplinary collaboration. During 2001, several faculty and graduate students met informally and regularly to explore issues of voter enfranchisement. Led by Jeremy Cohen, a professor of communications as well as associate vice provost of undergraduate education, six faculty engaged their students and one another in efforts to examine the processes that developed as Pennsylvania voters went to the polls for the 2000 U.S. presidential election.

Early in spring semester, faculty in communications (Richard Barton), political science (Robert O'Connor), agriculture extension and education (Constance Flanagan), geography (Lakshman Yapa), and higher education (Carol Colbeck) met with Cohen to explore creative approaches to fostering students' civic understanding while improving participative democracy. The faculty shared information about their courses and considered how to involve students in public scholarship projects about enfranchisement. Students in Yapa's course learned GIS by mapping Pennsylvania counties by size, ethnicity, age, and income level of the population. In O'Connor's political science course, undergraduate students contacted officials in each county to ascertain the voting method used and percentage of overvotes (more than one candidate selected for a single office) and undervotes (no candidate clearly selected) for president. Students in the introductory communications course supervised by Barton learned about media effects by studying the role of newspapers, television, and the Internet on the progress and outcomes of the 2000 election. Doctoral students in Flanagan's course on youth civic engagement developed and administered a survey to students in the introductory communications course to investigate the effect of the unit on students' perceptions of media use and consequent development of a sense of responsibility regarding the democratic process and presidential elections. The doctoral students presented their findings at an international conference (Moses and Wharton Michael, 2003).

Faculty working on the enfranchisement project offered each other feedback about their course designs and provided helpful literature and

resource person contact information. They also explored connections between their individual discipline-based public scholarship endeavors. A graduate student working with Yapa, for example, used GIS methods to map the information gained from O'Connor's class about voting methods and patterns of over- and undervoting across Pennsylvania counties. The group discussed publishing the results of their interdisciplinary efforts but did not, in part because the events of September 11, 2001, overwhelmed attention to other civic engagement issues and in part because the faculty members felt they needed to retreat to their own department to fulfill disciplinary responsibilities. Nevertheless, the enfranchisement project demonstrated how faculty engaged in public scholarship made connections across disciplines as well as between the various domains of their academic work, thereby enhancing their discovery, application, integration, and teaching and their students' learning.

Evaluating and Rewarding Public Scholarship

Public scholarship at Penn State shows how the different domains of academic work can be integrated and how the resulting products can and should be even more intellectually rigorous than discovery, application, or teaching by themselves. More remains to be done, however, to recognize, evaluate, and reward public scholarship as wholly integrated and intellectually rigorous academic work. According to Ramaley (2000), "Definitions of faculty work incorporated into faculty promotion and tenure guidelines [should] reflect sufficient breadth to recognize work that is community-based, interdisciplinary, and collaborative. Broadening the concepts of scholarly work will be extremely difficult unless a campus devises credible and effective ways to document and evaluate all forms of scholarship and a broad range of pedagogies" (p. 13).

An original goal of Penn State's Public Scholarship Associates was "the sharing of public scholarship teaching, research, and service within our own academic community in ways that recognize its scholarly basis for purposes of professional development as well as for tenure and promotion and salary recognition of performance" (Cohen and Yapa, 2003, p. 6). At Penn State, as at most other colleges and universities, faculty are still evaluated as if the different domains of their work are entirely separate. For annual reviews and promotion and tenure dossiers, faculty must document research publications, presentations, and grants in one section; teaching courses, advising students, and course development in another section; and service to institution, profession, and the community in a third section. There are early signs of recognizing the integrated complexity of faculty work, however. Penn State promotion and tenure forms were recently amended to include in the research section "description of outreach or other activities in which there was significant use of candidate's expertise."

Integrated academic work—public scholarship—should be subject to the same scholarly review that Glassick, Huber, and Maeroff (1997) advocate for each separate domain of academic work. Public scholarship should have clear goals, adequate preparation, appropriate methods, significant results, effective presentation, and reflective critique. External evaluators and promotion and tenure committees should be able to see evidence of original and creative contribution to knowledge, peer and client review, demonstrated effectiveness, and broad dissemination (O'Meara, 2002). The documents that faculty prepare for evaluation should indicate the ways and the extent to which each domain of their work informs and reinforces the others (Colbeck, 2002). Faculty might also explain how their discovery/ research informs course work that responds to both students' and community members' needs or how their application/service contributes to research by addressing current and important social, political, economic, or environmental issues.

Implications for Institutional Research

Institutional researchers may wish to collect and analyze data about public scholarship in terms of faculty workload, faculty productivity, or student learning. Many institutions currently collect faculty workload information in average hours per week or percentage of time allocated to the mutually exclusive categories of teaching, research, and service. Combining Boyer's four domains with a public scholarship approach, such forms might be modified to elicit information about allocation of time solely to discovery, integration, application, and teaching as well as how much of each faculty member's time is allocated to two or more domains at the same time. For example, faculty might be asked to document the extent to which the time they spent on teaching also advanced development of new knowledge (discovery) or contributed to community development (application). With this information, institutional researchers could assess the extent to which faculty members accomplish more than one academic goal at the same time (Colbeck, 1998, 2002).

There may need to be only minor changes in the way institutions account for faculty productivity. Examples provided by Jeffrey Parker, Lakshman Yapa, and David Riley show that public scholarship results in external funding and refereed publications and presentations about the disciplinary research as well as scholarship of teaching in well-respected journals, disciplinary conferences, and academic presses, as with any other scholarship. Faculty also produce student credit hours for the courses taught that incorporate disciplinary-based learning in service with the community. Institutional researchers may account for one additional aspect of faculty productivity that results from public scholarship: number and depth of relationships with community partners. Records and accounts of university-

community partnerships that foster discovery, integration, application, and teaching may well enhance town-gown relations.

Institutional researchers may wish to investigate the extent to which participation in public scholarship enhances student learning of disciplinary knowledge and fosters attitudes and actions indicative of active participation in democracy. They could compare student learning outcomes for students in public scholarship courses with those in traditional lecture courses and active learning courses that do not have a community engagement component. Researchers might accomplish these goals by adding new questions to the rating forms students complete about courses at the end of each term, or they may design separate surveys to collect these data from students.

Conclusion

Public scholarship enables faculty, students, and community members to work together to define real-world problems in all their complexity and then to cooperate on the process of addressing those problems. Reframing academic work as public scholarship fosters faculty engagement in and administrator and peer evaluation of professional work as an integrated whole that is more than the sum of its parts. Faculty who conduct public scholarship view their discovery, integration, application, and teaching scholarships as a complex and interrelated public resource that leads to publication-worthy discovery while also actively engaging students in meaningful learning with real-world problems in partnership with the community outside academe (Cohen, 2001).

The more that organizational evaluations encourage faculty to envision and document their academic work as an integrated whole, the more individual faculty will have personal goals for their work consistent with public scholarship, feel capable of conducting public scholarship, and believe that their work context is supportive of their engagement in public scholarship. Consequently, faculty whose work is evaluated as an integrated whole are more likely than those whose work is evaluated in separate domains to engage in more public scholarship more often.

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