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William I. Wolff ^a

^a Rowan University, Glassboro, New Jersey

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Systems of Classification and the Cognitive Properties of Grant Proposal Formal Documents

William I. Wolff

Rowan University, Glassboro, New Jersey

Despite the prominent role of application forms in the process of composing grant proposals, little attention has been given to the rhetorical and ethical implications of their prompts and instructions. This article analyzes classification systems reified within the cognitive properties of online forms that faculty members use to submit grant proposals. Results suggest that the historicity of proposal forms adds to the complexity of developing models that accurately represent proposal writing in multiple contexts.

Faculty members who want to introduce educational technologies into their classrooms often depend on internal university grants. These grants provide the necessary funds to cover hardware and software, release time to develop effective pedagogies and projects, student assistant salaries, and other related expenses. For example, my current institution provides a limited number of grants of up to \$5,000 to support faculty development of educational technology-related courseware innovations. To determine how to best distribute often-limited resources, many colleges and universities have developed sophisticated, competitive internal grant programs complete with online application forms and selection committees comprising administrators, faculty members, and students.

Recent studies have revealed contemporary grant processes as complex systems of actors, texts, genres, and technologies (Freed & Roberts, 1989; McIsaac & Aschauer, 1990; Myers, 1985; Tardy, 2003; Zachry, Spinuzzi, & Hart-Davidson, 2006). For example, McIsaac and Aschauer, in their ethnographic study of the proposal writing process at an engineering firm, reported that for one government proposal the engineers were required to complete 400 forms in addition to the text of the proposal itself, which could often run into the hundreds of pages. Engineers at

the firm examined in this study often referred to requests for proposals (RFPs) as “the Bible” (p. 536), and when going through the process of completing a team-written proposal, they would pin an RFP to a wall and create a storyboard around it. Similarly, Myers quoted the NIH instructions for completing the main section of a grant proposal and described the rhetorical and political complexities of composing proposals for a mostly unknown group of external reviewers who read grant applications with their own disciplinary assumptions, biases, and politics. To capture the complexity of this process, Tardy has argued for viewing the process of grant funding as a “genre system” of texts and discourse communities (pp. 14–15). One of the many genre sets within a genre system is the grant application, which, Tardy has observed, “constitutes a kind of core genre, in many ways reflecting and necessitating the larger network . . . [that] guides participants through its various social and textual nodes” (p. 26).

Zachry, Spinuzzi, and Hart-Davidson (2006) have argued that future work on the process of proposal writing would need to consider not only the proposal document but also the “multiple, auxiliary communicative practices and mediational documents that make proposal development possible” (p. 147). This article discusses two particular documents that mediate the grant proposal process: an online proposal form used to prepare proposals and the resulting proposal document generated after a proposal is submitted for consideration. Faculty members use these documents when they submit grant proposals for a College-level Educational Technology Services (CETS) program that provides competitive grants for faculty-developed courseware projects. Administrators and selection committee members use the documents when they evaluate such proposals.

The focus of my discussion is not on the composition processes of faculty members who write proposals to be considered by one grant funding organization. Others have dedicated their attention to such analyses (McIsaac & Aschauer, 1990; Myers, 1985; Tardy, 2003; Wolff, 2008). Rather, I shift my attention to investigate the online proposal application form itself—a document I came in contact with during the background analysis phase of a larger study designed to investigate the instructional technology climate in the largest college at Large Research State University (LRSU).¹ Reading the online proposal form in tandem with other CETS organizational documents—mission statements, vision plans, annual reports, earlier versions of the online form, faculty grant proposals, and so forth—led me to ask the following questions: Why had the wording of grant application prompts changed over time? What could account for inconsistencies among certain portions of the form and institutional realities? How did certain formal parameters contribute to the structure of the resulting grant proposal texts? In this article, I begin to address these concerns.

¹The names of the university and the support organization have been changed to preserve anonymity.

My goal, however, is not merely to offer a rhetorical analysis of online formal documents, nor is it to come to definitive conclusions about the preparation and use of grant proposal formal documents. Rather, by discussing portions of the online form (and related documents) in relation to theories on classification systems, I introduce technical communication scholars to another layer of texts that I argue need to be considered when investigating grant proposal writing as a complex system. Mediating documents, such as RFPs, application forms, and instructions, play a prominent role in the process of composing grant proposals. But despite this importance, little attention has been given to the rhetorical, ethical, and institutional implications of the classification systems and assumptions reified in the wording of their prompts, instructions, and other parameters. Bowker and Star (1999) have defined a classification as “a spatial, temporal, or spacio-temporal segmentation of the world” (p. 10) that has the potential to structure how information is read and human beings act and are perceived by others. As such, theories on classification systems can help reveal much of what is hidden within the prompts and parameters of formal documents that researchers use when they prepare grant proposals. Revealing what is hidden is significant for grant proposal writers and researchers because the classification systems embedded in grant proposal formal documents contribute directly to the kinds of texts that proposal writers create. Ultimately, the issues and questions raised here suggest that we can no longer separate out the writing of a proposal from the design of the proposal application and the classification systems reified with its prompts.

WHAT IS A CLASSIFICATION SYSTEM?

Studies of classification systems demonstrate the degree to which such systems can impact the daily lives of people inside and outside of organizations (Berg, 1997; Bowker & Star, 1999; Douglas, 1986; Fleck, 1979; Goodwin, 2000). According to Bowker and Star, a classification system “is a set of boxes (metaphorical or literal) into which things can be put to then do some kind of work—bureaucratic or knowledge production” (p. 10). Lincoln (1989) has observed that within a given situation “taxonomizers” (age, gender, ethnicity, departmental affiliation, and so forth) have the potential to “establish . . . the basis for an act of discrimination through which all members of a given class are assigned to one of two subclasses: those who possess the trait . . . and those who do not” (p. 133). Groopman (2007) has interviewed a doctor who lamented the tendency for new doctors to “relinquish their own thinking and instead look to classification schemes and algorithms to think for them” (p. 238). As these theorists suggest, classification systems pervade our lives, define our everyday experiences and social interactions, and profoundly impact the decisions we make. Filling in the demographics section of a survey is, for example, a task that brings respondents into direct contact with classifications such as gender, ethnicity, and mari-

tal status. For some respondents, the task is merely checking off boxes or clicking radio buttons. For others, such as those who are intersexual or have mixed ethnicity and might not see their classification as an option, the act is not merely about checking off a box. It is about who they are as individuals and how their classification has been assumed by the survey designer, their peers, or society as a whole. This is especially true when such questions do not have an “other” option that invites all respondents to provide answers. As Bowker and Star have suggested, “We need to consistently explore what is left dark by our current classifications (‘other’ categories) and design classification systems that do not foreclose on rearrangements suggested by new forms of social and natural knowledge” (p. 321).

Classification studies are studies of the history of ideas. Fleck has noted that it is “nonsense to think that the history of cognition has as little to do with science as, for example, the history of the telephone with telephone conversations” (p. 21). His unit of analysis is the classification of the “concept of syphilis” which was developed over time as the result of an evolving discourse community. Thorough investigations into the concept of syphilis, Fleck argued, must consider “particular historical connections” and have the potential to “discover operative socio-cognitive forces” (p. 23) that make visible significant steps in the development of the concept. Bowker and Star (1999) have made similar observations about the historical categorization of race under apartheid and HIV/AIDS, as has Bayer (1987) about the American Psychiatric Association’s declassification of homosexuality as a mental illness, Greenberg (2007) about the ontology of diagnoses that indicate depression, and McDermott (1996) about socially defined categories that locate children as learning disabled. More contemporary examples can be seen in the political, social, and religious discussions about the categorization of marriage; political and ethical discussions about the wartime categorization of the prisoners held in Guantanamo Bay, Cuba; Facebook’s deliberations over whether to limit users’ gender selections to female and male (Gleit, 2008); and the 2008 Olympic Committee’s decision to continue the practice of testing the gender of female athletes suspected to be male (Boylan, 2008).

In short, classification systems are often reified within the historically constructed (and, therefore, often invisible) cognitive properties of formal documents (Berg, 1997; Berg & Bowker, 1997; Goodwin, 2000). I use *reified* here as Wenger (1998) has defined it: “to refer to the process of giving form to our experience by producing objects that congeal this experience into ‘thingness’” (p. 58). Although they are often regarded as pragmatic structures of organizational systems, formal documents are actually embedded with social, ethical, and moral choices that represent specific designer assumptions and institutional realities and have the potential to influence the way users present information (Barnett, 1994; Bazerman, 2004; Johnson-Eilola, 2005; Spinuzzi, 2003). However insignificant the document’s features might seem to those who designed them, an analysis of reified documents often reveals a “complex web of conventions, agreements, expectations,

commitments, . . . obligations” (Wenger, p. 59) that have evolved over time. As a result, an analysis of formal documents can uncover decisions that have been made invisible as documents have been revised and redesigned.

ON FORMAL DOCUMENTS

The scholarship on human interactions with formal documents includes artifacts as diverse as tax forms (Barnett, 1994), telephone bills (Sless, 1994), medical record forms (Berg, 1997; Berg & Bowker, 1997; Groopman, 2007), and color charts (Goodwin, 2000). Goodwin, for example, has investigated the processes by which archeologists and their students categorize dirt samples at an excavation site. As part of the process of excavating a site, archaeology students are often instructed to describe the dirt that has just been excavated. To complete the descriptions, students fill in a coding form that contains boxes for color, consistency, and texture of the dirt being examined. Students must examine the dirt and assign the appropriate codes for each box on the form. This task is aided by the Munsell color chart, an artifact that “both mediates perceptual access to the dirt being classified and provides a color reference standard” (p. 20). The chart contains a series of pages, each of which is organized by chroma and value for any given hue. Each color category (for example, dark yellowish brown) has a corresponding hole under which the students hold up dirt they have placed on a trowel. Students, working in pairs, move the trowel under the holes until they find a match. The color is then recorded on the color form. The mundane task of filling in a color code on a paper form necessitates, at the very least, the following activities: obtaining a Munsell color chart, learning how to use the chart, placing dirt on the tip of a trowel, wetting the dirt, moving the dirt under the Munsell color chart, discerning which color the dirt matches, and writing the color code on the form.

Similar to the role the Munsell color chart plays in the practice of classifying dirt, Berg has suggested that a standardized medical form “structures the everyday gathering of medical data, facilitates communication between doctors, and allows for comparison over time and between different patients by offering a standard layout of presentation” (p. 455). Other examples indicate that artifacts-in-use can have more serious, even life-threatening implications. Groopman (2007), for instance, has suggested that although formal medical technologies can help increase the efficiency of diagnosis, when listening to a patient during a consultation, use of the form

also risks more cognitive errors because the doctor’s mind is set on filling in the blanks. . . . He is less likely to engage in open-ended questioning, and may be deterred from focusing on data that do not fit in the template. (p. 39)

Berg and Bowker (1997) have observed that in discussions of medical records, “the record is often portrayed as a ‘repository of information,’ as a vast treatment of

facts that only needs to be tapped” (p. 522). Bødker (1997) has described these shifts in focus to be “handles for studying *artifacts-in-use*” (p. 151), and in her discussion has argued that the process of designing mediating artifacts and documents, including the clarity of the text, plays a vital role in determining their success or failure.

STUDY METHODOLOGY

This Institutional Review Board (IRB) approved study was designed to investigate the instructional technology climate in the largest college of Large Research State University (LRSU). I selected a mixed-method research design (Creswell, 2002) using both qualitative and quantitative data collection and analysis. The qualitative portion of the study included a review of CETS historical documents from the years 1999 and 2006 (including vision plans, research proposals, archived Web sites, and financial documents); formal and informal interviews with CETS administrators and staff (including e-mail queries during the document analysis phase); observations of CETS Grant Program Selection Committee meetings and analysis of related documents; and a group interview of 4 Undergraduate Design Assistants (UDA).

The document analysis included the following:

- a review of all college vision plans submitted for approval to a university technology committee between the years 1999 and 2005
- a review of all faculty grant proposals submitted to the CETS Grant Program between 1999 and 2005. Each proposal was coded into 1 of 7 categories that emerged during the analysis (see Table 1). Information gleaned from these documents was stored in a password-protected Excel spreadsheet organized by the columns: year, department, faculty member, type of proposal,² category of proposal, title, total dollar amount requested, approval status, repeat approval, and total dollar amount approved. Information regarding approval status was provided by CETS³
- a review of CETS-provided grant proposal online submission forms used between 2001 and 2006.

Information obtained and observations made during the qualitative phase of the study contributed to the design of a quantitative survey distributed to a random sample of 300 and a purposive sample of 169 college faculty and graduate students (Wolff, 2008).

²Faculty could submit proposals in three categories: courseware development, servers and other hardware, and classroom technology upgrades (the names of the categories have been changed to preserve CETS's anonymity). The article focuses on courseware development proposals.

³Approval status and total dollar amounts funded were accurate dating back only to 2002. As a result, discussions relating to approval do not include projects funded in 1999, 2000, and 2001.

The Research Site

Large Research State University (LRSU) is a comprehensive doctoral university (Carnegie Foundation for the Advancement of Teaching, 2006) with more than 40,000 combined graduate and undergraduate students. CETS is the primary technology support organization in the largest college at LRSU. CETS's staff of 25 people is employed in activities ranging from database and Web site design to video and audio production. The organization also employs a group of UDAs who work one-on-one with faculty to help faculty design and implement their grant-funded projects.

In 1999, CETS began awarding grants to departments and individual faculty members. Grants were funded in part by student technology fee revenues that were distributed by a university-level committee to each college at LRSU. In 2002, CETS administrators created the CETS Grant Program, which awarded funding to faculty members for courseware development projects and to departments for the purchase of hardware and software to upgrade computer labs, servers, and other equipment. They also established the Grant Program Selection Committee comprising college faculty members, students, and CETS administrators.

Between 2002 and 2006, the process for submitting and evaluating courseware development proposals followed a similar timeline. Early in the spring semester, a call for proposals (CFP) was sent to college faculty members and posted on the CETS Web site. Faculty members submitted their proposals by interacting with and adding text to a series of online forms that could be edited until the submission deadline. Department chairs were notified as to which of their faculty members had applied for grants. In a letter to the selection committee, department chairs ranked the projects in order of their merit and how well they complemented the department's technology vision. Faculty members were notified of funding decisions by the end of the spring semester. The selection committee tended to meet three times annually—once to review the selection criteria and twice to discuss and select the proposals. After the initial meeting, committee members received an Excel spreadsheet with information organized under the following column headings: applicant name, project title, department, total budget, prior funding, department ranking, department chair name, whether the applicant had requested the assistance of a CETS UDA, and whether the applicant had requested to attend a CETS faculty workshop. Committee members read the proposals and rated each according to a 4-point scale ranging from 1 (*do not fund*) to 4 (*highest priority for funding*). After each committee member rated the proposals, they sent the spreadsheet to the grants coordinator, who averaged the committee members' ratings. At the first selection meeting, each committee member received a printed version of the spreadsheet with the proposals ranked from highest to lowest. The committee then discussed each proposal, starting with the highest rated.

A review of the proposals submitted between the 2002 and 2005 academic years indicates that proposals fell into seven categories (see Table 1). During that

TABLE 1
Courseware Development Proposal Types, Descriptions, and Submission
and Funding Rates, 2002–2005 Academic Years.

Type	Description of Proposal Type	Submitted	Funded (%)
Audio and Video Lessons for Language Instruction	Large-scale Web sites for all levels of language instruction designed to provide students with an opportunity to learn various aspects of a particular language and/or culture by listening to and/or viewing exemplars.	17	9 (52.9%)
Departmental Learning Tools	A broad category which includes projects that affect a large number of courses, that are geared toward a specific community inside and outside of the university, and that affect department-specific technologies (such as a department Web site).	21	6 (28.6%)
Digital Archives	These projects request time and/or help to digitize images, audio, video, and other resources, often with the goal of creating an eventual Interactive Database. These archives are not accessible online.	8	4 (50.0%)
Interactive Databases	Online archives of images, video, and/or audio that are accessible by students, faculty, staff, and, in some cases, the general public. The database structure of the resources differentiates it from Multimedia Web Sites and Departmental Learning Tools.	12	9 (75.0%)
Interactive Language Learning Tools	Large-scale Web sites designed to help students learn a language. They often include online grammars, quizzes, and homework problems. These do not contain audio and video components.	6	4 (66.7%)
Interactive Literary Analyses	Online resources designed to help users analyze and understand single or multiple pieces of literature, often including images, audio, and detailed annotations.	10	7 (70.0%)
Multimedia Web Sites	A Web site for a course(s) that contains one or more of the following—course syllabus, course notes, PowerPoint presentations, guided tours, images, audio, video.	35	18 (51.4%)
Total		109	57 (52.3%)

time period, faculty members submitted 109 courseware development proposals requesting more than \$3 million; 57 projects proposed by 51 faculty members were awarded \$1.7 million in grants. Multimedia Web Sites received more submissions (35) and were funded more times (18) than any other category. Interactive databases had the highest rate of acceptance (75.0%).

THE CETS ONLINE GRANT PROPOSAL FORM

Like many grant funding institutions, the CETS Grant Program provided an online form that faculty members had to use to submit their proposal for consideration. The 2006–2007 project proposal Web site comprised seven interactive Web pages, a static instructions page, and a summary page where applicants could review their work prior to submission. Applicants navigated from one page to the next by selecting a section in the horizontal navigation menu or by selecting a “Save changes” button. When applicants selected this button, their work was saved to a database. Applicants could also print a copy of their completed proposal or e-mail copies to themselves and their department chair. After applicants submitted their proposal and the deadline passed, the proposal could then be viewed by members of the selection committee. When selection committee members logged into the system, they saw a screen with the submitted projects listed in a table containing six columns: applicant name, applicant login name, applicant e-mail, project title, applicant department, and committee view options. Committee members had the option of viewing a printable version of the proposal, adding notes about the proposal that other committee members could see, downloading a copy of the proposal in Excel format, or e-mailing themselves a copy of the proposal. Committee members also received bound packets, organized by department, containing each of the proposals and a copy of each department’s vision plan.

Although the form appears to be simple in its structure and application, it serves multiple functions depending on the perspective of the viewer. In this regard, the form resembles other mediating documents that have been discussed in the extant literature. For example, Berg and Bowker (1997) and Groopman (2007) have noted the many groups and individuals who read medical records for their own educational, political, and/or social needs, including doctors, nurses, students, hospital administrators, insurance companies, researchers, and government employees. (There are also a host of complex coding and database applications that allow the Grant Program proposal site and online form to work properly. Each modification to the appearance and functionality of the proposal site and online form requires a multitude of programming tasks that are invisible to users, but ultimately impact their experience with the form.) From the personal view (Norman, 1991) of the applicant, the online form has the potential to mediate the creation of a complete project proposal, structure the wording and sections of the proposal, and necessitate the completion of other tasks (McIsaac & Aschauer, 1990; Myers, 1985; Tardy, 2003). From the personal perspective of a selection committee member, the online form enables the creation of a formal proposal document that can be downloaded, printed, and read, and then compared with other project proposals. From the system point of view (Norman, 1991), however, the form, through its instructions and prompts, serves as a guide for completing the proposal (which information is of value, what types of budgetary items to include, and so forth).

The Online Proposal Form and Assumptions About Applicant Knowledge

Cicourel (1964) has noted that the processes human beings use to portray certain events “are buried in implicit common sense assumptions about the actor, concrete persons, and the observer’s own view of everyday life” (qtd. in Bowker & Star, 1999, p. 320). These assumptions seem “right” to the actor making decisions because they tend to emerge as a result of the actor’s own life experiences. Too often, however, a decision maker’s assumptions are not congruent with others’ life experiences. An analysis of the budget section of the online proposal form suggests that the creator of the budget section had certain a priori assumptions about college faculty members’ familiarity with instructional technology and budgeting.

In 2000, the budget section consisted of one screen (see Figure 1). Applicants entered the quantity requested, a description of the requested item, the cost of the item, and the extension of the item cost. Applicants had to fit their budget within 10 preset lines of form fields. By 2005, however, total budget items were no longer

Budget
Enter budget summary in the table below. For each budget item (row), complete all information. When you have finished, click 'Submit' button at bottom of page.

qty	description	cost	ext
0	item 1 description	\$0	\$0
		total	\$0

FIGURE 1 CETS Online Proposal Form budget section, 2000.

determined by preset form fields. Instead, applicants created their budgets by selecting one of nine item types from a pull-down menu, and by entering into preset form fields the quantity, price, and a brief description of the selected item (see Figure 2). After the required information had been selected and entered, the applicant selected a button labeled “Add new item,” which dynamically added an itemized list of budget items to the Web page (see Figure 3). Unlike the 2000 form, in 2005 and 2006 there were no restrictions to the number of line items an applicant could add.

In 2006, a faculty member submitted a proposal for a project that requested funds for recording equipment to be used in fieldwork courses (see Table 2). Each of these items appears quite necessary for courses in which students learn the finer arts and techniques of fieldwork. Still, this list of items leads to the questions: How did the faculty member decide which items to request? Why, for example, did the faculty member request the Marantz MPD660 portable solid state recorder and not the Marantz PMD671 high resolution compact flash recorder? Which features of the MPD660 recorder did the faculty member think were more useful for students learning how to conduct linguistic fieldwork? Was the faculty member’s decision based on firsthand experience with the technology or another’s recommendations? Similar questions could be asked about the brand and model of laptop requested: Why a Dell and not a Mac? Does the faculty member already have PC-compatible equipment that would work seamlessly with the Dell? And why has the faculty member not requested software?

The task of selecting, for example, Special Equipment from a pull-down menu has the potential to introduce a host of other activities, each of which assumes a certain amount of applicant knowledge. The first assumption, which is based on a classification of technological savvy, is that applicants are familiar enough with online forms that they will know how to use a pull-down menu. (The form’s functions also need to be accessible for faculty members with visual or motor impairments.) Other technological savvy-based assumptions include knowing

2. Add budget item

Enter all required information, then **add new item**.

item type:	Select one ...	Select one ...
quantity:		Computer equipment
price:		Special equipment
description:		Software
		Supplies and misc
		Wages: graduate
		Wages: undergraduate
		Wages: workstudy
		Salary: Summer 2006
Add new item		Salary: FY 2006-2007

FIGURE 2 CETS Online Proposal Form budget section with pull-down menu, 2006.

2. Add budget item

Enter all required information, then **add new item**.

item type:

quantity:

price:

description:



3. Modify budget items

Click *edit* or *delete* to modify budget item.

<u>item</u>	<u>qty</u>	<u>price</u>	<u>ext</u>	<u>type</u>	<u>description</u>	<u>modify</u>
1.	1	\$500.00	\$500.00	Software	Necessary software	edit delete

4. Budget totals

Budget totals from your proposal:

<u>category</u>	<u>total</u>
Computer equipment	\$0.00
Special equipment	\$0.00
Software	\$500.00
Supplies and misc	\$0.00
Wages: graduate	\$0.00
Wages: undergraduate	\$0.00
Wages: workstudy	\$0.00
Salary: Summer 2006	\$0.00
Salary: FY 2006-2007	\$0.00
TOTAL	\$500.00

FIGURE 3 CETS Online Proposal Form budget section with dynamically added content, 2006.

- that the project will require a certain piece of computer equipment
- where to go online and off-line to research the piece of equipment and its cost
- what features to value when deciding which piece of equipment to purchase
- how many will facilitate completion of the project in a given period of time.

Veteran developers of instructional technology courseware materials may have little difficulty identifying where to research computer equipment and which fea-

TABLE 2
Submitted CETS Grant Proposal Itemized Budget, 2006

<i>Item</i>	<i>Quantity</i>	<i>Price (\$)</i>	<i>Extension (\$)</i>	<i>Type</i>	<i>Description</i>
1	16	500.00	8,000.00	Special equipment	Marantz MPD 660 recorder
2	16	100.00	1,600.00	Special equipment	Sony microphone
3	16	20.00	320.00	Supplies and misc	equipment bag
4	16	5.00	80.00	Supplies and misc	extension cord
5	16	5.00	80.00	Supplies and misc	4 rechargeable batteries and charger
6	32	100.00	3,200.00	Supplies and misc	2GB Compact Flash Memory Card
7	1	2,700.00	2,700.00	Computer equipment	DELL XPS M17[1]0 notebook with 100GB drive, DVD+RW drive, extra battery
8	1	1,400.00	1,400.00	Wages: Graduate	1 month summer wages

tures they will need. However, the above types of assumptions could have harmful implications if applicants are just starting to consider how to enhance their teaching by developing instructional technology tools. The mere fact of having to find computer equipment could prove intimidating for that group of applicants. Butler and Sellbom (2002) have found that faculty members who are not technologically savvy face significant barriers to adopting instructional technology in their courses, "including an innovation's characteristics and various economic, sociological, organizational, and psychological variables" (p. 22). Similar barriers could confront applicants whose projects necessitate the use of equipment they do not normally use when teaching and researching. For example, choosing transcription software and hardware is quite challenging if one is not familiar with the process of transcribing interviews that have been saved in digital format.

Assumptions—even those, like the one described above, that appear minor—are based on predefined classification systems that are both informed by and constructed for institutional realities. Nowhere is this seen more clearly than in the struggle of nurses to battle physicians' assumptions about the kind and importance of work they do—assumptions that Berg (1997) and Berg and Bowker (1997) have described as being reified in medical record forms. Bowker and Star (1999) have observed that physicians (and, I would add, insurance companies and patients) have tended to view nursing as the "undifferentiated other" (p. 252)—that is, nurses do all the undefined (and therefore less important) work that doctors do not do. The authors have argued that "implicit in the physician's classification systems was the assumption that nurses would perform any unaccounted work that would support the fit between the doctors' prescription and the patient's health" (p. 252). As a result, nurses have created their own classification system they hope will

“sensitize the entire health care sphere to the contribution that nurses make to the well being of patients” (p. 252), which in turn they hope will improve their overall work environment and challenge tautological assumptions about their important role in health care.

Just as physicians’ assumptions resulted in an environment that diminished nurses’ work, the assumptions about an applicant’s technological savvy reified in the budgetary portion of the online form could result in a grant application process that favors the technologically savvy applicant over the novice. We see this at other points in the form as well. For instance, in their project defense and description, applicants are prompted to address prior experience with, and the outcomes of, similar projects and to explain how they will determine if the proposed project has been a success. Both directives favor applicants who have applied for funding in the past or have enough experience developing instructional technology tools that they will be able to assess the success of a project. Favoring the more experienced applicant over the novice is certainly an understandable requirement for NIH and NSF grants, which are awarded to the best, most experienced applicants. A primary goal of the CETS grant process, however, has been to identify faculty members who want to use educational technologies in their classroom for the first time. By reifying in the structure and instructions in the budget section a classification system that favors the more experienced applicant over the novice, the grant program has created a document that has the potential to alienate and discourage a community they hope to reach.

“Practical Politics” and the Online Proposal Form

Just as Berg and Bowker (1997) and Groopman (2007) have noted that doctors and nurses are not the only individuals who have interests in the meaning-making qualities of formal documents, applicants are not the only members of the college or university who rely on the CETS proposal form, its functionality, and its resulting data. Whereas an applicant most likely perceives the online form as a document that facilitates the creation of a completed proposal, CETS staff, who have designed the Web site and database, made updates as requested by program administrators, and maintained the system, perceive the online form (and its related back-end functionality) as an end product of their work. The selection committee, however, is less concerned with the online form itself than with the usability of the screen from which they choose proposals to read and the formatted document generated after an applicant has submitted a proposal. From this perspective, it appears that the online form, like the medical record, is a repository for text, and it is categorized in such a way as to make the resulting standardized document easily accessible and readable by the selection committee, CETS administrators, college and university administrators, and others (see Figure 4). By standardizing the online proposal form and resulting proposal document, committee members can



FIGURE 4 Comparison of two standardized project proposal documents as viewed by Selection Committee members (Note: This figure highlights the standardized structure of the printable proposal document. The words are not meant to be readable.)

compare competing proposals using a similar language (“According to Project X’s description . . . whereas Project Y’s description makes the argument . . .”) and administrators can observe how the proposals for a project funded over multiple years have changed over time.

Douglas (1986) has warned that the “more fully . . . institutions encode expectations, the more they put uncertainty under control, with the further effect that behavior tends to conform to the institutional matrix. . . .” (p. 48). By standardizing the online form and the format that presents the proposals to committee members, CETS Grant Program administrators reify their perceptions of what information is valuable and necessary for funding consideration. This seems like an obvious observation; of course, administrators will determine the amount and type of information solicited. The significant questions, however, consider the visibility of the information being solicited, what Bowker and Star (1999) have described as the process of revealing “the practical politics of classifying and standardizing” (p. 44). Specifically, Bowker and Star have observed:

This is the design end of the spectrum of investigating categories and standards as technologies. There are two processes associated with these politics: arriving at categories and standards, and, along the way, deciding what will be visible or invisible within the system. . . .

The negotiations themselves form the basis for a fascinating practical ontology. . . . Once a system is in place, the practical politics of these decisions are often forgotten, literally buried in archives (when records are kept at all) or built into software or the sizes and compositions of things. (pp. 44–45)

The practical politics in the creation of structures and associated categories are often pragmatic, and they are determined by time, present technologies, current

knowledge on a particular subject, best intentions for organizations and intentions, and dialogue with those working within the confines of the classification system.

Many minor decisions, for instance, can have positive effects. Prior to the appearance of the 2006 online form, the forms included a field for the name of only one applicant. As a result, when one 2005 project proposal had multiple authors, the applicants were forced to enter their names in a way that challenged the formal structure of the document:

Last name: Smith & Washington

First name: Bob & Martha⁴

This entry resulted in a proposal document with the following header:

CETS Grant Proposal: Bob & Martha Smith & Washington

Norman (1991) has labeled these and other similar limiting design characteristics of formal documents *forcing functions* because they “force a specific behavior upon a person” (p. 34). As another example, Bowker and Star (1999) have pointed out that when the first International Classification of Diseases was conceived in the 1850s, there were 200 categories of disease—not because there were 200 known diseases but because there were 200 lines on the Austrian census forms used to record the diseases (pp. 64-65). Being forced to provide only one author per proposal is a forcing function (as was having a set number of budget line items in the 2000 online form). With the 2006 inclusion of the form field, “additional project participants [optional],” CETS administrators and staff eliminated this forcing function and reified within the prompt their redefinition of the classification of types of proposals: single author or collaborative. As a result, several 2006 proposals listed multiple participants, including graduate and undergraduate students. In these instances, the form field is not only providing space for other names. Rather, because these students are now on record as participants, they can state as such on their résumés or CVs. This new line on the CETS form, then, is contributing to the visibility of future researchers’ professional development.

In the 2006 proposals there does, however, appear to have been some confusion about the classification of the term *participant*. Is a participant a coauthor or someone who has a peripheral role? In her discussion of the role of computers in mediating human activity, Bødker (1997) has argued that “an artifact works well in our activity if it allows us to focus our attention on the real object and badly if it does not” (p. 150). Poorly worded or vague prompts can transfer the focus of attention from the act of completing the form to the form itself (Barnett, 1994). At least one pair of applicants was so concerned about the vagueness of the term *participant* that in the form field

⁴Names have been changed to preserve anonymity.

they typed in a clarifying prompt, “Co-PI:” followed by the Co-PI’s name and e-mail address. (It is interesting to note that the prompt the applicant used, “Co-PI,” is consistent with other grant applications. This could indicate that the applicants were using familiar proposal terminology to clarify their role in the proposal and to suggest that the form prompts become consistent with accepted research protocols.)

Another decision that has had significant organizational implications for CETS involved the classification of college departments as reflected in the Department field of the online proposal form. Applicants were asked to select their departmental affiliation when completing the Info section of the online form. In 2000, the pull-down menu included 25 departments and an Other category, which would allow faculty not affiliated with one of the 25 departments to continue filling in the form. In 2006, however, 40 departments were included, but there was no Other category. If an applicant were affiliated with only one of the listed departments, then the choice was easy. But what if the applicant were affiliated with more than one department (a center and the official department of which it is a part)? Or if the applicant had a joint appointment? In both cases, the choice of which department to select might necessitate other actions before a choice is made, such as consulting with chairs from both departments to gauge their reception of the project and how it fits within the departmental instructional technology vision. When faculty members are classified as *dual appointed*, the act of choosing a department has the potential to become both political and ethical by forcing them to choose one department over the other and by diminishing the interdisciplinary nature of their scholarship.

That there were 40 choices under the Department heading is significant because in 2006, there were 21 official college departments (as opposed to other LRSU academic unit classifications, such as Program or Center). My inquiries to CETS administrators about discrepancies between the number of departments included in the form and the number of official college departments revealed that the college’s official classification of a department was not what has determined which divisions appear in the pull-down menu. Rather, the contents of the pull-down menu reflected a classification system created by the dean based on the divisions from which he had wanted to receive vision plans. CETS Grant Program guidelines required department chairs to rank individual faculty proposals as part of their department’s instructional technology vision plan. However, if no faculty member from a certain department submitted a proposal, the chair did not write a letter in support, and therefore, that department did not submit a vision plan. As a result, there were gaps of several years between submitted departmental vision plans. The decision to link the creation of departmental vision plans with faculty decisions to submit grant proposals has resulted in the possibility that a department may never submit a vision plan. Thus, for instance, between 2002 and 2006, two official college departments had no faculty member applicants and therefore did not compose a vision plan. Furthermore, because departments were not required to submit vision plans on an annual basis, they might not have had the necessary structures in place (for example, a depart-

ment-level instructional technology committee) to create an informed vision plan when a faculty member from that department submitted a project proposal.

Departmental instructional technology committees have been invaluable in the college for articulating a department's technology vision. As an example, the text below represents one department's full vision plans for the 2 years prior to the creation of their instructional technology committee in 2003 ("made up of volunteers from the ranks of those who teach survey courses"):

2001

Our plan consists of a pedagogical project to use digital technology in a large number of our undergraduate courses.

2002

Our department strategy in relation to Instructional Technology is to put together a cluster of resources for our large shared courses such as the [introductory]⁵ surveys. We are moving in that direction in the latter case and hope to be able to do so in the former in the coming years. In the meantime you will find three individual proposals for technical support development. Of the three, the projects by [Johnson] and [Schwartz] are the most cost effective and have the most promise for wide usage. All three, however, are certainly worthwhile and point to the growing willingness of faculty to use Web-based and digitized material in their courses.

By contrast, the following text is an excerpt from this same department's 2005 vision plan:

2005

For the last three years, the . . . Department has pursued its overall goal of increasing instructional technology use with a two-pronged approach:

1. establishing a faculty computer lab and supplying software licenses in order to assist faculty members who want to incorporate multimedia and web resources into their courses
2. encouraging the development of digitized resource collections available to multiple instructors of our large survey courses in order to benefit the maximum number of students quickly

Both approaches have been fruitful. The computer lab, which became operational in January 2004, has helped familiarize faculty with the digitization of images and text, the use of PowerPoint, and the rudiments of web site design. More faculty members are now incorporating multimedia into their classroom lectures, adding digitized material to their Blackboard course sites, and exploring or expanding development of course web sites. The presence of the lab, and of knowledgeable personnel to staff it,

⁵Course names removed and faculty names changed to preserve anonymity.

has helped spur a greater interest in IT and we therefore intend to retain it as our top priority.

The department's IT committee has disseminated information about the opportunities available through [CETS] and encouraged [department] faculty members to submit their project proposals. . . . [continues single-spaced for a complete page]

The CETS policy that encouraged department chairs to comment on individual faculty proposals proved beneficial to the selection committee. Chairs' comments often provided insight into how a project complemented then-existing department initiatives, how necessary the project was within the overall discipline, and how greatly students will benefit from such a project. However, as the 2001 and 2002 vision plans for this department show, linking vision plans and the chair's comments does not necessarily result in a statement that describes in detail the department's overall technology vision.

Gaining access to information through the creation of categories and classifications within formal documents, as the dean was trying to do by classifying departments according to his own definition, is a common practice. Similarly, Berg and Bowker (1997) have observed that the electronic medical record is not merely a tool used to keep track of sick patients. Rather, it is also "a crucial tool in [nurses'] organizational struggle for status at the same time that it is a record of what happened to the patient, a legal document, and a tool that organizes their daily work" (p. 529). The above example indicates that the Department pull-down menu is a tool being used by the dean in a pragmatic effort to gain a specific type of information: knowledge about individual departments' instructional technology goals.

Prompts and Parameters in the Online Proposal Form

The relationships among actors and artifacts are often determined by a host of historical, practical, and political influences. Some of the effects may be small; others, as Perry (1998) and Norman (1991) have described, can force an actor to perform in a certain way. An analysis of the online proposal forms from 2000 and 2001 and between 2002 and 2006 reveals effects similar to those Perry and Norman have described. The 2000 and 2001 online forms prompted applicants to do the following: Specify the pedagogical goals and how they will be addressed; explain how students will benefit and how the project is geared toward their needs and expectations; describe the innovation, including new teaching methods and technologies; include a brief description of research possibilities; and explain how the project might be an exemplar/prototype for subsequent projects. By prompting applicants to discuss pedagogy, students, teaching methods, possible research avenues, and the project as an exemplar, the CETS online proposal form of 2000 and 2001 suggested a grant program that valued teaching, student learning, innovation, and increasing the number of faculty members who develop instructional technol-

ogy tools. Applicants were encouraged to see the development of their project as a starting point that could lead to other avenues of professional development both for themselves and their colleagues.

In contrast, however, prompts from 2002–2006 suggested a grant program that prioritized competition over development. Applicants were prompted to argue for why their project deserved funding, to showcase a history of developing similar successful types of projects, and to look toward the termination of the project by suggesting how they would gauge the project's ultimate success. These examples suggest that between 2001 and 2002, CETS administrators adjusted the goals of the grant program and the type of information that they valued as necessary for determining a grant-worthy proposal. In other words, the grant proposal administrators adjusted the system used to classify a funding-worthy application and reified that system in the 2002–2006 online forms. In 2000 and 2001, applicants were asked to discuss the innovation and new teaching methods and technologies they proposed to use. By contrast, since 2002, applicants have been encouraged to submit proposals that are similar to ones they had developed in the past; this prompt could stifle innovation and place applicants who have yet to develop any instructional technology tools at a perceived disadvantage.

There was, however, a pragmatic reason why CETS administrators chose to alter the funding criteria: the very real concern for using the college's money wisely. Selection committee members often grappled with how to best spend available funds by weighing the need to give successful yet incomplete projects another year of funding versus the importance of funding new projects and thus bringing new faculty into the community of developers and users of instructional technology tools. Between 2002 and 2005, 17 projects received multiple years of funding (5 were funded for 3 or more years). The language of these projects' project summaries changed very little from proposal to proposal. For example, the 2004 and 2005 project summaries for a project, "Electronic Pathway to Australia,"⁶ read exactly the same:

The [Electronic Pathway to Australia] project aims to serve the [LRSU] student body and the general public (including K-12 educators, students, government agencies and businesses). The Electronic Pathway shows [the d]epartment's commitment to digitizing its resources and sharing them with the community in creative new ways. In addition to storing information on the web, [department] faculty and professional staff will develop comprehensive teacher training modules for use in the classroom. The modules will be placed online and available for download. Additionally, these modules will be presented to K-12 educators at various outreach events. The primary technical components of this project will be a mini-DV video camera, an all purpose

⁶Project titles and descriptions have been altered to preserve anonymity but maintain their original goals.

scanner, one 12" iBook, an LCD projector and 2 17" iMacs. The project also depends on the part-time services of a digital media specialist.

Also reading exactly the same are the 2003, 2005, and 2006 project summaries for "Multimedia Language Lessons Online" (no proposal was submitted in 2004):

The proposal is for the development of an online multimedia reference and activity site for students of [language] at the first- and second-year levels, to provide a reference grammar accessible from the traditional parts-of-speech approach and from a communicative-function approach. This will enable more productive use of classroom time in lower-division Italian courses that can be devoted to communicative activities [*sic*], since the online reference and activity site will provide preparation and review of the grammatical material needed for the in-class activities.

This trend is not a coincidence. Douglas (1986) has observed the tendency for "institutions [to] bestow sameness" (p. 63). They "systematically direct individual memory and channel our perceptions into forms compatible with the relations they authorize. They fix processes that are essentially dynamic [and] they hide their influence. . . ." (p. 63). Goodwin (2000) has argued that formal documents that mediate human activities, like the Munsell color chart or, here, the proposal form, cause actors to perceive their tasks from the perspective dictated by the document (p. 21). Thus, the student archeologists' goal of classifying an exact dirt color is determined by the colors listed on the chart. In the case of the grant proposals, the organizing parameter of an applicant's perception was the prompt, which had not changed since 2002.

The prompt, a primary forcing function in the online proposal form, discouraged applicants from discussing development even if development and change had taken place over time. When considered in relation to what was actually discussed in selection committee meetings, a disconnect is revealed between the cognitive properties of the prompt and the classification system used to frame funding decisions. One of the main criteria for granting funds to a project that has previously received funding was that the applicant must be "making successful progress toward completion." Although it is understood that the primary reason for including this discussion topic was to motivate applicants to complete their projects, the committee was explicitly looking for "progress." If a project was not making satisfactory progress, there was a very good chance it would not receive additional funds. As such, the committee had classified a renewable project as one that is showing progress. Yet because the formal prompts in the online form discouraged applicants from discussing progress—from discussing the very criterion used to evaluate the project—the committee often relied on CETS Grant Program administrators' and UDAs' anecdotal and documented accounts of project progress. And some of the projects made so much progress that the original conceptions of their projects had

changed drastically. The result was a selection process informed by a classification system that was at odds with the very forms used to submit materials that were judged during the selection process.

CONCLUSION

Investigating classification systems reveals programmatic assumptions and decisions (pragmatic or otherwise) that are often hidden in the prompts, parameters, and functions of formal documents. As this study suggests, the prompts and parameters embedded in online grant proposal mediational documents have the potential to impact significantly both the text of a grant proposal and how the proposal is evaluated. By revealing what was previously hidden, researchers have an opportunity to design studies that explore issues beyond the scope of this investigation. Significant questions that have yet to be answered include the following: How do administrators arrive at the wording of the prompts and structure of the parameters in application forms? What is the effect on proposal application forms as grant organization goals and missions change over time? What assumptions do granting organizations have about their imagined applicant pool? How do technologically savvy and novice faculty members approach, engage, and complete grant proposal applications? What is the relationship among a reified classification system, the text and topic of a proposal application, and an applicant's success? The challenge for studies of grant-proposal-documents-in-use is to create methodologies that incorporate history into the scope of the investigation—history of the grant-funding institution, history of the documents being used, history of the grant proposal writer, history of the grant proposal itself, and so forth. Historical investigations have the potential to reveal the classification systems reified in grant proposal documents.

As Bowker and Star (1999) have observed, “We need to recognize that all information systems are necessarily suffused with ethical and political values, modulated by local administrative procedures” (p. 321). Proposal writing exists within such a complex, evolving information system of technologies, documents, actors, assumptions, and organizational histories. Institutional realities, decisions, and assumptions engender the classification systems that are reified in the wording of prompts and the structure of parameters; prompts and parameters engender the resulting texts. More studies need to be conducted so that we can reveal what was beyond the scope of this investigation: a more complete understanding of the cognitive processes, assumptions, and classification systems of the writers who create the prompts that structure proposal applications and the cognitive processes of the writers who respond to those prompts when composing a grant application.

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William I. Wolff is an assistant professor of Writing Arts at Rowan University. He teaches courses in new media, information architecture, and technical writing.