Tagg, J. (2010). Teachers as students: Changing the cognitive economy through professional development. *Journal on Centers for Teaching and Learning*, 2, 7-35.

Teachers as Students: Changing the Cognitive Economy Through Professional Development

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This article explores the relationship between centers for teaching and learning and teaching faculty. Examining the cognitive economy that constitutes the learning environment for both faculty and students under the categories of goals, activities, information, time, community, and alignment, the author suggests that centers for teaching and learning consider faculty as students. Arguing that the theory-in-use or governing paradigm of most institutions values instruction over learning, he explores the requirements of a cognitive economy that promotes a deep approach to learning for students and a deep approach to teaching for faculty, and he indicates the implications of this framework for centers of teaching and learning.

Introduction

What should be the relationship between a teaching and learning center and the teaching faculty at an institution? Is the center a service organization that seeks to serve the needs of its customers, the faculty, putting out fires and addressing problems that are brought to it? Or is it more like a professional consultant with special expertise, but that seeks only to resolve issues its clients raise? Or is it an organization with a mission that sets priorities and seeks to meet them? The answer will differ depending upon history, organizational culture, and local needs. But faculty developers themselves tend to a certain take on the issue. In a recent survey, "Developers identified teaching for student-centered learning *as the most important issue* to address through services for faculty" (Sorcinelli, Austin,

Eddy, & Beach, 2006, p. 73). This suggests that centers have a mission to fulfill that can provide shape and direction to their activities.

How to teach to promote student learning has received much attention in the last two decades, and the best research and writing on the question offers many advances over conventional practice (Bain, 2004; Biggs, 1999; Doyle, 2008; Ramsden, 1992; Svinicki, 2004; Tagg, 2003; Weimer, 2002). By most indicators, however, most faculty members have been slow to make changes. "It is an amazing paradox," Muscatine (2009) notes,

> that the faculties that have profited from advances in research in all other fields of learning have generally failed to do so in their own backyard. . . . Your typical professor is hardly aware of new thinking in education, does not read educational periodicals, and rarely goes beyond the academic department in discussing problems of teaching and learning. (p. 97)

I will suggest here that the relationship of teaching and learning centers to faculty is very similar to the relationship of faculty to students. Teaching faculty are, in a real and significant sense, the students of faculty developers—and they show the same array of resistance, evasion, and avoidance strategies in the face of learning challenges that we have learned to expect from students. That relationship has heuristic value as we think about the process by which faculty grow as learners and teachers.

The Governing Paradigm and the Cognitive Economy

Organizational Paradigms: Instruction or Learning

It flows from the goal of improving the quality of teaching that the central role of teaching and learning centers is to make teaching faculty better learners. There are certain principles common to both student and faculty learners that can help us maximize the effectiveness of the process. I have suggested elsewhere (Barr & Tagg, 1995; Tagg, 2003) that research on student learning allows us to sketch out some of the characteristics of a rich and productive learning environment. The research also allows us to differentiate between different approaches to education as part of an overall paradigm—a systematic and consistent set of assumptions and principles that govern organizational behavior. Most colleges and universities today remain largely within the Instruction Paradigm. That is to say, as organizations, they primarily seek to provide instruction, to have students take classes, to keep those classes full (enrollment), and to have students complete classes so that they can take more of them (retention). Increasingly, we have come to see that this framework puts the

cart before the horse, mistakes the means for the end. The chief purpose of undergraduate higher education is to produce student learning. If we reexamine the work of colleges and universities from the perspective of the Learning Paradigm, we will revalue much of the activity that goes on in these institutions. Thus, many of the units charged with professional development of faculty have become centers for teaching *and learning*, acknowledging that we cannot speak coherently of teaching independent of learning.

When I say that the Instruction Paradigm governs the operation of most colleges and universities, I do not mean to say that most educators believe in it. Hardly any do. (At any rate, none of those that I have asked do, and that's quite a few.) The problem is, as Argyris and Schön (1978) point out, that people in organizations often don't do what they say and think they should. We operate with two kinds of theories simultaneously. My *espoused theory* is the one I express and usually believe. But I act on my *theory-in-use*, which is the unconsciously held set of rules and principles that governs my practice. As Argyris puts it, "Although people [often] do not behave congruently with their espoused theories, . . . they do behave congruently with their theories-in-use, *and* they are unaware of this fact" (1982, p. 85). If the Learning Paradigm is the espoused theory of most educators, the Instruction Paradigm is the organizational theory-in-use of most institutions.

The Cognitive Economy

When speaking of student choices in an academic setting, we tend to speak the sometimes reductionist and fragmented language of "motivation," treating students as if they were pushed and pulled by discrete forces in one direction or another. Perkins (1992) has suggested that a better metaphor to explain student choices in an academic setting is what he calls the "cognitive economy": "the metaphorical economy of gains and costs that students encounter" (p. 156). The typical school classroom, he suggests, constitutes "a cool rather than a hot cognitive economy—one that does not motivate the energy needed for complex cognition . . . but runs at an altogether lower level of cognitive demand" (p. 159). We can say that a hot cognitive economy is one that encourages students to take a deep approach to learning rather than a surface approach. Students who take a surface approach to learning are focusing on the signs, the external character of the object of learning, memorizing words for the test and cramming for short-term recall. Students who take a deep approach are probing for meaning, seeking to connect new learning to their exist-

ing mental models, to learn for use (Bowden & Marton, 1998; Marton & Booth, 1997; Marton & Säljö, 1976).

If we see the cognitive economy as the overall environment—the total system of costs and benefits, opportunities and restrictions—that shapes choice for students, we can certainly apply the same model to teachers. A hot cognitive economy is one that encourages students to take a deep approach to learning, to probe for the meaning and connect new learning with prior knowledge— as opposed to a surface approach, trying to learn the signs without exploring the meaning and skimming over knowledge where possible by relying on rote memory. Likewise, we can say that a hot cognitive economy for teachers is one that encourages *a deep approach to teaching*. A deep approach to teaching is one that probes for meaning, that seeks to connect students with the object of study, that calls not just for expertise about the subject taught but for knowledge of how students learn, and for what Shulman (2004b) has called "pedagogical content knowledge": "the particular form of content knowledge that embodies the aspects of content most germane to its teachability" (p. 203).

How, then, can we differentiate a hot from a cool cognitive economy? I have suggested six dimensions by which we can examine the cognitive economy for students, and I think we can use them productively to examine the cognitive economy for teachers as well. They are goals, activities, information, time, community, and alignment (Tagg, 2003). Professional developers cannot reshape the cognitive economy by themselves. But their effectiveness will depend in many cases on their ability to see their role in a larger context. At some points, professional development and organizational development merge. And professional developers are uniquely situated to change some features of the cognitive economy and to raise productive questions about how to heat up the cognitive economy overall. First, then, let us consider the cognitive economy for students.

The Cognitive Economy: Students as Learners

Goals

Why do people do what they do? What do they hope to accomplish? They perform better, work harder, and accomplish more when they are pursuing intrinsic goals. As psychologist Albert Bandura (1997) notes, "when people select their own goals, they are likely to have greater self-involvement in achieving them. If goals are prescribed by others, however, individuals do not necessarily accept them or feel obligated to meet them" (p. 218). So the use of external rewards as motivators has a

pervasive and baleful influence on school learning from the earliest stages. A large body of research supports this. Just to take a single example from the many possible, Edward Deci, one of the pioneering researchers in this field, and Carl Benware conducted a study in which they gave a group of college students a challenging learning opportunity (Deci, 1995). They told half of the students that they would be tested and graded on their work; they told the other half that they would have to teach the material to someone else (p. 47). They then tested both groups and found "that the students who learned in order to put the material to active use displayed considerably greater conceptual understanding of the material then did the students who learned in order to be tested" (p. 47). Extrinsic rewards inherently tend to undermine intrinsic motivation. Pink (2009) concludes in his recent survey of the research that "This is one of the most robust findings in social science—and also one of the most ignored" (p. 39).

Csikszentmihalyi (1990) has studied the conditions of motivation in some detail in developing the theory of "flow." He has identified several conditions for achieving the flow experience, a state of heightened engagement that is intrinsically rewarding: It "usually occurs when we confront tasks we have a chance of completing"; it involves "clear goals and immediate feedback" in conditions that "allow people to exercise a sense of control over their actions" (p. 49). In his studies of people's sense of satisfaction in a variety of contexts, Csikszentmihalyi finds that "enjoyment comes at a very specific point: whenever the opportunities for action perceived by the individual are equal to his or her capabilities" (p. 52).

A cognitive economy that highlights extrinsic goals and discourages the pursuit of intrinsic goals will be a chilly one. What happens for many students in the school setting is that the extrinsic reward of grades suppresses their intrinsic motivation. In one study of high school students, the same students who excelled and showed high motivation in challenging extracurricular activities found classes *in the same subjects* boring and unmotivating (Csikszentmihalyi, Rathunde, & Whalen, 1993). In the Learning Paradigm, we should seek to promote intrinsic goals.

Activities

A hot cognitive economy is one in which students are active rather than passive, and in which their activities are of a certain kind. If students are to do things that matter to them, that help them to achieve intrinsic goals, then they must do things that they are not doing just because of an external mandate. Certain kinds of activities involve *performance*, by which I mean an activity pursued to some extent for its own sake, something that has

autonomous value. Tests and drills may keep students very busy, but the whole value of the test or drill is consumed by the assessment that it entails. On the other hand, the student who writes an article for the student newspaper is engaged not just in an activity but in performance.

In the Instruction Paradigm setting, most student work consists of activities that have little or no value to the student (or to anybody else) beyond being evidence of student recall, and student recall driven by the external mandate alone seldom survives long after the test. Deci (1995) concludes that "with both college students and elementary school children, the research indicates quite convincingly that the strategy of giving tests is not necessarily productive if the objective is long-term learning" (p. 49). The kinds of tasks that are consumed by their assessment cannot sustain intrinsic motivation; they externalize both the choice of goal and the criteria for success.

Performances, on the other hand, entail tasks that one might wish to accomplish for their own sake. Service-learning, problem-based learning, undergraduate research, internships, and all assignments where a student has to produce a piece of work that the student sees as valuable are powerful pedagogies because they engage the student in performance and, thereby, increase the chances that the student will form intrinsic goals around the work. In a hot cognitive economy, most student activities would be performance.

Information

Learners sometimes get information that expresses a judgment on their work. This is *evaluation*. And sometimes they get information that shows them how they can improve in doing a task the next time they do it. This is *feedback* (Wiggins, 1993). The two are not mutually exclusive and often overlap. However, many school assignments are seen by students as one or the other, and they are most often seen as evaluation. Whether any given information is feedback or evaluation is often in the eye of the beholder. Because the difference between feedback and evaluation lies in how the learner uses the information, the same information can often be seen in either way. End-of-term grades are nearly pure evaluation because they are permanent and cannot be altered. Good tutoring or coaching, on the other hand, is heavily weighted toward feedback. The coach identifies the kinds of mistakes the student makes so that the student will know what to practice and how to practice differently.

While evaluation is necessary in the educational process, feedback is what produces learning. Knowing that we have done something well

or badly, by itself, doesn't help us to do it better. Knowing what to do differently does. (Of course, evaluation can be a trigger to effort, but it provides no clear target for that effort.) The student who sees correction as evaluation will often respond by withdrawing; the student who sees it as feedback will try again. So a high ratio of evaluation to feedback tends to create a cool cognitive economy; a high ratio of feedback to evaluation tends to create a hot one. But because feedback or evaluation is often in the eye of the beholder, the student needs to learn to see information as feedback when possible.

Time

Every choice we make has an implicit *time horizon*. The time horizon is the implied answer to the question "How long will I have to live with the consequences of this decision or action?" The time horizon of the decision to rent a certain model car to drive on your long-weekend trip is much shorter than the time horizon of your decision to buy the car. Signing a mortgage has a longer time horizon than signing a month-to-month lease. We tend to invest more thought and effort in decisions with a longer time horizon. Choices that have a long time horizon are more likely to involve intrinsic goals, simply because foundational goals tend to be for the long term. While educators often espouse the goal of "lifelong learning," it is a characteristic of nearly all college classes that they have a fairly short time horizon: about three months in the semester system. Students very often invest themselves more in extracurricular activities than they do in their classes. Extracurricular activities—athletic competition, drama, music, the arts, journalism—all have a much longer time horizon than classes. These are things that the student can continue to do for years, not just months. Light (2001) reports the findings of the Harvard Assessment Seminars: "When we asked students to think of a specific, critical incident or moment that had changed them profoundly, four-fifths of them chose a situation or event outside of the classroom" (p. 8).

A short time horizon tends to cool the cognitive economy; a long time horizon tends to heat it up. This is one reason why the cognitive economy of extracurricular activities is often hotter than that in the classroom. Indeed, the evidence on the retention of information or skills from classes is not encouraging.

Community

The chief and most valued source of feedback for most students—as for most workers—is their peers. Astin (1993) traced several large cohorts

of students longitudinally and concluded that "the student's peer group is the single most potent source of influence on growth and development during the undergraduate years" (p. 398). The student who takes a deep approach to learning seeks to find meaning, to place the objects of learning in a network of relationship, to locate them in a universe of discourse. Meaning emerges from the communication of ideas, chiefly among peers. A cognitive economy in which students are isolated and impeded from building peer communities will be cold. To create a hot cognitive economy, colleges and universities must promote and nurture the development of "communities of practice," communities with a common purpose, doing common tasks, built around learning (Wenger, 1998).

A hot cognitive economy is one in which students find themselves working collaboratively with other students on academic tasks. So collaborative work in the classroom heats up the cognitive economy, as do larger-scale collaborative designs, such as learning communities in which students meet with the same cohort of students for more than one class (Smith, MacGregor, Matthews, & Gabelnick, 2004). Students offer the most influential source of feedback on learning to other students.

Alignment

Single courses may affect students powerfully, but a student's overall orientation to learning—his or her default approach—is determined by the cognitive economy as a whole. If extrinsic goals are emphasized over intrinsic goals, trivial activities over performances, evaluation over feedback, in the context of a short time horizon, while students are isolated from their peers in the practice of academic work, then the cognitive economy will be cold indeed. But, in fact, hardly any institution is clearly aligned around these characteristics of the Instruction Paradigm for the simple reason that faculty and administrators don't embrace the Instruction Paradigm. To the contrary, the Learning Paradigm is much closer to the espoused theory that everyone from presidents to provosts to professors expresses. Thus, teachers, advisors, and administrators often say one thing and do another. Students even at very highly regarded universities get seriously mixed messages, and when in doubt tend to fall back on the default orientations to learning that they mastered in high school, which predominantly lead them to a surface approach (Steinberg, 1996). And for undergraduate students we can hardly doubt that the chief avenue through which mixed messages come to them is the classroom. When students encounter one course with articulated learning outcomes but another with a point system tied to no clear rubrics of understanding,

one where the teacher gives them options and control and another where mandates deny them any meaningful choices, one where they engage in performance and problem-solving and another where they merely feed back keywords on machine-graded exams, one where they work in collaboration with other students and another where to do so is regarded as cheating, they conclude quite reasonably that the time horizon for any pattern of pedagogy is the end of the term and the master question that can get them through the treacherous and unpredictable path to graduation is "What does this teacher want?"—a question that must be asked anew with each class and for which the answers of the teacher cannot be trusted, because what teachers say and what they do may not be related. The misalignment of words and deeds and of one course with another tends to chill the cognitive economy for most students, even in an environment where many teachers do a very good job.

Faculty is a collective noun. But for students, its meaning is almost entirely distributive. Each professor governs his or her own domain, and to find the pattern, even for the student who spends six years in college, is hard. A faculty of independent contractors, each working for an independent department, is unlikely to produce a hot cognitive economy for students. That would require a faculty that deserves the singular, as opposed to the plural, a collegium in which members move in tandem to a common goal. Why is it so hard to achieve that? The reason lies in the cognitive economy in which faculty themselves work.

The Cognitive Economy: Faculty

Goals

Teachers should understand the way external rewards affect intrinsic motivation because it ought to powerfully affect the way they teach. But how does this core principle of motivation work for teachers themselves?

With few exceptions, we can safely assume that most college faculty do not hate teaching. The fact that they have chosen it as their profession is respectable *prima facie* evidence that they place it above "revolting" on their scale of preference. However, teaching isn't the whole of the profession. The chief competitor for faculty attention, at most institutions, is research. What are the external rewards, and how do they shape the cognitive economy for faculty? Just as intrinsic rewards in the form of grades suppress student motivation to learn, the extrinsic reward system emphasizing research appears to repress faculty engagement in teaching.

The most obvious forms of external reward are pay, promotion, and tenure. Fairweather (1996) examined the comparative effects of teaching and research on faculty pay and concluded that "Research, especially scholarly productivity, is very highly valued in pay for faculty in 4-year colleges and universities. Regardless of institutional type or mission and irrespective of program area, faculty who spend more time on research and who publish the most are paid more than their teaching-oriented colleagues" (p. 67). What about promotion and tenure? Schuster and Finkelstein (2006) reviewed several decades of survey research: "The proportion of faculty agreeing that it is difficult to attain tenure without research or publications rose steadily from about two in five (39.9%) in 1969 to nearly two-thirds (65%) by 1997" (p. 129). If the external rewards of pay, promotion, and tenure are increasingly tied to research rather than teaching, it would perhaps help to explain why, by the 1990s, "faculty members almost universally expressed a desire to shift some portion of their time from teaching to research" (Schuster & Finkelstein, 2006, p. 87).

Is this because faculty are intrinsically more motivated to do research than to teach? Or is it because the extrinsic rewards of money, promotion, and prestige tend to displace their intrinsic motivation to teach? What seems clear so far is that teachers—at least those working in 4-year colleges and universities—find the extrinsic rewards of research considerably greater than those of teaching and tend to have diminishing motivation to invest themselves in their teaching.

The reward structure at most institutions does require that most faculty teach. Teaching is part of the job. Yet in the cognitive economy of the Instruction Paradigm college, the job of teaching does not entail, necessarily, that teachers be much involved with student learning, and certainly not that they inspire a deep approach to learning. What institutions almost uniformly require is that teachers instruct students, evaluate their knowledge or skills, and assign grades. In other words, the mandatory work of teaching is sorting—dividing up the students on the five-point scale at the end of the semester. To simply meet that requirement—to do the job—is to tell students what you want them to know, test them on it, and sort them according to how well they perform on the tests. A teacher who failed to give end-of-term grades, at most institutions, would have failed to do her job as defined by the institution and would not be allowed to continue teaching. A teacher whose students failed to learn anything of consequence or to remember any of it beyond the end of the term would, by the standards of the external reward system, be doing her job entirely satisfactorily. I take it as obvious that most teachers want to do much more than that, that they are intrinsically motivated to inspire a deep approach

to learning in students. But as with the students themselves, the cognitive economy neither encourages nor rewards such behavior.

So what of the intrinsic motivation to teach well, to create deep learners? We will return to this question after examining the other aspects of the cognitive economy that shape teacher motivation.

Activities

Are teachers engaged in performance? In the common usage of the term, they often are. Standing in front of a group of people and holding forth on a topic for an hour or so qualifies as "performance" as we generally use the word. But recall that we are using it in a slightly different sense here. By "performance," we mean an activity that has autonomous value, that is worth doing to some extent for its own sake. So how authentic, how close to performance, in this sense, is most faculty work?

In this, as in other things, we can see faculty work as almost a mirror image of the student learning it generates. The object of teaching is student learning. So faculty work is authentic to the extent that students learn. But as we have seen, students can learn in a superficial and surface way, that kind of learning neither changing students much nor surviving long in students' minds. If teachers teach for surface learning, the act of teaching is as inauthentic and lacking in long-term value as is the corresponding student learning. If, however, teaching elicits from students a deep approach to learning, then the teaching itself is authentic, consequential. And teachers know this, don't we? The student who is just trying to make it through the test, who wants to get past the class with the minimum effort, makes us depressed, perhaps even resentful, because that student seems to devalue our work. Even if we work hard at teaching, that effort seems inconsequential, trivial, and feckless if students miss the real value of it. If students are not authentically engaged, then teachers' work ceases to be authentic.

As with students, the teacher's end of the work of learning gains authenticity from having real and important consequences, and most of the time that means consequences beyond the classroom. When students take a deep approach to learning, the learning changes them, and they carry it away into the world with them, rather than leaving it behind in the classroom. How does the teacher know whether her work is consequential, whether students keep it or discard it, whether it changes them? They can guess, of course, but this isn't very satisfying or persuasive in the long run. Like students, teachers need feedback.

Information

Teachers, like students, get either evaluation or feedback, or both, in response to their activities. And as with students, evaluation or feedback is largely in the eye of the beholders; they will tend to see what they expect to see. At most institutions, faculty members are evaluated (judged) on their teaching by their students, their peers, and perhaps their administrators. Such evaluations, however, are usually intermittent and brief. And most faculty evaluations are carried on with little or no reference to what or how the students learned, simply because there is no reliable information on that question available in publicly accessible form. How much feedback do teachers get? Keep in mind that feedback is information about the consequences of people's actions that can help them better to achieve their goals in the future. At most institutions, feedback on the consequences of teaching is self-generated: The teacher in question must design and execute the process for getting feedback. The very popular Classroom Research Techniques (Cross & Steadman, 1996) are means of generating feedback about what students are doing in response to teaching.

Here again, faculty feedback tends to be a mirror image of student feedback. If faculty evaluate students merely by assigning grades, then the results can only be seen as an evaluation of the teachers. (How that evaluation is interpreted varies, of course. In some cases, good evaluations of students are paradoxically seen as implying defective teaching or "easy grading.") If faculty provide feedback to students, then it can likewise be feedback for faculty. So the instructor who lectures and gives a test of recall is evaluating student work. And the quality of students' test responses can be seen as an evaluation of the quality of the teaching. But there is very little in a one-time test that can serve as useful feedback to the teacher on how to teach more effectively. (Unless the teacher tests recall of the same material again, she has no idea even how much of the students' response is due to her teaching. They may have known the answers before taking the class.) Such tests can reveal what students failed to recall, but they tell very little about why. On the other hand, the instructor who engages students in interactive feedback in the course of a lesson gets feedback on his teaching in return. When the teacher formulates problems based on the lesson and has students respond with response systems (clickers), then discuss the problems in peer groups and respond again, the teacher has discovered what kinds of student errors are most frequent and whether students can collaboratively discover and correct those errors. When the teacher has students write about their understanding and interpretation of the material, she can find out how well students have conceptualized

and transferred the object of study. This kind of feedback helps the teacher both to formulate future lessons better and to design problems to promote engagement and understanding. In problem-based learning, when student discussions go too quickly to a solution (whether right or wrong) or when students are blocked or follow extended dead-end approaches, this is feedback to the teacher both on how to formulate future problems and how to prepare students for problem solving.

Of course, the most important feedback that teachers could have about student performance may be the consequences of course learning after the course is over. Does the learning survive? And can students transfer it to new settings? This could help teachers to revise the next course for better results. But here, the faculty member is helpless to generate any useful feedback by her own efforts. To generate feedback on the significant consequences of the course requires a framework larger than the course and a time horizon longer than that of the term.

Time

Teachers face essentially the same time constraints in a semester or quarter class as do students. The time horizon of the class is limited by the term. If the teacher looks no further than the end of the term, neither will the students; if the students look no further than the end of the term, the teacher will tend not to either. If feedback is contained in the course, neither teacher nor student will be as likely to take as deep an approach as they would if feedback on learning had a longer time horizon. Of course, the teacher will always *say* that students should look beyond the end of the semester, should seek to transfer and apply what they are learning. But most students are cautious about taking such warnings at face value. They have learned that the actions of assignments and assessments speak louder than the words of syllabi and lecture exhortations.

Here, as with feedback beyond the semester, the individual faculty member is strictly limited. How can the teacher extend the length of the term? We can take our clue from those courses that have done so. We see a longer time horizon in sequences where the tasks in follow-on classes are conspicuously linked to the work in the preparatory classes. We see it in closely integrated majors, where students understand from the beginning that they are preparing for larger tasks in subsequent classes. And we see it in programs that have an explicitly vocational or professional purpose, where students understand that they will be applying the same knowledge or skills they are learning in their classes in their work after college. Students and teachers alike adopt a longer time horizon in a course

when the framework of learning and assessment is larger than the course. The teacher who takes a deep approach to teaching will seek not simply to have students remember a body of material for the final exam, but to transfer that material to new contexts, to reason about it, and to test it against novel problems. But, again, this is a challenge that an individual instructor can only partially meet working alone. An individual teacher can develop learning outcomes and rubrics for an individual class. But even if that teacher believes that those criteria *should* be used for ongoing assessment beyond the class, neither teacher nor student will believe that they *will* be so used unless other faculty publicly adopt and use them. In other words, creating a hot cognitive economy by providing meaningful feedback beyond the class and extending the time horizon of learning ultimately requires not individual actions by single teachers but collaboration across faculties.

Community

Just as a deep approach to learning for students requires that they develop a community of peers within which to negotiate meaning, so faculty who would take a deep approach to teaching require a community of practice around teaching through which to test, explore, and develop the meaning of their work.

Of course, all faculty members are members of a community of practice. To advance in the study of an academic discipline is to become a member of the community of practice of that discipline. It is impossible to imagine a college or university granting tenure to a faculty member who does not belong to a disciplinary organization, read the disciplinary journals, and contribute to the disciplinary conversation. But where is the community of practice around teaching? As Shulman (2004a) puts it, "We close the classroom door and experience pedagogical solitude, whereas in our life as scholars, we are members of active communities. . ." (p. 455).

It is not just the contrast with research that makes the work of teaching appear removed from community. In most community colleges, teaching is the only mandated activity of faculty, and most faculty members neither do research nor publish. Yet Grubb and associates (1999) found that "A defining aspect of instructors' lives in community colleges is their isolation. Except in a small number of exemplary institutions, most instructors speak of their lives and work as individual, isolated, lonely. A teacher's job is a series of classes, with the door metaphorically if not literally closed" (p. 49).

The absence of a community of practice around teaching has dire

consequences for the ability of teachers in higher education to recognize and use feedback and for their motivation to improve the quality of their teaching. In their discussion of the conditions for developing expertise, Bereiter and Scardamalia (1993) point out that one of those conditions is what they call "second-order environments." (First-order environments are "the ordinary situations of work and everyday life" that present a stable set of demands and do not call for the development of expertise [p. 105].) These second-order environments are those "in which the conditions to which people must adapt change progressively as a result of the successes of other people in the environment" (p. 106). Consider the operation of any academic discipline as a research community. New experiments or arguments confirm new hypotheses that then change the questions that researchers seek to answer. A new theory, if well supported, will change the conversation, even for those who are not persuaded by it, because the theory must be tested and challenged before it can be adopted (or rejected) as a foundation for further research. The process differs in the humanities, the social sciences, the natural sciences, and the professions, but in all of these cases, professional scholars work in a changing landscape and with the expectation that the conversation will change in response to ongoing discovery and persuasion. So in such an environment, "One adapts to changes that keep raising the ante, by setting a higher standard of performance, by reformulating problems at more complex levels, or by increasing the amount of knowledge that is presupposed" (p. 106). This second-order environment is what makes it possible to develop and sustain expertise in a domain. It makes expertise learnable, rather than just the extraordinary accomplishment of a heroic few. And it is sustained through communities of practice.

In teaching, where is the second-order environment, sustained by a community of peers? And where is the expertise? In the popular mind, teaching is often seen as a "gift," a mystical skill bestowed upon a lucky few, but unexplainable and unpredictable. The academy extends rewards and opportunities in abundance to research scholars, sustaining the second-order environment that creates the scaffolding on which young scholars can rise to increasing levels of expertise through systematic engagement with escalating challenge. Without this second-order environment, working in isolation, lacking either the standards or challenges that a community of expert practice provides for the scholar, the teacher has neither the scaffolding on which to climb to expertise in teaching nor any yardstick by which to measure her progress. As Shulman (2004a) puts it, "the reason teaching is not more valued in the academy is because the way we treat teaching removes it from the community of scholars" (pp. 455-456).

Alignment—and Goals Again

Faculty members, like students, experience their work as a whole, and the whole environment shapes the cognitive economy. At the same time, faculty work is often divided into parts as thoroughly separated from each other as a student's separate classes. The economy of college teaching, as opposed to research and governance or service, is often one of isolation, fragmentation, and separation. The cognitive economy of the Instruction Paradigm college facilitates a surface approach to teaching and discourages a deep approach. Learning requires feedback, but faculty members are left on their own to generate real feedback from students. Those who create opportunities for performance for their students, who assign authentic tasks rather than just tests and drills, also create a richer body of feedback from students. But the course itself, cut off from the rest of the student's experience and limited to a single term, stops feedback at the end of the term, denying the teacher a view of the consequences of the work and, hence, curtails the authenticity of the work itself. These are problems that faculty can address, but only in community, not as isolated individuals. Yet the structure of work and the culture of most institutions tends to isolate faculty members from one another, and the lack of a real community of practice around teaching stunts the growth of faculty toward real expertise in their work as teachers.

Consider how these domains of the cognitive economy affect the first domain we discussed: goals. We have seen that the extrinsic rewards for faculty are weighted heavily toward research rather than teaching. This is not to say that research is not intrinsically rewarding. It often is. And I have no doubt that research done for its own sake is on balance more valuable, more substantive, and more interesting than that done simply to fill out a resume and earn points toward tenure. But what about the intrinsic rewards of teaching? Recall the way Csikszentmihalyi (1990) characterized the flow experience, the quintessential state of intrinsic motivation. He found that "the experience usually occurs when we confront tasks we have a chance of completing"; it involves "clear goals and immediate feedback" in conditions that "allow people to exercise a sense of control over their actions" (p. 49). I assume that most young teachers take some pleasure in teaching. And given a growing sense of accomplishment and control in the domain of teaching, that pleasure should grow. But the aspects of the cognitive economy we have discussed largely shut down the channels for gaining a sense of competence and control over the work of teaching. The only clear goals that the teacher can set are in the short term; the only feedback he can hope for is self-generated; and significant learning

goals for students, the goals that involve a deep approach to learning and long-term aspirations, can hardly ever be achieved in a single term. The cognitive economy for college teaching denies many teachers the apparatus to sustain a sense of self-efficacy in pursuing significant, long-term goals. Thus, the environment provides abundant incentives for faculty to downsize their personal goals and accept surface-level feedback. Like students, teachers who are repeatedly thwarted in their efforts to achieve a sense of real accomplishment may withdraw into self-handicapping behavior and defensive pessimism. If teachers are to set personal goals and pursue them with vigor, they must have the means to grow and to experience that growth, not simply repeat over and over again the secret rituals of their trade in the private space of the classroom.

The most serious of the barriers to making teaching intrinsically rewarding and a realm of growing expertise cannot be addressed effectively by individual teachers acting alone. The only route to extending the time horizon for teaching, developing rich feedback, and making teaching an authentic performance inspiring intrinsic motivation is through building a community of practice around teaching, a second-order environment that provides the scaffolding on which college teachers can climb to increasing expertise. We cannot align the work of faculty with one another or the work of any individual faculty member with the varied demands of teaching unless faculty members themselves collaborate in the effort, not as a temporary and ad hoc measure to meet external requirements, but as a permanent process of growing in their work and, hence, changing in their jobs.

The Role of the Center

How should centers for teaching and learning respond to the need to heat up the cognitive economy of teaching? Professional developers have a limited scope of influence. Just as students in a cool cognitive economy will tend to withdraw and resist efforts to engage them in serious learning, so will faculty. And certainly the relationship between professional developers and faculty members is, in many ways, quite different from that between teachers and students. At the very least, the power relationship is different: The center is in no position to assign the faculty members homework and require them to repeat the course if it isn't completed! The influence of the center is almost entirely suggestive rather than coercive. This may not be a bad thing, but in any case it is simply part of the context of the work. Understanding the role of the cognitive economy in shaping faculty attitudes, however, can help us to set priorities for the kinds of

interventions that will make the greatest difference. The goal of a center for teaching and learning should be to change the cognitive economy of teaching at its institution in order to change the cognitive economy for learning.

The key point of leverage for changing the cognitive economy of teaching is creating communities of practice for teachers, especially communities across departmental boundaries. Centers completely constrained to Instruction Paradigm priorities risk being reduced, in Shulman's telling phrase, to "emergency rooms for faculty in pedagogic arrest" (Huber & Hutchings, p. 85). This way of thinking about pedagogical development, of course, is of a piece with the thinking that severs teaching from the possibility of real expertise. Faculty who don't teach well are anomalies that fall below the norm and need remediation; hence, the norm is "good" teaching, something that most people can do without effort or training. The only ones who need to improve are the "defective."

Whether the center is working with teachers individually or in groups, it can help to break down the sense of isolation from other teachers and the insulation from feedback on teaching. Indeed, professional consultations with individual teachers can be a powerful means of helping those teachers to generate feedback in their own classrooms and, hence, become self-regulating learners about their own pedagogy. But such consultations also can break down the isolation of the faculty members and show them the value of collaboration around the work of teaching. There are several other interventions that can do this as well, and where the center can promote and facilitate them it can intervene powerfully in the cognitive economy.

The Scholarship of Teaching and Learning

Building on the foundation laid down by Boyer (1990) and Rice (1991), Shulman (2004a) advanced the idea of "teaching as community property." The scholarship of teaching and learning can create "the teaching commons" (Huber & Hutchings, 2005), a second-order environment that can be the scaffolding for expertise and improvement in teaching. For those faculty directly involved in the scholarship of teaching and learning, this focus of scholarship creates rich feedback, extends the time horizon of reflection on teaching, and engages faculty members in the community of practice that raises the bar for teaching effectiveness. And the aspiration to become a scholarly teacher will raise the sights and increase the engagement of most faculty members. Scholarly teaching opens the prospect of a much higher degree of intrinsic goal-setting for teachers. It gives substance

to the term "excellence" and richly expands the possibilities of feedback on pedagogy. But the scholarship of teaching and learning (SoTL) will change the cognitive economy most powerfully when faculty do that scholarship and use it as part of a community of practice with other faculty members at the institution. Centers, even when they are not the organizing units for such scholarship, can often create frameworks for sharing scholarship and developing expertise across academic departments that will increase the impact of this research and raise the rewards, intrinsic and extrinsic, for participating in it. Crucial to liberating the energy of faculty for teaching is changing the reward structure so that SoTL is recognized as scholarship in tenure and promotion processes. The center has the capacity to marshal the evidence that supports such a change and to collect and present to the faculty the consequences of scholarly teaching. And centers can have a powerful effect on the cognitive economy by raising the profile of faculty scholarship on the campus, both the work of local faculty and the general body of research that is growing all the time. At many institutions good scholarship is being done, but most of the faculty don't know it.

Faculty Learning Communities

Just as student learning communities have successfully created communities of practice for both students and faculty, so similar communities for faculty can achieve the same end, and for the same reasons. A faculty learning community is a small (6-15) faculty group that meets for an extended period of time (at least a semester and often a year or more) to address a question or problem and produce some response or product. The learning community might be built around doing scholarship, reading research, exploring a pedagogical problem or issue, or just trying to answer an important question. If the community genuinely is to be a community of practice, it must meet not just to talk, but to come to some conclusions and, ideally, to produce some product at the end. The community has great latitude in terms of what its product should be, but it should produce something, if only a report of its conclusions. The learning community is not just a meeting of like minds; it is a community of *practice*.

A faculty learning community can be a powerful framework for reflecting on the teaching and learning process. It can create the second-order environment that advances the thinking and the understanding of the participants. In cases where the model has been pursued it has shown great potential. For example, Cox (2006) reports a study at Miami University (Ohio) that found "junior staff who participated in learning communities were tenured at significantly higher rates than those who

did not" (p. 95). Faculty who participate in learning communities, from graduate students preparing to join the faculty ranks (Richlin & Essington, 2004) to mid-career faculty (Blaisdell & Cox, 2004), generally have been enthusiastic (Cox, 2004).

Such communities can also serve multiple purposes for the organization. They are a framework for addressing institutional problems or exploring routes to change that the institution can use to advance the common understanding. And by doing so, they can change the cognitive economy and encourage a deeper approach to teaching indirectly as well as directly.

Learning Outcomes and Assessment

Most centers expend a good deal of effort these days facilitating either the development or the assessment of student learning outcomes. Often, though not always, this work is undertaken in response to accreditation requirements without any thoughtful reflection on the meaning or purpose of those requirements. Ewell (2009) has suggested that for many institutions, the conversation about assessment has been driven by external demands for accountability rather than the internal effort to improve the quality of learning. As a result, he finds, "Far too many institutions, dominated by the need to respond to external actors like states or accreditors, approach the task of assessment as an act of compliance, with the objective being simply to measure something and the exercise ending as soon as the data are reported" (p. 16). This way of thinking about assessment, of course, tends to insulate the cognitive economy of teaching against change by constructing a barrier that deflects the evidence about the consequences of teaching. It is very much like the mental maneuver that some students make. If faculty come to see the evidence of student learning as an evaluation on faculty or the institution done for some outside party, then—like students who ignore the suggestions for improvement on their papers and just read the grade—they will jump through the hoops, but won't explore how they can change their own behavior to get better results. The assessment of student learning should, I would say nearly always, be feedback to students, and hence to faculty, about how teaching and learning can be done better in the future. Institutions that have, in haste to produce evidence of their quality, turned to standardized tests or samples of student work have effectively severed the assessment of student learning from feedback to student learners, inadvertently chilling the cognitive economy—and reinforcing faculty confusion about what the purpose of the project really is. Ewell (2009), noting that in the past

assessment was often "conspicuously separated from what went on in the regular classroom" (p. 19), suggests that it should be embedded in the regular curriculum.

Centers can have a powerful effect on the way faculty think of assessment and, hence, on the way they use it. While many centers are doing this, many are limited precisely by the cold cognitive economy that defines assessment as evaluation rather than feedback. The Teagle Foundation recently convened a group of "administrators, faculty, and graduate students from prestigious Research I universities" for a discussion of assessment (Struck, 2007, p. 1). When the conversation turned to professional development, "most participants acknowledged that much more could be done with centers for teaching and learning. Irrespective of the merits of their services and activities, participants expressed concern that faculty still perceived these centers as sites of remediation" (p. 3). Hutchings (2010) notes that centers for teaching and learning can play a crucial role in shifting faculty attitudes (about both assessment and centers) by converting evidence of student learning into feedback on teaching:

> Bringing faculty together around such evidence, facilitating constructive conversations about its meaning and implications, setting local efforts in the context of a larger body of research—these are important roles that many teaching centers are now taking up, roles that strengthen the growing sense of community around pedagogy and a shared commitment to evidence. (p. 14)

The development of learning outcomes and rubrics for their assessment can be a powerful framework for building a second-order environment because it focuses faculty attention on questions that are very easy to fudge during the grading process: What do we actually want students to learn? And how can we tell whether they have learned it? Indeed, the development, testing, and use of learning outcomes and rubrics brings faculty within sight of the scholarship of teaching and learning. Hutchings (2010) suggests that

> Creating a place (and incentives) for greater faculty involvement in assessment means seeing such work not simply as service or as good campus citizenship but as an important intellectual enterprise—a form of scholarship reflecting faculty's professional judgment about the nature of deep understanding of their field and about how such understanding is developed. (p. 15)

In other words, faculty collaboration about assessment of learning outcomes can be a way of directing faculty conversations toward how to

assess, and hence promote, a deep approach to learning. Faculty learning communities can be an excellent framework for developing learning outcomes, refining assessment of learning outcomes, and testing, reviewing, and revising learning outcomes.

The most powerful framework for developing a hot cognitive economy would be a completely developed system for assessing and tracking student progress on clearly defined learning outcomes. If the institution could track the progress of each student on each learning outcome and preserve that data, then each faculty member could get rich feedback on her own courses in terms of how students progressed after those courses were over (Shupe, 2008). This would allow us to see, for the first time, how our classes are working beyond the final exam. It would extend the time horizon for learning by showing both students and faculty the trajectory of student learning before and after the class, and it would show students the connections between one class and another, changing the cognitive economy in powerful and positive ways. Most institutions have quite a way to go before achieving such a rich feedback system for learning outcomes. But what is disappointing is that most faculty at most institutions have never even thought about the possibility. One vital role that centers can serve is to place this possibility before the faculty, along with illustrations of how it has been done, and put the idea of transformative uses of learning outcomes on the table.

Building a Language of Learning

One of the characteristics of a cool cognitive economy is that talk about teaching and learning is largely carried on in the vocabulary of institutional processes and concrete classroom referents. Will it be on the test? How many points for a "B"? Does this class meet the multicultural or humanities or science requirement? Even faculty, when discussing student deficiencies among themselves, tend to fall back on either process-derived labels or undefined abstractions. She's a "C" student. He doesn't understand the material. One word that gets used a lot is *understand*, but frequently without any criteria either offered or tested. The problem is that the category of misunderstanding is enormous. We might be reminded of mathematician Stanislav Ulam's remark that talking about "non-linear systems" is like talking about "non-elephant animals." What's left is almost everything. So the vagueness of many of our reports of student learning states tends to suck all but the most superficial meaning out of much of our conversation.

Teaching is complicated. The failure to learn rarely flows from the

failure to explain. I can tell you what I want you to know, but you may not hear what I say. The framework of prior knowledge that you bring to listening is the filter through which you hear. So the student who "just doesn't get it"—the bona fide "blockhead" who can't get past square one—is in most cases using a filter that excludes what the teacher wants to say. This is, in fact, one of the simpler and more easily addressed problems of teaching, and one that a teacher with the time to focus on it and the taxonomy and vocabulary to describe it can address fairly easily. But experts in chemistry and French literature do not come to teaching having learned this vocabulary or having ever had to use it. A biologist with a doctorate has a vast, detailed, and systematic vocabulary to describe the complex, interacting systems of the living world, but may have only a primitive set of gross descriptors to characterize what her students are doing when they enter this new country with its largely new language. The task of learning about learning is not necessarily simple for faculty, and that is a very good reason for trying to avoid it. Like students who face a learning challenge that seems too complicated to handle, faculty—who are, after all, busy doing other things—try to avoid the assignment, procrastinate in the face of it, and produce a litany of excuses for why they don't need to do it.

Ultimately, we may hope that the external reward system will change, that the structures that inhibit faculty learning will change, and that the entire institution will experience a paradigm shift. But that will not happen tomorrow, and it is most likely to happen if the new paradigm has a living framework in the minds and work of the people at the institution. This can be built only through making the language of learning the vernacular. That is to say, by using it so consistently and so often, by applying it so regularly to the problems that arise in the course of daily life, by translating problems into it and expressing solutions through it, that it comes to be taken for granted. The center for teaching and learning cannot do this by itself, of course. But it can do a lot. It can consistently address teaching problems in terms of what students are doing and how students respond to their learning challenges. It can talk about student approaches to learning, student self-regulation, metacognition, and goals. It can guide faculty in course redesign and new course design using the frameworks that begin with learning and construct the course from there, such as those described by Fink (2003), Wiggins and McTighe (1998), Weimer (2002), and Doyle (2008). The best and easiest way to do this is probably to participate in developing learning outcomes and rubrics for measuring them. Having spent a good deal of time doing this, I can testify that nothing I did as a teacher forced me to think so consistently and test

my ideas so vigorously about student learning. These conversations are a powerful learning experience.

A core mission of professional development should be to use and model among faculty, administrators, and staff a common language about learning, a conceptual framework that will allow teachers to talk to one another, and to their deans, about what students are doing in the learning process. But just being exposed to a consistent language and set of concepts in workshops, in newsletters, and in conversations will help faculty to learn to think about challenges that they had thought of as beyond the pale.

Use a Deep Approach to Learning as a Design Principle

That faculty often lack the language to conceptualize the work of teaching in a sophisticated way is disappointing, but perhaps not surprising. What is surprising is that, often, even if faculty do know the words, they don't seem to be able to sing the tune. Halpern and Hakel (2003) conclude, "We have found precious little evidence that content experts in the learning sciences actually apply the principles they teach in their own classrooms. Like virtually all college faculty, they teach the way they were taught" (p. 37). Why is this? For the same reason that students who have studied a subject matter in the classroom and retain what they learned cannot then apply it in a new context. As Halpern and Hakel (2003) point out, "Unfortunately, it is quite possible for students to achieve high scores on tests . . . and not be able to recognize a given concept's application in a slightly altered context, or not be able to apply the concept at some time in the future" (p. 40). Likewise, even when faculty do understand the process, they may not be able to easily apply it.

If teachers teach as they were taught, then it should be a central mission of the center to teach them in the way we want them to teach—that is, to incorporate student learning as a design principle into the work of the center, and assume it wherever possible in the design of the institution. We should assume intrinsic motivation to promote student learning, a priority on performance, rich feedback, a long time horizon, and a community of practice around teaching. To do this, of course, brings to the surface many points of misalignment with the larger institution. If student learning is a design principle, these points of misalignment cannot be camouflaged, but need to be acknowledged. To do so will create a certain cognitive dissonance about the design of learning and the design of the institution. It is one of the central goals of centers to heighten that cognitive dissonance, because that is what changes people.

Consider one example of how using a deep approach to learning as a design principle can affect day-to-day decisions. One of the most common practices of centers is to offer workshops to introduce faculty members to some idea or skill. Almost always, these workshops have a worthwhile object and some practical value. But if a deep approach to learning is one of our design principles, what would be our approach to such workshops? First, we would ask how the workshop would affect the cognitive economy. Are participants going to be engaged in performance, and is the performance relevant to student learning? Will they be engaged in activities that they take to be authentic? Will they see how these activities can affect student learning? What is the time horizon of the activity? That is, will participants see consequences beyond the session, and how long will they envision applying them? Will the workshop engage the participants in a community of practice that can sustain the work of the day and allow them to negotiate its meaning for themselves? The object of the workshop may be important and valuable. But unless it has the potential to connect to the larger cognitive economy in a way that will sustain intrinsic motivation of the participants, it is probably not worth doing. A workshop that is connected with some larger community of practice and that sustains some continuing effort that results in performance can be a valuable contribution. But if it is not so connected in the minds of the participants, if participants see it as an isolated experience in which they are spectators, then it is probably making little contribution.

If we take a deep approach to learning seriously as a design principle, professional development will be more demanding and more rewarding than it would otherwise be. Many activities that have been the bread and butter of the center may have to be modified or dropped. If an activity or project does not contribute to creating a hot cognitive economy, it fails the test of quality. The center should be doing something else instead. And, of course, if the center is modeling the practice it hopes to inspire, then it will seek rich and complex feedback. It will seek feedback, for example, not just on the day of an event but six months later. It will not ask just for an evaluation, but also for performances of the learning. It will monitor the outcomes in the classroom and the faculty community. It will seek to meet the needs of the faculty, to respond to their goals, but in a way that raises their level of engagement and raises their sights.

Are we still talking about professional development? Or have we crossed the line into organizational development? If we take seriously the idea of the cognitive economy as the learning environment of the institution, it will be clear that the line between the two is by no means clear. Educators are not isolated individuals; they are members of a large learn-

ing team, and we can't change the parts without at least creating pressure to change the whole. Ultimately, the work of professional development is to change the theory-in-use of the college, to make an institution of higher learning into a learning organization.

In a perfect world, this would be easy to do. Well, not yet. But, neither learning nor teaching is easy. We don't do them because they are easy. We do them because they change us and change others in a constructive way, so that we can change the world. If faculty are students, then they deserve the best learning environment that we can create for them, and as with students, the best learning environment will both ask more of them and reward them more richly.

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