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Ritual as Work Strategy: A Window into Organizational Culture

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Learning in cooperation and/or collaboration with others is embedded in many higher education settings. Research on learning communities of various types often focuses on academic performance and pedagogical and curriculum enhancements. Our intent was to explore the cultural aspects of peer-to-peer collaboration. We apply the analytic lens of ritual to understand how engineering majors manage this "betwixt and between" phase of their lives prior to graduation. Our ethnographic and survey data go beyond confirming the emergence of "communitas" (an egalitarian and collaborative community spirit) among these undergraduates, to examine its value, how it works, and why it is sustained. We argue that students learn and adopt various work strategies, many of which are collaborative efforts, in response to the engineering school's organizational culture. This research raises options for new collaborations to transform the organizational culture while enhancing student performance and the college experience.

Key words: ritual, collaboration, work strategies, organizational culture, engineering

The idea of interacting, learning, and performing effectively with others has spread across industry as the *de facto* work model in an interconnected world: collaboration. Organizational partnerships, for example, are on the rise, motivated by the benefits of new knowledge and improved efficiencies and effectiveness (Briody and Trotter 2008). This idea has infiltrated educational settings where we see repeated and frequent emphasis on learning communities, student-centered learning, and active/collaborative learning experiences (Bernold, Spurlin, and Anson 2007; Freeman et al. 2014; MacGregor et al. 2000).

Research on cooperative learning often includes guidance by faculty. Johnson, Johnson, and Smith's (1998) meta-analysis revealed perceptions of greater academic and personal support from peers and instructors when college students learned cooperatively, in contrast to those working competitively or alone. Smith and MacGregor (2009:120) emphasized the faculty's role in bringing "focus, coherence, and community" to "curricular learning communities." Other research focuses on peer-to-peer collaboration, which has been linked to higher achievement and integration into college life (Arnold and Reeves 2014; Astin 1993). Indeed, students were "more academically and socially engaged" if participating in learning communities (Engstrom and Tinto 2008:47). Formalized group work is consistent with the trend of intentionally integrating teamwork into engineering curricula (Godfrey and Parker 2010; Layton et al. 2010). Smith (2015) found that "magnets" (i.e., students considered helpful by others) had statistically higher grade-point averages than students looking for help, possibly due to assisting their peers. Still other studies have emphasized social learning, meanings, and values tied to the college experience (Hughes 2010).

This article examines evidence of, and strategies for, collaboration among undergraduate students in an engineering major as part of a larger project on organizational culture and change. The setting for this study is an Engineering School

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(ES) whose students engage in highly collaborative work. We use ritual theory to understand the transition from ES major to ES graduate. By *ritual,* we mean a transformational process filled with patterned, recurring behaviors to achieve a specified goal. Ritual includes everyday interactions (e.g., hallway greetings), organized events (e.g., class lectures), and work behavior (e.g., studying) that enable us to "make sense of the world around us" (Kertzer 1988:85). Through ritual, organizational-culture features are formed, shared, maintained, modified, or eliminated. Elders (i.e., faculty) nominally define ritual by specifying expectations, sequencing, and requirements, while initiates (i.e., students) experience it. We identify strategies that ES majors use to manage the transformative process to graduation.

Explaining Culture through Ritual

Several strands of ritual theory are useful in exploring the structural (e.g., roles, rules) and dynamic aspects (e.g., work practices, relationships) of organizational culture and how students engage with it.

Ritual as Function

Durkheim emphasized the sacred dimension of ritual, especially how social solidarity and group identity create community. He conceptualized ritual through its function, arguing that "rites are the means by which the social group reaffirms itself periodically" (Durkheim 1915:432) and maintains the status quo. Rites (or ritual) are integrating forces, bringing people together to build group identity. The ritual "sustain(s) the vitality of these (shared) beliefs" such that "individuals are strengthened in their social natures" (Durkheim 1915:420). Indeed, people participate in and share the importance of community and publicly reassert beliefs and values collectively held.

Goffman extended Durkheim's work by focusing on day-to-day social encounters or interaction rituals, many affected by status. Deference, for example, might involve "presentational rituals" such as "salutations, invitations, compliments" as well as "avoidance rituals…which lead the actor to keep at a distance from the recipient" (Goffman 2005:72, 62). Goffman demonstrated that ritual reaffirms social differences and status inequalities.

Ritual as Transformation

Theorists have understood ritual as a transformation process for individuals and groups. Van Gennep (1960:3) indicated that a rite of passage occurred when people "pass from one defined position to another which is equally well defined." For Turner (2007:94), this transition represents a transitory, temporary, and dynamic space, which has "few or none of the attributes of the past or coming state." Indeed, one cannot simply rely on the past for managing the transition. Ritual initiates are "neither here nor there; they are betwixt and between" or "liminal" (van Gennep 2007:95). They experience ambiguity regarding assumptions, norms, status, and identity, often as a member of a cohort.

Turner discussed the formation of an egalitarian spirit, which he called "communitas," among ritual initiates. Such individuals experienced similar expectations, processes, and challenges and submitted to the "general authority of the ritual elders" (Turner 2007:96) whose job was to orchestrate the structure of the transition. "Intense comradeship and egalitarianism" tended to arise within the cohort (Turner 2007:95). If the goal of the ritual was achieved, the initiates attained a new status, and the transformation was complete.

Ritual as Performance

Ritual has been conceptualized as a dramatic or staged presentation. Goffman (1959:17, 22, 24), who also analyzed ritual as performance, noted that a performer "puts on his show" for "his audience" in a certain "setting" and associated with a particular "appearance" (i.e., engaged in work, social activity) and "manner." Moore and Myerhoff (1977) identified six formal properties of ritual: repetition, acting, special behavior, order, staging, and the collective dimension. Their edited volume emphasized the development, performance, and outcomes of ritual, along with the messages and meanings conveyed. For example, ritual shapes social interaction and views of social life.

Rituals in educational settings are particularly relevant for this article. Manning (1994, 2000) found rituals built community and created meaning, while Magolda (2000, 2003) connected ritual to institutional values. Quantz and Magolda (1997:222) argued that small daily rituals of school life represented the "real work of creating community (or of resisting it)…especially those little actions between individuals that work symbolically to affirm or challenge the location of the individual in the status quo." Quantz (1999) asserted that much public action is a "show" that sends certain signals (e.g., via dress, language). McCloskey (2014) focused on the persistence of ritualized practices (e.g., administering timed tests) despite educational reforms.

Other Lenses for Understanding Ritual

Ritual has been viewed as an enactment of power. For example, Bell (2009) introduced the notion of "ritualization" to describe certain strategies and social actions distinguishing ritualized practices from other activities. A power relationship tied to ritualized practices "defines, empowers, and constrains" (Bell 2009:221) rather than acts to exert total social control. She argues that participants both consent to and resist aspects of ritualized practices. Although the power relationship is asymmetrical, given one party's level of domination, it entails some degree of flexibility (e.g., in negotiating). Kertzer (1988) offered numerous cross-cultural examples of the power of political rituals and their associated symbols on fomenting or reducing conflict as well as producing or strengthening political systems and processes. Secrecy during

a ritual is also an indicator of power. Stewart and Strathern (2014:76) emphasized the "acquisition or exercise of power in and through secret acts that mark [those] participants off from others." Those possessing secrets are in a more powerful position than other ritual participants.

Still other researchers have examined ritual using embodiment theory covering domains such as emotions, feelings, spirituality, experience, and the senses. Turner (1967:28) discussed properties of ritual symbols in which he found a "polarization of meaning"—whether sensory or ideological. Some symbols "may be expected to arouse desires and feelings" (Turner 1967:28) such as the *mudyi* sapling producing a milky substance and symbolizing breast milk. Handelman and Lindquist (2005:4) explored the concept of ritual devoid of "cultural and contextual positionings." Their contributors, for example, offered examples in which ritual involves God (Nagy 2005), virtuality (Kapferer 2005), and other "acts of imagining" (Handleman and Lindquist 2005:214). Stewart and Strathern's (2014:1, 117) definition of ritual is "practice and performance" but "a kind of embodied performance" that can be captured through a process of framing in which values and meanings are emphasized.

A New Focus: Ritual as Work Strategy

We take a new approach in exploring ritual by targeting perceptions and behavior *during* ritual as work gets done. Along the lines of Durkheim (1915), ritual represents an ideal way for us to ponder the moral forces that unite individuals and allows students to develop and follow their own social norms as a way to succeed under pressure. Given the importance of collaboration in education and the workplace, we wondered how initiates navigate the college ritual. The literature offers no agreed-upon definition of collaboration. Thomson, Perry, and Miller (2007:3) define it as:

> Interact[ing] through formal and informal negotiation jointly creating rules and structures governing their relationships and ways to act or decide on the issues that brought them together; it is a process of shared norms and mutually beneficial interactions.

Our definition is simpler: working with others to achieve goals. We approach ritual from the perspective of students' work—notably, learning, studying, explaining to others, and practicing engineering. We examine how ES majors manage their educational ritual from rising sophomores to graduating seniors. Thus, ritual offers us a collective representation of the social group that we can observe, since it allows students to see their ritualized actions as "doing" something relevant and significant in their social (school) life. These research questions guided our analysis:

- What strategies do ES majors use to navigate the current culture and maximize their ability to be successful?
- To what extent does collaboration play a role in their activities?
- What are the qualities of peer relationships in these collaborative activities?
- What can be learned about organizational culture through the lens of ritual?

Background

An engineering undergraduate program within a Midwestern United States research university is the setting. First year College of Engineering freshmen enroll as "undeclared" majors and focus on math/science basics. They transition to an engineering major (e.g., electrical, mechanical) at the start of their second, or sophomore, year; admission to the ES major is competitive. About 1,400 ES majors pursue the 120-credit-hour degree where the student-to-faculty ratio is about 20 to 1.

Second year entails discipline-specific engineering fundamentals. It is characterized by large class sizes (e.g., 120 students), intensive problem solving (via well-defined homework problems), and primarily a lecture format. Third, or junior, year shifts toward more advanced topics and includes laboratory experiences. Class sizes are somewhat smaller, with team-based assignments more common. Technical electives, which generally favor complex, open-ended, and ill-defined problems, largely fill the fourth, or senior, year. Course enrollment runs between thirty to fifty students. Also included is a capstone course in which small teams collaborate on specific engineering challenges.

Faculty hold the highest-status, with credentialed chaired professors at the top of the hierarchy. They are featured in ES documentation as leading "world-class research programs." Support staff are generally subordinate to faculty, working in management and supervision, academic advising, administrative tasks, lab instruction, and research. Faculty and staff funnel ES majors through the ritual. Rank within the student hierarchy is defined by cohort year (i.e., sophomore, junior, and senior), academic performance, and sometimes, student leadership positions.

ES brochures and web pages promote a rigorous undergraduate program designed to attract "Renaissance" students driven to "excellence." Most ES majors participate in one or more co-/extra-curricular activities (e.g., internships, study abroad). Student organizations are identified as a "very economical way to build relationships with [the] brightest and most energetic students." Thus, the ES ritual includes both academic and non-academic components, some of which (e.g., curriculum) are designed intentionally by faculty and supported by staff, while others (e.g., clubs) are shaped by groups of students or authored solely by individual students (e.g., co-op programs).

Data and Methods

Data Collection

We used a typical ethnographic mixed methods study with multiple forms of face-to-face engagement. The power

Table 1. Interview Characteristics by Study Participant Type

Interview Characteristics	Faculty	Staff	ES Majors	Total
Number of Interviews	11	15	12	38
Average Interview Length (in minutes)	53	56	56	55

and strength of ethnography, a systematic account of a particular organizational or community culture, "lie in features such as the multiple methods used in data gathering, the length of the field period, the composition of the sample, and the cycle of exploration, confirmation, and validation of the cultural patterns" (Briody, Trotter, and Meerwarth 2010:181). Our goals were to tell "a credible, rigorous, and authentic story" (Fetterman 2010:1) and build "theories of culture—or explanations of how people think, believe, and behave" (LeCompte and Schensul 2010:12). We also administered surveys and reviewed documents and digital materials. IRB approval was secured, and all participants consented.

The primary source of data was interviews. In Fall 2015, we conducted thirty-eight interviews involving forty-two people (i.e., faculty, staff, and students) (see Table 1). The faculty and staff represented different ranks and job functions. The interviews averaged fifty-five minutes with a range from twenty-eight to eighty-eight minutes. We used open-ended questions to elicit cultural descriptions and viewpoints. Sample questions included:

- If you were speaking with a friend or family member and that person asked, "What is it *really* like in the ES?" what would you say?
- To what extent has the culture of the ES changed since you arrived?
- Tell me about your experiences interacting with other ES majors (or with staff; or with faculty).

We conducted eight focus group discussions in Spring 2016 to explore and confirm themes that emerged from the interviews. The sample consisted of thirty-seven ES majors (all sophomores); the focus groups ranged in size from four to six. Discussions lasting seventy minutes on average incorporated questions such as:

- What lessons have you learned about being academically successful?
- To what extent is the ES program preparing you to achieve your goals?
- If you could imagine how you would like the culture to be in the future, what would it be like?

Our team designed a Spring 2016 survey to confirm and extend key interview findings. The sample included 110 majors on which we knew cohort year: fifty-six seniors, forty-seven juniors, and seven sophomores. The survey focused largely on student work habits (e.g., alone or in groups, where and when work occurred).

ES activities were continually observed. For example, we documented the places where students spent their time (e.g., classrooms, offices). We focused on building layout, equipment, and workspace décor and took photos in public spaces to capture work and interactions.

To understand how the ES presented itself and to capture its mission and values, we examined the website. We also collected materials given to majors and new faculty (e.g., on courses, areas of expertise).

Data Analysis

All interviews and focus groups were audio recorded and transcribed, though we also took extensive notes during these discussions. We reviewed sample transcriptions with our notes to ensure quality and resolve any issues.

Our primary analytic technique was content analysis, used to identify themes and patterns in the ethnographic data. We supplemented it with a specific exploration of the interview data using kumu.io. Kumu's network visualizations were useful in creating cognitive maps from connections made by interviewees between two or more phenomena. Descriptive statistics were applied to the survey data.

We triangulated within and across methods and were sensitive to evidence of consensus or difference. For example, we explored student interviews for key patterns and examined staff and faculty interviews for the same, similar, or alternate patterns. We compared the degree of consistency across interview, focus group, and survey data, reconciling disparate or opposing findings. Next, we reviewed our work with selected ES members and with engineering and anthropology faculty at several universities and in the private sector. Both formal presentations and informal discussions resulted in strong support for the patterns we identified.

Ritual Conditions

Transition Challenges

Students and faculty often have distinctive perceptions of the transition from first to second year. A senior recalled, "A lot of the people in the program kind of come in cocky, I guess would be the way to put it. I definitely did…."

By contrast, a faculty member stated:

> There's a step up in terms of workload and expectation… they're starting to see topics they have never ever seen before…. They can't live off that high school content knowledge anymore. It's all brand new and the combination of those things, often in that semester…will catch them by surprise.

ES majors described their experience through these freely-elicited comments: "hard," "busy," "difficult," "intense," "tough," "overwhelming," "intimidating," and "struggle." Other phrases offered additional detail: "tons and tons of homework," "sink or swim," "pull all-nighters," "It's like boot camp," "It's a gauntlet," "grinding through," and "just *way* too much."

Many faculty members agreed with student assessments: "I think it's very rigorous. It's very formal. It's no compromises. I won't use the word 'strict,' but the idea is that when we are focused on undergraduate education, we do it right." The picture emerging from student and faculty descriptions is one of academic and technical rigor, a program intentionally designed to demand commitment and hard work.

Recognition and Communitas: Being Part of the Experience

ES majors self-identify within their cohorts (e.g., sophomores with sophomores), recognizing that they share a common experience. They take many of the same courses, having been advised by professional staff members who, as one of them said, "know the rigor of those courses, the sequencing of those courses." Despite large class sizes, ES majors meet others in their cohort as they follow their plan of study. One senior put it this way: "(You) develop a pretty good network of peers in the program. You're all in it together." Similarly, a junior commented:

> Last night I was in the lab for a couple hours late…. There were people walking around kind of talking and making jokes while they were working. Generally, we are like, "Oh, this is awful—like so much work." But then we just get [sic] it done because then we realized we were all suffering together and not alone—which is the nice part.

Many focus group participants described the camaraderie that forms, as explained by this sophomore:

> Based on visits to other colleges I had, it seemed like it was more competitive [elsewhere]—like cutthroat, like you want to be ahead of everybody. But from my experience here so far, it seems that everybody is wanting to help everybody out a lot more and [you] realize that you have a common bond through engineering classes and the school.

Another student echoed his classmate's sentiments saying: "You have to go out there and help each other. So, it turns into an 'us against the program' instead of 'us against each other within the program.'"

ES majors understand that they are a part of a larger whole. Even though peer networks get disrupted if students fall behind, enter the co-op program, or participate in a global experience, ES majors have the option of seeking help from their cohort. Indeed, this explanation from one senior offers a succinct rationale: "…because everybody's like in the same boat." The consensus view is that communitas forms to deal with the challenging workload.

Daily Routine and Work Habits

ES majors have full days. One senior stated, "Typically, I'm on campus by at least eight or nine o'clock in the morning. Four, five hours of class, lectures, labs, on average. Then I usually camp out in a computer lab and leave around ten or eleven. Then go back home and sleep and start over." Another senior recounted the rhythm of his day like this:

> You go to class. Then afterwards you have a meeting (with your group). … You go to the computer lab to work on the project. We realize, 'Okay, we finished this. Why don't we work on homework in this class together—get started on that?' We get stuck. Luckily, the TA [teaching assistant] is there to help us out; [we] ask him questions. It's just like eat, sleep, engineering.

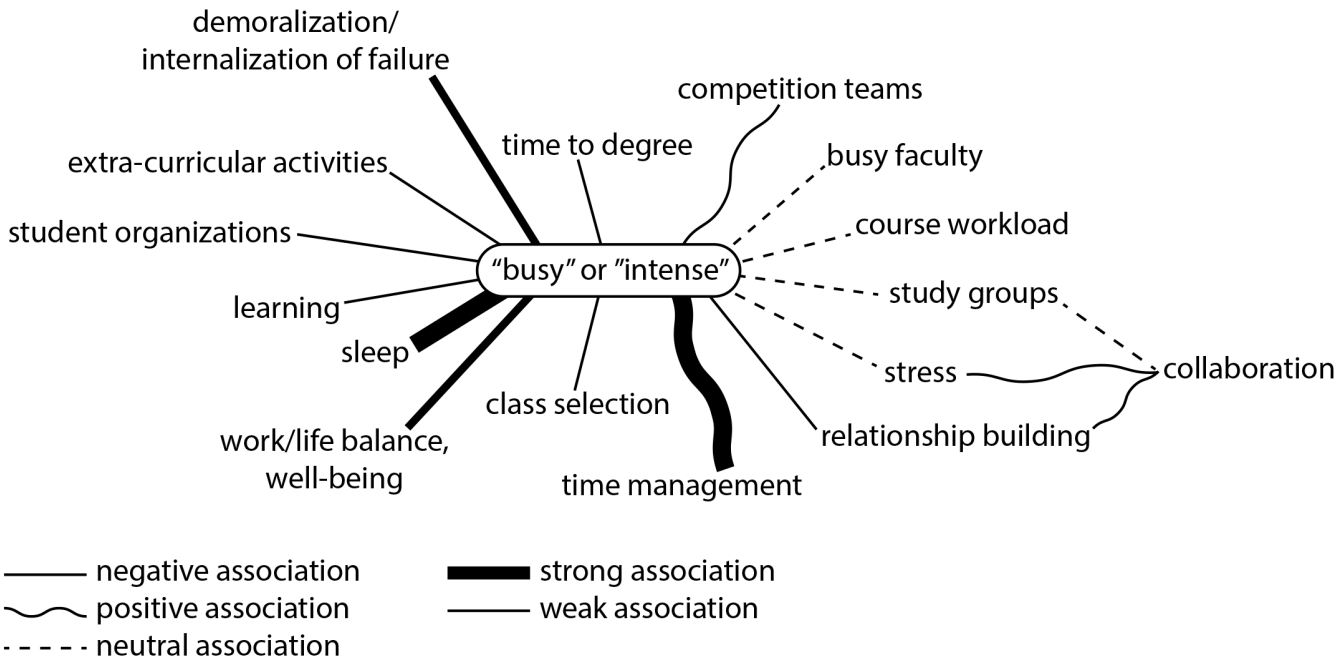
The daily routine consists of attending class, studying alone or in a group, and other forms of group work (e.g., project-based, student organization). These daily activities are tied directly to the curriculum and reflect ES organizational values espoused by students, faculty, and staff: technical excellence, pride in a rigorous program, commitment, hard work, and perseverance. A staff member noted: "Students are…very tolerant of other students unless they're not working. They're extremely hard workers." As in any ritual, ES majors are expected to accept and deal with the challenges to complete it successfully.

Workload Impacts

Figure 1 illustrates the effects of the workload on various aspects of student life. This kumu.io analysis not only highlights activities often taken for granted in the literature but also reveals student perceptions of those effects. The line types represent student views—straight line is negative, curved line is positive, and dotted line is neutral.

Positive Consequences. ES majors believe that time management skills result directly from the "busy" or "intense" workload (thick curved line). Over time, they learn to concentrate on their academics, using non-class hours increasingly effectively. A thin curved line connects the workload with the Baja program—a hands-on engineering experience that can be a counterweight to schoolwork. One senior commented:

Figure 1. Workload Effects on ES-Majors' Lives and Learning (Kumu Figure by Anthony Ramos and Edward Berger)



"You also get a benefit out of it [Baja] while you're having fun—my sanity check, if you will." The Baja program is emblematic of many ES student organizations, with high student satisfaction.

Negative Consequences. Figure 1 illustrates many negative consequences of the busy/intense workload: relationships, participation in student organizations, extra-curricular activities, and work-life balance and/or well-being. One focus group participant commented, "If you increase your socializing even the tiniest bit, you can feel like you're not putting enough into your schoolwork." Workload intensity ramps up for upperclassmen: "As you get farther and farther down the track of [the program], it's just been exponentially more difficult." There are significant social costs in completing the ES program in four years, even for those *not* involved in semester-long programs (e.g., co-op) where program completion takes longer than four years.

A second dominant pattern is sleep loss (thick straight line). Freely-elicited comments about sleep appeared seventeen times in the ES-major interviews. One senior asked her TA: "Just to get a general understanding…How many sleepless nights will I have…?" When a junior was asked what he did in his spare time, he replied, "I like to take naps." Indeed, daily schedules are so packed that work-life balance is, in fact, not balanced—as indicated by this senior: "I mean I've spent thirty-six-hour periods just in a computer lab before—just sitting there, working on everything. I feel like I spend most of my life in the computer labs." Indeed, we discovered that some students actually sleep in the labs. The rigorous workload extracts a price.

Strategies for Getting the Work Done

Working Alone

ES majors report a two-pronged approach to working, including time spent studying alone (i.e., physically isolated from peers) and time spent in groups. First, they emphasized the educational value of working alone. One senior stated, "Some classes, I study by myself, and it's because I understand the material pretty well." Many preferred to study alone until they encountered some difficulty. Reaching out to peers is the most common second step in studying strategies as reported by this focus group participant: "…[F]or exams and homework, I start on it by myself. And then if I get stuck, or if I finish it and I want to check with somebody, then I will go to one of my friends who is working on it." Despite the preference to begin studying alone, ES majors are rarely isolated from other initiates. Students frequently reported online communications via web or text with peers even if working alone.

Our survey results generally confirm these patterns. Respondents (n=110) reported spending between one-half and two-thirds of their time working alone, with the remainder spent working in groups. Our observations of students working in the ES building are consistent with these findings.

Participating in Collaborative Work Groups

Group types. Our study revealed three general types of groups within the ES ritual: study and project groups, student-organization groups, and career-enhancing groups.

Study and project groups help students master course content. Clusters of ES majors taking the same course(s) or labs collaborate. Study groups are student-driven and informally-formed, sometimes assembling based on professor recommendations. They have a flexible membership and a duration ranging from brief communications to semester-long interactions. Study groups may remain intact, change, or dissolve depending on group member compatibility, competency, and schedules. One senior stated, "We take a lot of the same classes, so we'll work on things together. There's four or five of us. They're usually pretty consistent, and there's always more people that come and go. It's not super organized…we'll just meet up in the labs occasionally.…" Project groups, on the other hand, are formally organized under the professor's direction and are tasked with completing a class project. Projects are generally longer-duration (i.e., weeks) and more open-ended than the homework and coursework review done in study groups.

Study and project groups vary in size, composition, and meeting frequency. Group size averaged two to eight members. Group composition was mixed in terms of gender and ethnicity/race but not necessarily language. Non-native English-speaking international students often formed language-specific groups. Meeting patterns varied depending upon the amount of work to be done and its deadline. Groups met about two to three times per week for six to eight hours.

We found no particular pattern associated with group formation. Given the large class sizes, study groups seemed to be based on a variety of factors (e.g., proximity in classroom seating, common residence in a dormitory, enrollment in same classes, interest in studying near the tutorial rooms). It is not important for students to know each other to study together or to seek academic help from each other. In general, group composition changes with each new semester, though some group members may continue to collaborate if future courses bring them together.

Student-organization groups consist of competition-based teams such as Mini Baja and Formula Society of Automotive Engineers (SAE). Other groups target professional development such as the Ambassadors' program that introduces children and youth to engineering. An Ambassador who was a junior stated, "We try and do one event per semester for elementary or high school students…if your parents can't get you to [the university], this is getting [the university] to you and getting you exposed to engineering."

Career-enhancing groups take various forms. Over 90 percent of ES majors gain work experience through internships and co-ops (ES Admissions Folder, Spring 2014). A few interviewees reported working as research assistants. As with the internship and co-op programs, students initiate the request, though often a professor will make a general announcement in class about research opportunities. The ES and university offer several study-abroad programs that typically include workplace exposure and/or direct work experience. A senior from an Asian program stated, "I got to shadow an industrial engineer, a tooling engineer, [and] I even got to go to one of the suppliers they had for injection molding and seeing [sic] the drama that goes on between two different companies…."

All work groups have a collaborative component, most of which involve peers, though an industry sponsor, professor, or study abroad coordinator may engage with students. Collaborative work groups are another key strategy by which students manage the challenges of the major and adapt to the size and demands of the organizational culture. ES students recognize the value of such work groups in supporting their learning and completing program requirements, though they would be unlikely to talk about their participation in terms of "ritual."

Ubiquity of communitas. Group work is intimately tied to the formation of communitas. A senior stated, "Usually when I first meet someone, it's like we're working on homework. Then we continue to work on homework together. We start to learn. We'll start to grow on a personal level…." A junior remarked, "When you do find a group of people who regularly meet up…[they'll say] 'Oh! You did bad [on the exam]? Sorry to hear that. What can we work on together?'" Interactions may occur outside the work group according to this senior: "After spending time with the Baja group, we'll get done with a project or whatever, and we'll all go out to eat together afterward. I guess it's just kind of expanded my social circle, which I think is definitely positive."

Sophomore focus group participants explained their views of group studying in relation to mutual support and cohort success:

- "It's usually a group of us saying, 'Okay, we've all done our assumptions and what did you get from the problem statement? And what equations should we be using for this problem?' And trying to make sure that everyone succeeds together."
- "Engineering is supposed to be about teamwork, and you've got to be good at 'team working.'…And with the help rooms, then it's a lot of thinking through it together rather than 'I've got the answer. Ha-ha! I'll get the grade over you.' I've never seen that happen."

The willingness to help and receive help from peers has been essential to ES-major academic success. A staff member offered this confirmation: "In general, I see the students as being very supportive of other students."

Academic help through peer collaboration. We observed repeated instances of students collaborating at tables and in open seating areas in the ES building. Survey respondents indicated that groups meet in academic spaces and that most groups work together between 5:00-10:00 P.M.

Interviewees report benefits of group work. A sophomore commented, "Usually, we don't know how to do some questions or don't know some concept about the things in the class. We ask each other. We explain to each other." A junior talked about his Baja experience: "I usually hit a rut more often than not, take a step back, then consult with everybody else to see who's got what, who's farther on…. Everybody's got a piece of information for the puzzle. Then hopefully you put it together…." His statement underscores the belief that all are capable of collaborating and contributing through give-and-take processes.

Just as some study groups may dissolve, some project groups assigned by the instructor may not be fully successful. A senior confirmed: "It always becomes me just taking it (the project) in my own hands, finishing the thing for myself, because I know I need to get it done for my own sake. I try to get everybody to cooperate, but sometimes you can't change peoples' ways." Tensions can arise on projects, as this professor explained:

> The German students, for example, tended to be very strongly opinionated: "This is the way it needs to be. This is the way we learned it. This is how you do it'." …The other two United States students were kind of getting left out. From the German students' perspective, they were underperforming, and from the American students' perspective, "They weren't letting us participate." …I said, "I think you guys have the potential to be very strong contenders for the competition at the end, but you won't get there unless you can learn to trust each other with things, even if it's not exactly the way you would've done it." To their credit, they took that to heart.

Tensions related to collaborative work occur; sometimes they are overlooked and other times addressed. While conflict may affect relationships within a particular work group negatively, its effects remain localized and temporary.

Relative ease and efficiency of learning. A second benefit of group work is the relative ease of learning compared to learning on one's own. Many sophomores and juniors, particularly, consider study groups to be an effective and efficient way for them to master the course material. A junior commented, "I know everyone is very willing to help, so I'll text someone while I'm doing the…homework and ask if they have any helpful tips, or [say] 'I'm stuck here. What am I missing?'" A senior indicated that working in groups can reduce wasted time or effort: "We'll like go to an office hours [sic] together…because then TAs can interact with like answering one question with a group of people instead of having to do them all individually. I feel like collectively we can typically solve problems a lot more efficiently that way."

Durability of peer relationships. The relationships that ES majors form through group work are mixed. Occasionally, strong friendships develop and enjoy significant longevity. One senior explained:

> The professor leading the exact lab section I was in… ended up assigning us [to] groups…. Even though we were literally sequential in alphabetical order by last name, we ended up hitting it off really well…. It was this weird coincidence, and even now we are still really good friends. We try to get classes together.

A junior involved in study abroad offered, "You make a lot of good friends on that trip."

However, most peer-to-peer relationships are transitory and somewhat superficial. Relationship permanence and quality are not primary considerations during the ES experience, though work group compatibility is. One focus group sophomore explained: "I actually didn't know very many [ES majors]…coming in this year. But now I've met people in my classes. But for the most part, they're not really friends that I hang out with outside. They're just like to do homework and study together." A senior's comment also suggested the temporal, and sometimes momentary nature, of these relationships: "The majority of my friendships within ES have always come out of some academic need." The survey revealed a similar pattern: when asked to account for *all* purposes of study groups, "enjoying social interactions with others" only accounted for between 10-15 percent of the 418 responses. Thus, we find that ES majors are focused on completing their degree and availing themselves of the benefits of communitas to address their workload issues. Relationship durability is not a top priority, just as college social activities are not a top priority.

Discussion

Our research aligns best with the social dimensions of ritual theory, including its functional and structural components. For example, Durkheim's (1915) work primarily emphasized function and maintenance of the status quo. Turner (1967:101) explored transitions but had little interest in the dynamics or interaction-oriented aspects of ritual, describing "the passivity of neophytes to their instructors, their malleability,…[and] their reduction to a uniform condition…." The performance orientation of ritual, as employed by Goffman (1959, 2005), Magolda (2003), Manning (1994, 2000), Quantz (1999), and Quantz and Magolda (1997) stressed showmanship and normative behavior. These ritual theorists focused their attention either on large-scale, collective rituals or on everyday interaction rituals but not on the simultaneous integration of both.

Understanding Ritual as Collaborative Work Strategies

Our definition of ritual (a transformational process directed toward a specified goal) targets the ritual's long-term scale (i.e., transition from ES major to ES graduate) *as well as* the day-to-day activities and challenges ES majors face. Thus, it involves both the evolution of the college experience over approximately three years and the shared experiences of the initiates over this time period. Without the everyday ritual practices understood within the broader temporal and spatial

context of the major, we would be unable to understand the centrality of group behavior to the engineering degree. Our approach focuses on what happens *during* the transition to ES graduate, and in particular, the use of student work strategies to manage the workload. This emphasis on work strategies is not currently part of the ritual literature.

The movement of ES majors through the educational system occurs as part of a context of asymmetrical relationships. Faculty hold greater power than students in the ES hierarchy given their role in establishing course requirements and standards and evaluating student performance. Moreover, they possess engineering discipline "secrets" (Stewart and Strathern 2014) and knowledge that students hope to acquire. The faculty's role and experience, along with prominent faculty symbols (Kertzer 1988), such as private offices and titles, help legitimize and reproduce the "ritualized practices" associated with teaching and learning. As Bell (2009:214) argued, the ritualization process does not result in powerless puppets: "Those seen as controlled by ritual authority are not simply able to resist or limit this power; they are also empowered by virtue of being participants in a relationship of power." Indeed, students learn to respond and adapt to ES conditions through purposeful strategies.

Individual strategies. The workload shapes how ES majors adapt to the organizational culture. Two individual strategies appear to enhance academic performance. First, ES majors study alone during a significant portion of their college years. They generally prepare first and meet with peers after, a finding that offers a more nuanced view of student learning than Johnson, Johnson, and Smith's (1998) meta-analysis. Some study participants suggested that they were more likely to study alone as soon as they learned to manage their time effectively; time management tends to be more challenging for sophomores than for upperclassmen.

Second, ES majors compromise the amount of time they spend sleeping and joke about "sleepless nights" or craving "naps." Many focus group participants shared a knowing smile or laugh when such phrases were used. In itself, this behavior expresses communitas and the shared understanding of the intense ES experience. Joking about the lack of sleep reinforces ES majors as a special group, while simultaneously mediating status differences and functioning as a badge of honor that is critical to ES-major identity.

Our findings are consistent with Magolda's (2000, 2003) emphasis on cultural norms and messages and Stewart and Strathern's (2014) focus on the values and meanings ascribed to ritual. The value of studying time alone and attention to assignment deadlines reflects the organizational culture's emphasis on individual responsibility. Each ES major transitions through college largely based on his/her own efforts. Learning how to study, particularly by doing homework problems, and time management are skills students are expected to master. Problem solving, hard work, and long hours are typically necessary to complete the degree requirements. Students unable or unwilling to commit to this approach generally experience lower academic performance or leave the major.

We found embodiment theory, with its emphasis on internalized emotions, feelings, sensory perceptions, and the like (Handelman and Lindquist 2005; Turner 1967), does not align with our data set. Our data gathering was not designed to capture this micro level of detail since our interests lay in comparing the current ES organizational culture with a potential future culture. While we have some evidence from our student, staff, and faculty conversations that students experience an emotional transformation—from unsettled sophomores to more confident seniors—that evidence is largely anecdotal and beyond the scope of this article.

Collaborative strategies. We see ritual as a set of learning processes in action, rather than a performance or show for an audience (Quantz and Magolda 1997). Our analysis incorporates students' sense of belonging (Engstrom and Tinto 2008; Godfrey and Parker 2010; Hughes 2010) but directs attention to *how* the work gets done. In that process, a shared group identity is formed: "us against the program." Appadurai (2004:79) argued that in ritual, "social effects are produced, and new states of feeling and connection are created." Communitas, through collaborative work groups, helps strengthen learning. ES majors learn cohort reliance to help build their base of technical knowledge and improve their problem-solving capabilities. They optimize time spent together to ensure efficient and effective collaborations in study, project, and student-organization groups. While some socializing occurs, these work groups are much more about accessing and using peers as a resource pool (Hughes 2010) because they are "in the same boat"; "strong 'family-like' relationships" (Godfrey and Parker 2010:16) do not emerge.

Exposure to the workplace and the global practicalities of engineering are more important than efficiency for career-enhancing groups. Such college experiences represent a change, but not a termination, in the ES ritual. ES majors temporarily alter their daily routines to embark on internships, co-ops, or study abroad. Upon return, students express a readiness and sense of renewal in tackling the next set of ritualized challenges and in re-immersing themselves in the organizational culture's communitas.

How the Work Strategies Work

Communitas. We have focused on *the what*—student strategies to get the work done. Now we turn our attention to *how* these strategies work. Turner (1967, 2007) emphasized communitas but did not connect it to specific activities and interactions among ritual initiates. Magolda (2000, 2003) and Manning's (1994, 2000) research stressed the role of collective events in building community by virtue of the connection to the college, as well as meaning-making, but without capturing connections among ritual initiates. We found that communitas performs its short-term function within work groups by providing academic help and encouragement. Communitas and collaborative work strategies are self-reinforcing.

The egalitarian spirit of communitas does not dissipate from the organizational culture when the course or project ends. As new courses start, ES majors may continue working with former group members; alternately, they may choose new companions, seeking a good fit. Communitas simply gets energized among work group members as group composition changes over time; the organizational culture continues to support and strengthen it. Since the project began in Fall 2015, we have identified a strong collective interest in helping all group members succeed. Collaboration and communitas have been intertwined, purposeful, and persistent. Unfortunately, our data do not allow us to clarify how collaborative groups may be structured or change internally.

The enduring egalitarian spirit of communitas contrasts dramatically with ES' status hierarchy. Status-equal communitas among ES majors continues in spite of the status hierarchy in ES organizational culture. While some have referenced status and power differentials between selected ritual stakeholders (e.g., elders) and initiates (Bell 2009; Magolda 2000; McCloskey 2014; Quantz 1999; Stewart and Strathern 2014), we note two structurally-parallel systems operating. Given that context, we wondered how and why communitas stays intact. Indeed, the strength and resilience of this egalitarian spirit persist—even as pressures mount for ES majors to differentiate themselves the closer they get to graduation. The question becomes: why does communitas survive?

Cultural accommodation. One explanation for the persistence of communitas concerns the accommodation of status-equal communities by ES and the broader university culture. Students are in a liminal situation that has an "order… having a beginning and an end" (Moore and Meyerhoff 1977). The ritual sequence signals the temporary, ephemeral period in students' lives. ES majors are transient, not permanent members of ES culture. Indeed, each cohort is "just passing through" on the way to the degree.

When individuals or a group are not a permanent part of an organization or community, differences arise with those who are (relatively) stable members (e.g., faculty, staff). As long as the temporary group does not attempt to change the existing organizational culture in ways perceived as threatening, the differences can exist in parallel and be tolerated, even to the point of acceptance and promotion. Communitas is not considered a threat, despite its distinctiveness vis-à-vis the status hierarchy. The broader ES (and university-wide) cultural rules, expectations, and practices are flexible enough to accommodate such differences, even to the point of reinforcing their advantages. Indeed, collaborative work strategies benefit other ritual participants, namely faculty. Instructor encouragement of, or assignment to work groups, effectively reduces instructor time with students because students help each other. Consequently, faculty time is largely freed up for other pursuits.

Reciprocity. A second explanation for the persistence of communitas involves reciprocity. ES majors are active in a number of mini communities (i.e., collaborative work groups) that function as insulated safe zones for questioning, answering, practicing, and learning. Interaction is a key element of these groups; the exchanges within the groups have the potential to benefit all present.

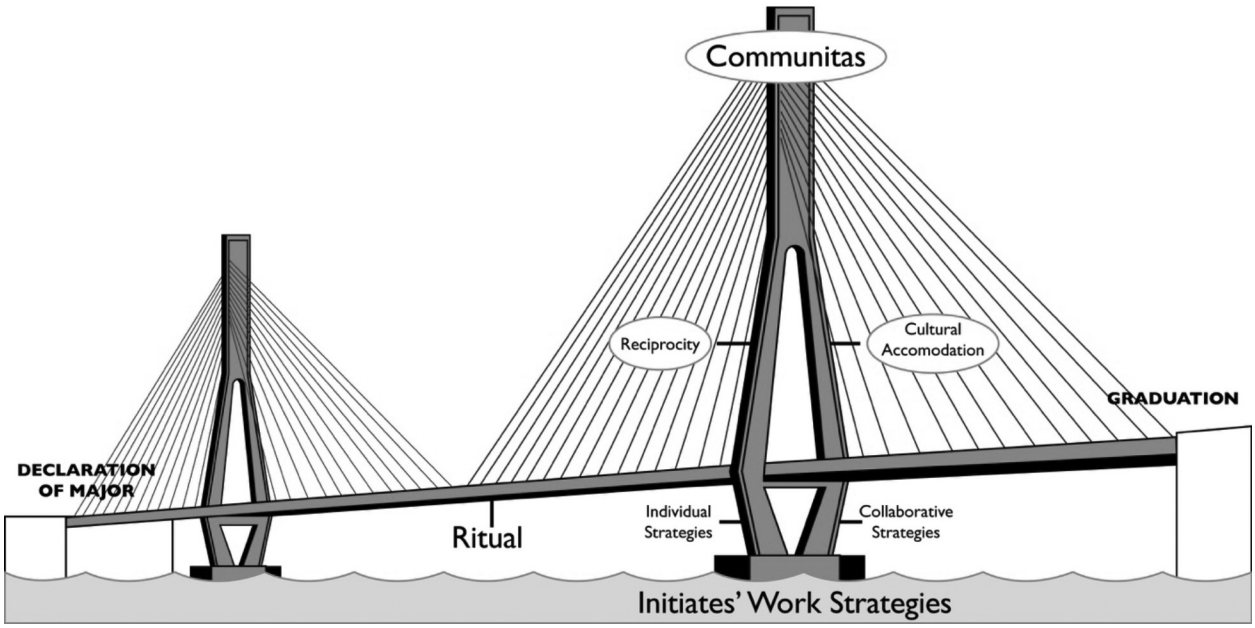
We argue that two forms of reciprocity (Sahlins 1974) are aligned with communitas within these various mini communities. *Balanced reciprocity* is characterized by exchanges (e.g., academic assistance) in which there are counter obligations. If one ES major assists another in her study group, she can expect to get help from someone in the group when she needs it. By contrast, in *generalized reciprocity*, there is no expectation of return from the individual offering the help, though there is an expectation that the recipient will help others at some future point. We often refer to this behavior as "pay it forward." Generalized reciprocity happens across groups (e.g., a member of one group might offer to assist another group studying in the same location) while balanced reciprocity happens within groups. Communitas, accommodated by the surrounding ES culture and powered by reciprocity in the context of a demanding program, creates a dynamic of students collaborating with and teaching each other. This explanation is consistent with the findings of Engstrom and Tinto (2008) and Smith (2015).

Modeling the ES-Major Experience

Figure 2 illustrates our model of ritual as work strategy. The *environment* surrounding the cable-stayed bridge, including land, water, and air, can be likened to the organizational culture in which the ritual occurs. Each cultural attribute (e.g., number of majors, work ethic) affects and is affected by all other cultural attributes (e.g., study groups, socializing while working).

Structural features of the bridge reflect all the key elements of both the collective ritual and the shorter ritualized interactions. The *bridge deck* characterizes the collective ritual or transition of majors to their end goal: graduation. It is associated with the initiates' transformation from an ambiguous non-degreed status to degreed engineer. The *bridge foundation* represents the work strategies used to cope with the technically demanding organizational culture. Two load-bearing *pillars* epitomize the two principal work strategies ES majors employ. One denotes individual strategies (e.g., studying alone, sleep deprivation), while the other reflects participation in collaborative activities (e.g., study groups, student-organization groups). The *top of the bridge* and the *cables* represent the unifying power of communitas among initiates. Both features can support and stabilize work group relationships, essential for managing the engineering workload. Finally, the triangular-shaped *pylons* supporting the cables alternately signify reciprocity among majors and cultural accommodation by the organizational culture. Thus, the model serves as a heuristic device in which various elements join in a certain configuration to produce this particular cultural pattern.

Figure 2. A Model of Ritual as Work Strategy (Original Artwork by Neal Anderson)



Conclusions

This study highlights student work strategies within a demanding and collaborative organizational culture. Key gaps are filled through this research. Our innovative approach to ritual enables both a long-term view of the college major experience and patterned instances of ritualized behavior within that experience. We have extended ritual theory's focus on *communitas* to *communitas in action*, most notably through student collaborative work strategies. Our bridge model illustrates the ES ritual elements.

Lessons from this study should be useful to decision makers. First, we advocate understanding the student experience holistically: at given points in time and over time, and inclusive of both academic and non-academic components. Second, student work strategies shape and are shaped by the organizational culture. They remind us of the value of collaboration in addressing challenging situations. Third, ritual is a powerful lens through which to view salient features of the organizational culture. Kertzer (1988:85) has warned, "…[P]aradoxically what is persuasive about ritual is the way it discourages critical thinking." We must be vigilant in exposing areas necessitating organizational improvement:

- Developing or expanding rituals to foster more collaboration—say among diverse students, students and professors, across staff, or within the faculty;
- Creating a set of best practices to launch new collaborations quickly and effectively;
- Strengthening relationships within the organizational culture, given its size and diversity;
- Encouraging more fulfilling interactions; and
- Investigating workload effects on student well-being.

Limitations and Future Research

Our exploratory study focused on a single engineering school. A future confirmatory study might involve several schools (i.e., departments) at the university, or several universities, differentiated by program rigor, size, location, and other factors. Our study stressed the combined value of individual and collaborative work strategies among students. A future study might examine collaboration within and across roles (e.g., faculty with students). Our study confirmed the pervasiveness of communitas and its expression in collaboration. A future study might examine the conditions leading to collaboration or explore the extent to which collaboration occurs within and across diverse student populations (e.g., non-traditional, international). Finally, our study did not incorporate academic outcomes to enhance ritual understanding. A future study might examine such outcomes in relation to the ethnographic data.

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