

Disciplinary Variations in Publicly Engaged Scholarship: An Analysis Using the Biglan Classification of Academic Disciplines

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Abstract

Although contemporary models of faculty involvement in publicly engaged scholarship recognize the important influence of disciplines on faculty members, few studies have investigated disciplinary variations empirically. This study used the Biglan classification of academic disciplines to analyze publicly engaged scholarly activities reported by faculty members during reappointment, promotion, and tenure review. The Biglan dimensions (pure/applied, soft/hard, life/nonlife) were used to explore types of scholarly activity, intensity of activity, and degree of engagement. Using interpretive content analysis, we analyzed 171 reappointment, promotion, and tenure forms gathered from faculty members at one research-intensive, land-grant, Carnegie-engaged institution in the Midwest. Descriptive statistics revealed statistically significant disciplinary variations associated with all three Biglan dimensions. Study results provide evidence for moving beyond a universal, institutional approach to more nuanced discipline-specific policies, professional development programs, and support for faculty involved in publicly engaged scholarship.

Introduction

In 1995, Robert Diamond and Bronwyn Adam edited the first volume of *The Disciplines Speak: Rewarding the Scholarly, Professional, and Creative Work of Faculty*; 5 years later, they followed up with *The Disciplines Speak II: More Statements on Rewarding the Scholarly, Professional, and Creative Work of Faculty* (2000). In both volumes, Diamond and Adam emphasized the importance of extending the conversation about publicly engaged scholarship beyond “the confines of campus-based departments where faculty members reside [to] disciplinary and professional associations that play such an influential role in establishing faculty priorities” (Rice, 1995, p. vi). Edward Zlotkowski’s 21-volume book series, *Service Learning in the Disciplines*, published between 1997 and 2000 (around the same time as *The Disciplines Speak* volumes) reinforced the importance of acknowledging and celebrating disciplinary variations in one particular type of publicly engaged schol-

arship—service-learning and civic engagement. These nonempirical treatments raised awareness about publicly engaged scholarship by promoting descriptions and examples in the early years of the community engagement movement in U.S. higher education.

As the movement has continued to develop and deepen over time, scholars have advocated for institutional alignment and have studied the effects of institutional change initiatives (*Beere, Votruba, & Wells, 2011; Kecskes, 2006; Thornton & Jaeger, 2008*) or have developed complex models to explain faculty involvement in publicly engaged scholarship (*Demb & Wade, 2012; O'Meara, Sandmann, Saltmarsh, & Giles, 2011; Wade & Demb, 2009*). Both the institutional and individual streams of scholarship affirm the influence of disciplines on faculty members and acknowledge that faculty members occupy “niches” with dual membership in both their institutions and their disciplinary subjects (*Clark, 1987, p. 42*).

Despite decades of attention to disciplinary variations in publicly engaged scholarship, there have been few empirical studies about disciplines, resulting in institutional policies and practices about publicly engaged scholarship that are more universal or aggregate in nature than nuanced and discipline-oriented. In the conclusion of a recent study, the scholars advocated for moving away from a macro approach (i.e., one-size-fits all, institutional approach) and away from a micro approach (i.e., course or project approach) to a more robust understanding of how different disciplinary cultures interpret, influence, and implement publicly engaged scholarship (*Buzinski et al., 2013, p. 45*). This study's goal was to address the need for additional scholarship about disciplinary differences in faculty work, particularly variations in publicly engaged scholarship (*Braxton & Hargens, 1996; Jones, 2011*).

Conceptual Framework

Although a few studies have analyzed publicly engaged scholarship using disciplinary categorizations (*Buzinski et al., 2013; Glass, Doberneck, & Schweitzer, 2011; Lunsford & Omae, 2011; Morreale & Applegate, 2006; R. Neumann, 2001; Vogelgesang, Denzon, & Jayakumar, 2010*), none have used the Biglan classification of academic disciplines (hereafter referred to as the Biglan classification) as a conceptual framework. In higher education research, however, the Biglan classification has been used for decades in studies about faculty work, including research on faculty salary and instructional staffing patterns (*Muffo & Langston, 1981*); professional success, research opportunities, faculty conservatism, and character

development (*Smart & Elton, 1982*); faculty goal orientation (*Smart & Elton, 1975*); choice of methodological approach to research (*Alise, 2008; Alise & Teddlie, 2010*); faculty time use, type of faculty scholarly output, source of funding for research, and faculty attitudes (*Stoecker, 1993*); research output and socialization (*Creswell & Bean, 1981*); and self-selection into disciplines (*Malaney, 1986*).

Table I. An Expansion of the Biglan Classification of Academic Disciplines

	Hard		Soft	
	Nonlife	Life	Nonlife	Life
Pure	Astronomy	Botany	English	Anthropology
	Chemistry	Entomology	German	Political Science
	Geology	Microbiology	History	Psychology
	Mathematics	Physiology	Philosophy	Sociology
			Communications	Geography
		<i>Epidemiology</i>	<i>French, classics, and Italian</i>	<i>International Studies and Programs</i>
		<i>Molecular genetics</i>	<i>Linguistics and Language</i>	
		<i>Neurology</i>	<i>Music</i>	
		<i>Plant pathology</i>	<i>Religious studies</i>	
			<i>Writing and Rhetoric</i>	
Applied	Ceramic engineering	Agronomy	Accounting	Ed. administration
	Computer science	Dairy Science	Finance	Secondary Ed.
	Mech. engineering	Horticulture	Economics	Special Ed.
	Civil engineering	Ag. economics		Vocational Ed.
	Nuclear engineering		Advertising	
		<i>Animal Science</i>	<i>Information systems</i>	<i>Counseling, ed. psychology and special education</i>
	Computer engineering	<i>Biosystems and agricultural engineering</i>	<i>Marketing</i>	
	Computer science		<i>Supply chain mgmt.</i>	
	Electrical engineering		<i>Telecommunications</i>	<i>Criminal justice</i>
	Planning, design, and construction	<i>Community agriculture</i>		<i>Family and child ecology</i>
	Medical Technology	<i>Fisheries and wildlife</i>		<i>Kinesiology</i>
		<i>Food science and human nutrition</i>		<i>Labor and industrial relations</i>
		<i>Forestry</i>		<i>Nursing</i>
		<i>Recreation, parks, and tourism</i>		<i>Pediatrics and human development</i>
		<i>Small and Large animal clinical science</i>		<i>Psychiatry</i>
			<i>Teacher education</i>	
			<i>Social Work</i>	

The Biglan classification characterizes the subject matter of academic disciplines along three dimensions: (1) pure/applied, (2) hard/soft, and (3) life/nonlife (*Biglan, 1973a, 1973b*). The *pure/*

applied dimension refers to the degree of concern with the application of disciplinary knowledge; that is, pure fields are less concerned about practical applications than applied fields. The *hard/soft dimension* refers to the degree to which there is paradigm consensus in the field; that is, hard fields are characterized by a high degree of consensus, and soft fields are characterized by a low degree of consensus and therefore are more open to multiple methodological approaches and interpretations. The *life/nonlife dimension* makes distinctions between those disciplines concerned with living organisms and those that are not. In Table 1, the original Biglan classification of academic disciplines appears in nonitalicized font.

Approach to Inquiry

Research Purpose and Questions

This study's purpose was to explore, discover, and reveal disciplinary variations in publicly engaged scholarship conducted by faculty members. The grand tour research question was, are faculty members in some disciplines more likely to approach their publicly engaged scholarship in ways that differ significantly from those of faculty members in other disciplines? Guided by the Biglan classification, the research questions were further refined to include the following:

1. Do the *types of activities* faculty members are involved in as publicly engaged scholarship vary by discipline?
2. Does the *intensity of activity* in their publicly engaged scholarship vary by discipline?
3. Does the *degree of engagement* in their publicly engaged scholarship vary by discipline?

Definitions

Throughout this study, the phrase *publicly engaged scholarship* was used because it encompasses a broad range of scholarly activities that cut across faculty members' responsibilities in research or creative activities, teaching and learning, service and practice, and commercialized activities—all of which are conducted in collaboration with community partners and provide a direct benefit to audiences beyond the campus (*adapted from Michigan State University, Provost's Committee on Outreach, 1993*). *Publicly engaged scholarship* also acknowledges a spectrum of collaborative relationships with

community partners, ranging from less reciprocal, transactional, unidirectional activities (i.e., outreach) to more mutually codeveloped, transformative, multidirectional activities (i.e., *engagement*; Ellison & Eatman, 2008; Saltmarsh & Hartley, 2011).

Types of activities referred to types of scholarly activities defined by the typology of publicly engaged scholarship (Doberneck, Glass, & Schweitzer, 2010), which categorizes faculty work into four main responsibilities: publicly engaged research and creative activity; publicly engaged teaching and learning; publicly engaged service and practice; and publicly engaged commercialized activities. The typology further subdivides those four main faculty responsibilities into fourteen mutually exclusive subcategories (Doberneck, Glass, & Schweitzer, 2010, p. 18). In this study, researchers analyzed the data to look for disciplinary variations among the four main types and the fourteen subtypes of publicly engaged scholarship. Researchers assumed that if an activity was reported on the reappointment, promotion, and tenure (RPT) form that the faculty member considered that activity to be scholarly in nature; however, some faculty members reported instances of volunteering or community service that were unrelated to the faculty member's discipline or training or did not have a clear scholarly foundation—for example, participating in the Kiwanis Club or volunteering for Habitat for Humanity. On a case by case basis, researchers excluded these activities from the study.

Intensity of activity referred to “the frequency, duration, and complexity of the faculty member's interaction with community partners” (Doberneck, Glass, & Schweitzer, 2012, p. 19). In other words, how often and to what extent do the faculty member and community partner collaborate with one another? The concept was influenced by Enos and Morton's (2003) partnership development model, which characterizes partnerships by depth, complexity, and time (p. 27).

Degree of engagement referred to “the extent to which faculty members collaborate with their community partners in reciprocal, mutually beneficial ways” (Doberneck, Glass, & Schweitzer, 2012, pp. 19–20). In other words, to what extent do community partners have a voice in the collaboration and share decision-making power with the faculty member? This concept was influenced by The Research University Civic Engagement Network's degree of collaborative processes in engaged research (Stanton, 2008, p. 26), Imagining America's continuum of scholarship (Ellison & Eatman, 2008), and distinctions between transactional and transformative partnerships (Saltmarsh & Hartley, 2011).

Research Site

Because this research was an exploratory study, the research site was purposefully limited to one research university/very high, land-grant, Carnegie-engaged institution in the Midwest. The institution was purposefully selected because of its long-standing commitment to publicly engaged scholarship, including the early development of an institutional definition for outreach scholarship (*Michigan State University, Provost's Committee on Outreach, 1993*), development of criteria to document quality outreach and engagement (*Michigan State University, 1996*), and revisions in the reappointment, promotion, and tenure forms to encourage reporting of outreach and engagement in 2001 (*Glass, Doberneck, & Schweitzer, 2010*). The number of faculty members at such a large institution, combined with a long-standing institutional commitment to publicly engaged scholarship, was expected to generate sufficient heterogeneity to enable exploring the study's research questions in depth (*Kezel, 1999; Patton, 1990*).

Sources of Data

The researchers chose RPT forms and the accompanying narratives as the sources of data for this study because these documents are the official institutional record of scholarly accomplishments and faculty members' expressions of their academic contributions (*Moore & Ward, 2008; Moore & Ward, 2010; A. Neumann, 2009; Neumann & Terosky, 2007*). Although there is growing evidence that RPT documents do not represent a straightforward summary of a faculty member's accomplishments but instead reflect a strategic, socially constructed response to contested institutional processes and spaces, especially for female faculty and faculty of color (*Arnold, Crawford, & Khalifa, 2016; Diggs, Garrison-Wade, Estrada, & Galindo, 2009; Stanley, 2006; Tierney & Bensimon, 1996; Winkler, 2000*), the chosen research design precluded thorough examination of the political dimension and context of the participating faculty members. Even though this is a study limitation, the researchers viewed institutional documents, such as RPT documents, as stable sources of rich institutional data (*Whitt, 2001*) suitable for the first exploratory analysis of publicly engaged scholarship using the Biglan classification.

At this institution, RPT forms are divided into an administrator's section and a faculty candidate's section, which is further subdivided into (a) instruction, (b) research and creative activities, (c) service within the academy and the broader community,

(d) additional reporting, including sections for additional scholarship and the scholarship of integration, and (e) grant reporting. The candidates must also submit an essay and their curriculum vitae (Glass, Doberneck, and Schweitzer, 2010). Section D—additional scholarship and the scholarship of integration—was added in the 2001 RPT revisions to reflect Boyer's (1990) expanded definition of scholarship and to encourage publicly engaged scholars to report their scholarship that reflected the integration across faculty roles (Bloomgarden & O'Meara, 2007; Campbell & O'Meara, 2014). In this study, researchers analyzed the faculty candidate's section of the form (sections A–E), essays, and curriculum vitae.

Participants

Researchers obtained the list of tenure-track faculty who underwent reappointment, promotion, or tenure review during 2001–2006 from the institution's Office of Academic Human Resources and contacted the listed faculty members for their consent to include their RPT materials in this IRB-approved study. Due to the unavailability of institutional data, this study did not include tenure-line faculty members who were unsuccessful in promotion and tenure review; were no longer employed at the institution; and/or no longer held tenure-line positions at the institution. Of the 374 faculty members invited to participate in this study, 171 voluntarily agreed to inclusion of their materials, for a response rate of 46%.

The 171 participants were 31% female, 69% male; by race/ethnic identity, participants were 5% African-American/Black, 3% American Indian/Alaska Native, 10% Asian/Pacific Islander, 2% Hispanic, and 80% White. The participant ranks included 54% assistant professors and 46% associate professors. Participants held primary appointments in the following colleges: 27% Agriculture and Natural Resources; 12% Arts and Letters (including Music); 4% Business; 2% Communication Arts and Sciences; 6% Education; 4% Engineering; 3% Human Medicine; 19% Natural Science; 2% Nursing; 3% Osteopathic Medicine; 14% Social Science; 3% Veterinary Medicine; and 1% other. Chi-square analysis determined that this sample did not differ significantly (by gender, race/ethnicity, rank, and college) from the full-time, tenure-line faculty at the institution during the study period.

Data Coding and Data Analysis

Once the RPT documents were obtained, the research team determined each faculty member's Biglan classification based on

their departmental appointment. If a faculty member held an appointment in more than one department, the department of their primary appointment was used in this coding step. Disciplines have proliferated since Biglan's 1973 conceptualization, and, as a result, the research team encountered 40 departments that were not part of the original Biglan classification. To assign Biglan dimensions to these unclassified departments, the researchers considered the degree to which the department is concerned with the application of disciplinary knowledge (pure/applied), openness to multiple approaches and interpretations (hard/soft), and emphasis on living organisms (life/nonlife). In a few cases, the research team sought out faculty colleagues from the unclassified departments and asked for their advice in classifying their own departments. Previously uncategorized departments were then assigned a Biglan classification; these appear in italics in Table 1. Table 2 reports the frequency of the Biglan classifications in the study sample. After assigning Biglan classifications, the research team followed a three-step coding process.

Table 2. Frequencies of Biglan Classifications in the Study Sample

	Hard		Soft	
	Nonlife %	Life %	Life %	Nonlife %
Pure	12	13	13	13
Applied	5	24	12	9

In Step 1, the research team coded *types of activities* by applying the typology of publicly engaged scholarship to the documents. Each reported instance of publicly engaged scholarship in the RPT documents was coded with an absence/presence code. Crosstabs were used to compare the paired Biglan dimensions with the frequency of each type of publicly engaged scholarship. Chi-square statistics revealed that faculty members in some disciplinary groupings were more likely to report some types of publicly engaged scholarship.

In Step 2, researchers coded *intensity of activity* using the four-point coding scheme developed by Colbeck and Wharton-Michael (2006). These mutually exclusive scores were assigned holistically and ranged from 0 (representing no publicly engaged scholarship) to 3 (representing long-term collaborations that include peer-reviewed evidence of scholarly achievements such as grant-writing, publications, or awards). Researchers calculated the means and difference in the means for the paired Biglan dimensions and

ran independent sample *t*-tests to determine the significance of these differences.

In Step 3, the research team coded *degree of engagement* by assigning mutually exclusive, holistic codes using a 4-point coding scheme similar to the intensity of activity codes. These mutually exclusive, holistic codes ranged from 0 (representing no publicly engaged scholarship) to 3 (representing two-way interactions between the faculty member and community partners that resulted in cogenerated knowledge). Researchers calculated the means and the differences in the means for the paired Biglan dimension and ran independent sample *t*-tests to determine the significance of the differences.

Quality and Rigor

Initially, to develop the codes inductively from the data, the research team coded documents individually and then discussed coding decisions during team meetings. Over several months of iterative individual and team coding, codes and coding rules developed into the codebook. During the coding process, the research team assigned each faculty member's materials to two researchers who independently coded their assigned documents for type of activities, intensity of activity, and degree of engagement and entered their codes into Statistical Package for Social Sciences (SPSS) 17.0. Reconciliation reports revealed coding agreements and disagreements. When disagreements in coding were identified, the coders consulted the codebook and met to reconcile the differences. Finalized codes were entered into a second, separate SPSS file that was used for the final data analysis. In this way, the codes were developed, refined, and applied consistently to ensure a high degree of team-based, interrater reliability throughout the coding process (Mayring, 2000; MacQueen, McLellan, & Milstein, 1998).

In addition, the research team practiced critical reflexivity during frequent in-person meetings to guarantee that the codes refined through constant comparative analysis were understood by all coders, incorporated in the updated coding manual, and recorded to create an audit trail (Anfara, Brown, & Mangione, 2002; Creswell & Miller, 2000; Glaser, 1965; Glaser & Strauss, 1967).

Through this three-step coding process, the data were transformed from qualitative data into quantitative data to support statistical analyses commonly used in interpretive content analysis (Boyatzis, 1998). The researchers chose interpretive content analysis because it is an analytic approach that accommodates large amounts

of text as data, supports analysis of keywords in context, and generates descriptive statistics about patterns in the data (Krippendorff, 2004; Neuendorf, 2002).

Results

Main Types of Publicly Engaged Scholarship

Faculty members in the applied, hard, and life disciplines were overall more likely than their colleagues in pure, soft, and nonlife-fields to report publicly engaged scholarship. Faculty members in applied and life disciplines were more likely than their pure and nonlife colleagues to report publicly engaged research and creative activities. Faculty members in applied disciplines were more likely than their pure colleagues to report publicly engaged teaching and learning. Faculty members in applied and life disciplines were more likely than their pure and nonlife colleagues to report publicly engaged service and practice. Finally, faculty members in hard disciplines were more likely than their soft-discipline colleagues to report publicly engaged commercialized activities. Table 3 shows the frequencies, chi-square values, and significance levels for the main types of publicly engaged scholarship.

Subtypes of Publicly Engaged Scholarship

Faculty members in *applied disciplines* were more likely than their pure discipline colleagues to report five subtypes of publicly engaged scholarship: publicly engaged research funded by business, industry, or commodity groups ($p = .000$); publicly engaged research funded by nonprofits, foundations, or government ($p = .000$); noncredit instruction for public understanding ($p = .001$); service—technical assistance, expert testimony, or legal advice ($p = .002$); and service—advisory boards related to the discipline ($p = .018$). Faculty members from the *pure disciplines* were less likely than their applied colleagues to conduct any subtype of publicly engaged scholarship.

Faculty members in the *hard disciplines* were more likely than their soft-discipline colleagues to report three subtypes of publicly engaged scholarship: publicly engaged research funded by business, industry, or commodity groups ($p = .000$); noncredit instruction through classes and programs ($p = .004$); and service—patient, clinical, or diagnostic services ($p = .039$). Faculty members in the *soft disciplines* were more likely than their hard-discipline colleagues to report two subtypes of publicly engaged scholarship:

publicly engaged research unfunded or intramurally funded ($p = .016$) and for-credit instruction for nontraditional audiences ($p = .046$).

Table 3: Main Types of Publicly Engaged Scholarship by Paired Biglan Dimensions

Main types of PES	Frequencies, Chi-Square Values, and Significance of Paired Biglan Dimensions											
	Pure	Applied %	χ^2	Sig. Level	Hard %	Soft %	Hard %	Sig. Level	Life %	Non-Life %	χ^2	Sig. Level
Outreach and engagement overall	88.4	98.8	7.758	0.05	96.8	89.5	3.809	.051	96.1	89.7	2.797	NS
Publicly engaged research and creative activities	62.8	82.4	8.208	.003	73.7	71.1	.147	NS	81.6	58.8	10.617	.001
Publicly engaged teaching and learning	82.6	95.3	7.021	.007	91.6	85.5	1.566	NS	90.3	86.8	.516	NS
Publicly engaged service and practice	60.5	83.5	11.263	.001	73.7	69.7	.326	NS	81.6	57.4	11.881	.001
Publicly engaged commercialized activities	16.3	11.8	.722	NS	22.1	3.9	11.538	.000	14.6	13.2	.060	NS

NS= Not statistically significant

Table 4: Sub-Types of Publicly Engaged Scholarship by Paired Biglan Dimensions

Subtypes of Publicly Engaged Scholarship	Biglan Dimension											
	Pure %	Applied %	χ ²	Sig. Level	Hard %	Soft %	χ ²	Sig. Level	Life %	Nonlife %	χ ²	Sig. Level
Publicly Engaged Research and Creative Activities												
Research: business, industry	17.4	43.5	13.748	.000	45.3	11.8	22.286	.000	34.0	25.0	1.561	NS
Research: nonprofit, foundation, government	36.0	64.7	14.045	.000	55.8	43.4	2.584	NS	65.0	27.9	22.560	.000
Research: unfunded, intramural funding	37.2	43.5	.709	NS	32.6	50.0	5.292	.016	44.7	33.8	1.998	NS
Creative activities	7.0	4.7	.400	NS	3.2	9.2	2.809	NS	3.9	8.8	1.815	NS
Publicly Engaged Teaching and Learning												
For-credit nontraditional learners	15.1	15.3	.001	NS	10.5	21.1	3.629	.046	14.6	16.2	.083	NS
Noncredit classes and programs	69.8	77.6	1.369	NS	82.1	63.2	7.817	.004	75.7	70.6	.558	NS
Noncredit public understanding	50.5	82.4	10.018	.001	74.7	67.1	1.203	NS	75.7	64.7	2.434	NS
Publicly Engaged Service and Practice												
Technical assistance	45.3	68.2	9.122	.002	56.8	56.6	.001	NS	68.9	38.2	15.723	.000
Patient, clinical, and diagnostic services	5.8	11.8	1.892	NS	12.6	3.9	3.979	.039	13.6	1.5	7.521	.004
Advisory boards related to discipline	30.02	47.1	5.107	.018	40.0	36.8	.178	NS	42.7	32.4	1.857	NS
Publicly Engaged Commercialized Activities												
Publicly engaged commercialized activities	16.3	11.8	.722	NS	22.1	3.9	11.538	.000	14.6	13.2	.060	NS

NS= Not statistically significant

Faculty members in the *life disciplines* were more likely than their nonlife-discipline colleagues to report three subtypes of publicly engaged scholarship: publicly engaged research funded by nonprofits, foundations, or government ($p = .000$); service—technical assistance, expert testimony, or legal services ($p = .000$); and service—patient, clinical, or diagnostic services ($p = .004$). Faculty members in the *nonlife disciplines* were less likely than their life-discipline colleagues to conduct any subtype of publicly engaged scholarship. Table 4 shows the frequencies, chi-square values, and significance levels for the subtypes of publicly engaged scholarship. Faculty members in this study did not report three types of publicly engaged scholarship—for-credit curricular service-learning, non-credit managed learning environments, and cocurricular service-learning. Consequently, these three subtypes of publicly engaged scholarship noted in the typology of publicly engaged scholarship were not included in Table 4.

Intensity of Activity

Independent sample *t*-tests were conducted for the paired Biglan dimensions; the analysis revealed statistically significant differences in the intensity of activity between *pure/applied* and *life/nonlife* dimensions. The means for each Biglan dimension were as follows: pure (1.76), applied (2.29), hard (2.13), soft (1.89), life (2.28), and nonlife (1.63). Faculty members in applied disciplines reported higher intensity of activity than those in pure disciplines ($p = .000$). Faculty members in life disciplines reported higher intensity of activity than those in nonlife disciplines ($p = .000$). Analysis of the hard/soft disciplines did not reveal statistically significant results. Statistically significant disciplinary variations related to intensity of activity are reported in Table 5.

Degree of Engagement

Independent sample *t*-tests were also conducted for the paired Biglan dimensions; the analysis revealed statistically significant differences in the degree of engagement between *pure/applied* and *life/nonlife* dimensions. The means for each Biglan dimension were as follows: pure (1.22), applied (1.52), hard (1.38), soft (1.36), life (1.56), and nonlife (1.07). Faculty members in the applied disciplines reported higher levels of engagement than those in the pure disciplines ($p = .016$). Faculty members in the life disciplines reported higher degrees of engagement than those in the nonlife disciplines ($p = .000$). Analysis of the hard/soft disciplines did not

reveal statistically significant results. Statistically significant disciplinary variations related to degree of engagement are also reported in Table 5.

Table 5: Intensity of Activity and Degree of Engagement by Paired Biglan Dimensions

	Means and Differences in Means by Paired Biglan Dimensions											
	Pure	Applied	Difference in means	Sig. Level	Hard	Soft	Difference in means	Sig. Level	Life	Non-Life	Difference in means	Sig. Level
Intensity of activity	1.76	2.29	.53	.000	2.13	1.89	.24	.126	2.28	1.63	.65	.000
Degree of engagement	1.22	1.52	.30	.016	1.38	1.36	.02	.850	1.56	1.07	.49	.000

Discussion

This study revealed statistically significant findings related to publicly engaged scholarship in four of the six Biglan dimensions: applied, hard, soft, and nonlife. Faculty associated with the pure and life dimensions were not more likely than their colleagues to report publicly engaged scholarship in their RPT documents.

Question 1: Do the types of activities faculty members are involved in as publicly engaged scholarship vary by discipline? In examining disciplinary variations in the main types of publicly engaged scholarship—research and creative activities, teaching and learning, service and practice, and commercialized activities—analysis revealed statistically significant findings associated with three of the Biglan dimensions. Faculty members from the *applied disciplines* were more likely to report publicly engaged research and creative activities, teaching and learning, and service and practice. Faculty members from the *hard disciplines* were more likely to report publicly engaged commercialized activities. Finally, faculty members in the *life disciplines* were more likely to report publicly engaged research and creative activities and publicly engaged service and practice.

Analysis of the *subtypes of publicly engaged scholarship* revealed a wider range of disciplinary variations associated with applied, hard, soft, and life Biglan dimensions. Faculty members from *applied disciplines* were more likely to report five subtypes of community-engaged scholarship: research funded by business and industry; research funded by nonprofits, foundations, and government; noncredit instruction for public understanding; technical

assistance; and advisory boards related to the discipline. Faculty members from the *hard disciplines* were more likely to report four subtypes of publicly engaged scholarship: research funded by business and industry; noncredit classes and programs; patient, clinical, and diagnostic services; and commercialized activities. Faculty members from the *soft disciplines* were more likely to report two subtypes of publicly engaged scholarship: research that was intramurally funded or unfunded and for-credit teaching and learning for nontraditional learners. Faculty members from the *life disciplines* were more likely to report three subtypes of publicly engaged scholarship: publicly engaged research funded by nonprofits, foundations, or the government; technical assistance; and patient, clinical, and diagnostic services.

Question 2: Does the intensity of activity in their publicly engaged scholarship vary by discipline? Faculty members from the *applied and life disciplines* were more likely than colleagues from other Biglan dimensions to report high levels of intensity in collaborating with community partners. In other words, their publicly engaged collaborations with community partners were more likely to include frequent interactions, longer durations, and more complex relationships.

Question 3: Does the degree of engagement in their publicly engaged scholarship vary by discipline? Faculty members from the *applied and life disciplines* were also more likely than colleagues from the other Biglan dimensions to report high degrees of engagement in their publicly engaged scholarship. Faculty members from applied and life fields were more likely to engage in reciprocal ways with mutual benefits to all partners and to participate in transformative relationships with their community partners.

This study's findings are in keeping with the extant scholarship about disciplinary variations in faculty members' commitment to and involvement in publicly engaged scholarship (Buzinski et al., 2013; Hammond, 1994). In 2000, Antonio, Astin, and Cress analyzed the 1995–1996 Higher Education Research Institute (HERI) national faculty survey and examined faculty members' field of training and their commitment to community service. They found that faculty members from social work, ethnic studies, women's studies, education, and health sciences (i.e., applied and life Biglan dimensions, except for ethnic studies) exhibited higher levels of commitment to community service than faculty from math/computer science, physical science, foreign language, anthropology, and English (i.e., pure, nonlife Biglan dimensions, except for anthropology; 2000, pp. 384–385).

In 2002, Abes, Jackson, and Jones found similar patterns in their national survey research that revealed that faculty members from social/behavioral sciences; social work, education, and human ecology; agriculture; business; and the health professions (i.e., applied Biglan dimensions) were more involved in service-learning than faculty from humanities; arts; physical/biological sciences; and math, engineering, and computer sciences (i.e., pure Biglan dimensions; 2002, p. 7).

In 2010, Vogelgesang et al.'s logistic regression analysis of 2002–2005 HERI survey data revealed similar disciplinary patterns. On two main public engagement questions—using scholarship to address community needs and collaborating with community in research and teaching—their research ranked faculty members from education, forestry/agriculture, and health sciences (i.e., life Biglan dimensions) highest and ranked faculty members from engineering, humanities, math/statistics, and English (i.e., nonlife Biglan dimensions) lowest (2010, p. 449).

Study Limitations and Directions for Future Research

Because this was the first study to use the Biglan classification to analyze disciplinary variations in publicly engaged scholarship, we purposefully limited the study's scope to a single institution. To establish the generalizability of these findings, future research could be conducted at similar institutions to see if the same disciplinary variations are present in their faculty members' publicly engaged scholarship. Because there is growing evidence that institution type influences faculty members' involvement in publicly engaged scholarship (Demb & Wade, 2012; O'Meara et al., 2011; Wade & Demb, 2009), a similar study could be conducted at multiple types of institutions of higher education to see if these disciplinary variations hold true or vary across institutional types.

The unavailability of reappointment, promotion, and tenure materials from faculty members who did not advance through the review process imposed another limitation. This lack of data prevented the researchers from comparing RPT materials of those who advanced through reappointment, promotion, and tenure successfully with those who did not advance. Although such a comparison was not this study's exploratory focus, future research comparing publicly engaged scholarship in RPT documents from faculty members who were successful to those who were not successful would be a significant contribution to the field.

Academic service-learning and cocurricular service-learning figure prominently in publicly engaged scholarship, especially in research about disciplinary variations (*Abes et al., 2002; Antonio et al., 2000; Buzinski et al., 2013; Hammond, 1994*). Aware of the wide range of terms used for service-learning, researchers thoroughly examined the RPT data for multiple terms that could be used to describe service-learning, including academic service-learning, cocurricular service-learning, civic engagement, and community-based research in courses. No instances of service-learning were reported on the RPT forms. This finding was unexpected because faculty members at this institution incorporate service-learning into their courses and include cocurricular service-learning activities as part of their leadership activities on campus (*Karen McKnight Casey, personal communication with the institution's director of the Center for Service Learning and Civic Engagement, September 19, 2008*). The researchers speculate that the RPT form itself may be one cause for the underreporting of academic or cocurricular service-learning. For example, at this institution, the Registrar's Office does not have a special course designation for service-learning comparable to the ones for entrepreneurship (e-courses) and Honors options (h-courses). As a result, it would not be apparent from the faculty member's list of courses whether a class had a service-learning or community engagement component. The RPT forms do not include a way to indicate whether courses listed in the instruction section include academic service-learning, community-based research in classes, or other forms of publicly engaged teaching and learning (e.g., no asterisks to note outreach and engagement components). Nor is there a separate section on the form for reporting course-based, publicly engaged teaching and learning, even though there is a separate section on the form to report noncredit instruction. This limitation in the reported data merits further inquiry—at this particular institution and in future studies about disciplinary variations in publicly engaged scholarship. This study's findings, however, should be considered complementary to extant studies of disciplinary variations that have focused almost exclusively on service-learning and civic engagement.

“The changing nature of knowledge domains over time has its impact on the identities and cultural characteristics of disciplines” (*Beecher & Trowler, 2001, p. 43*). To address the inevitable changes in disciplines, a future study might refine and expand the Biglan classification as a conceptual framework in the analysis of publicly engaged scholarship. Academic disciplines have evolved and changed since Biglan first published his classification framework

in 1973. New disciplinary fields have emerged; others have split into distinct subdisciplines incongruent with the 1973 Biglan classification. For example, physical geographers could be classified as pure, hard, and nonlife, whereas their cultural geography colleagues could be classified as applied, soft, and life. The rise of interdisciplinary scholarship, especially in response to problems typically addressed through publicly engaged scholarship, also poses a challenge to Biglan's classification (Stoecker, 1993). In addition, epistemological and methodological perspectives have proliferated since 1973, leading faculty members to embrace publicly engaged scholarship from a range of intellectual stances and personal motivations that do not adhere strictly to disciplinary lines. Expanding the existing Biglan classification poses some challenges, but using an updated conceptual framework in future research might reveal subtle subdisciplinary differences useful in informing institutional policy in ways more consistent with faculty members' disciplinary (and subdisciplinary) lives.

Implications for Institutional Policy and Practice

The recognition that publicly engaged scholarship manifests itself in different ways in different disciplinary groups has significant consequences for multiple aspects of institutional policy and practice. First, universal, institution-wide, "one-size-fits-all" policies, especially those associated with reappointment, promotion, and tenure, may need to be reconsidered and expanded to accommodate disciplinary variations in publicly engaged scholarship. Consider this study's finding that faculty members in the hard disciplines were more likely to report publicly engaged commercialized activities than faculty from the other five Biglan dimensions. RPT policies that do not encourage the reporting of publicly engaged commercialized activities may unintentionally disadvantage faculty members from the hard disciplines.

Second, revising and expanding policies is necessary, but not sufficient, for changing institutional policies and practices. Departmental mentors; members of reappointment, promotion, and tenure committees; and institutional leaders are often most familiar with the types of activities, intensity of activity, and degrees of engagement from their own disciplines. They are often less familiar with the norms and standards in disciplines, and even sometimes subdisciplines, that are not their own. To counteract the "if it doesn't look like *my* scholarship, it shouldn't be counted in RPT" perspective, institution-wide efforts should be made to familiarize faculty and administrators, particularly those in decision-

making positions such as hiring committees and RPT committees, with the variety of ways faculty members and community partners collaborate with one another on publicly engaged scholarship.

Third, professional development for publicly engaged scholarship may need to be reexamined and diversified so that faculty support is offered in ways that are consistent with disciplinary variations in publicly engaged scholarship. For example, professional development programs that support faculty to win federally funded grants with outreach and engagement components (e.g., National Science Foundation grants with broader community impact requirements) privilege faculty in the applied and life disciplines over faculty in the other four Biglan dimensions. Instead, a comprehensive approach sensitive to disciplinary variations might provide a portfolio of professional development opportunities that intentionally focus skill-building in areas naturally of interest to different disciplines. For example, to support robust publicly engaged teaching and learning, professional development workshops and trainings might focus on nontraditional audiences (for soft disciplines), noncredit classes and programs (for hard disciplines), and noncredit, public understanding events, resources, and materials (for applied disciplines). Although resources may not be available to offer workshops and trainings for every disciplinary grouping, it may be prudent to review the slate of offered workshops to verify that certain segments of the university's disciplines are not being neglected while others are supported.

Finally, institutional support for publicly engaged scholarship may need to be reexamined and modified to be extended equitably to faculty from all disciplines, so that institutional awards are not inadvertently concentrated on faculty in some disciplines and unavailable to faculty in others. For example, university awards programs that emphasize and reward publicly engaged scholarship defined as long-term, highly engaged university–community partnerships (i.e., high intensity of activity, high degree of engagement) privilege faculty members in applied and life disciplines over those in pure and nonlife disciplines. Faculty members from Agriculture and Natural Resources, Education, and Health Sciences would win the annual university awards each year, with faculty members from Arts and Humanities, Business, or Natural and Physical Sciences rarely winning awards. Over time, this may result in uneven support for faculty based on their discipline (or more accurately, based on an incomplete understanding of the various ways faculty members in different disciplines conduct publicly engaged scholarship). Without awareness of and attention to disciplinary variations, an

inadvertent concentration of support in some disciplines to the exclusion of others is also likely to occur in the awarding of seed grant money, conference support, travel resources, and other forms of institutional support for publicly engaged scholarship.

Concluding Thoughts: Disciplinary Variation and Diversity in Engagement

In a 2008 review article about the community engagement movement in higher education, Sandmann put forward a conceptualization that divided the movement's history into four separate eras. She named these eras *punctuations*, a term borrowed from the biological sciences referring to punctuated equilibria or periods of relative stability that are then followed by periods of rapid structural, transformational change (Sandmann, 2008, p. 93). Sandmann distinguished four punctuations in the community engagement movement: (1) engagement defined, (2) engagement as teaching and research, (3) engagement as a scholarly expression, and (4) engagement institutionalized.

Throughout these eras, leaders in the publicly engaged scholarship movement sought to define and promote publicly engaged scholarship as a legitimate form of faculty work and to differentiate it from more traditional, nonengaged approaches to research, teaching, and service. National leaders in the movement and leaders at specific institutions worked to develop shared principles and best practices to guide publicly engaged scholarship in a more unified, cohesive manner. At forums like the American Association of Higher Education's Faculty Roles and Rewards Conference in the late 1990s and early 2000s, administrators and scholars sought to align institutional mission statements, rewards policies, and operational structures to support community engagement. The publicly engaged scholarship movement's strength was in its coalescing momentum around a common vision and practice for community engagement. This unifying approach to leadership has served the movement well. As O'Meara notes in her recent summary of accomplishments to advance the scholarship of engagement "there is more of it" and "there are structures and processes in place to support faculty, students, and institutions as they do this work" (O'Meara, 2011, pp. 181, 185).

As research on disciplinary differences continues to proliferate, perhaps it is time to question whether we have entered a new punctuation in the publicly engaged scholarship movement—characterized less by an emphasis on unity through shared principles and

best practices and more by an emphasis on disciplinary variety and diversity (Buzinski et al., 2013). The fifth punctuation might be called “disciplinary variations and diversity in engagement.”

Clearly, it is important for institutional leaders to promote the collective significance and value of their institution’s publicly engaged scholarship to external constituencies such as legislators, funders, and members of the general public. However, when it comes to internal institutional leadership, perhaps the time has come to adopt a more nuanced approach where the disciplinary variations and diversity of publicly engaged scholarship are recognized, celebrated, and encouraged in both policy and practice.

Acknowledgments

The authors would like to thank the faculty members who consented to have their reappointment, promotion, and tenure dossiers included this study; Office of Academic Human Resources, who provided access to the documents; and the National Collaborative for the Study of University Engagement, which provided research support. We would like to acknowledge the contributions of then graduate researcher Chris R. Glass, who introduced the research team to the Biglan classification of academic disciplines. Dr. Glass is currently assistant professor of Educational Foundations and Leadership at Old Dominion University. Finally, we would also like to thank conference participants at the 2012 International Association for Research on Service-Learning and Community Engagement in Baltimore, MD and the 2012 National Outreach Scholarship Conference in Tuscaloosa, AL for their critical and constructive comments on preliminary presentations of this data.

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