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Abstract

This article traces the uncomfortable relationship between writing studies and the concept of learning transfer. First it reviews three stages in the changing attitudes toward learning transfer in writing theory that is influenced by rhetorical genre studies, activity theory, and situated learning. Then it reviews learning transfer theory itself, an area that is seldom explicitly referred to in writing studies. The article concludes with a synthesis that brings transfer theory to bear on writing studies, suggesting directions for developing research and pedagogical practices related to business and technical communication.

Keywords

rhetorical genre studies, activity theory, situated learning, business communication, technical communication, workplace writing, learning transfer

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Perkins and Salomon (2004) told of a “disappointed Physics professor” who related the following story. He had taught some principles of physics using stock problems such as the following: “A three kilogram ball is dropped from the top of a hundred metre tower. How long does it take to reach the ground?” On the final exam, the professor included this problem: “There is a one-hundred meter hole in the ground. A ball weighing three kilograms is rolled off the side into the hole. How long does it take to reach the bottom?” Some students did not recognize the connection between the tower problem and the hole problem. After the exam, one student even accosted the professor with a complaint. “I think that this exam was unfair,” the student wailed. “We never studied any *hole* problems!”

This anecdote illustrates the problem that faces all educators but that is perhaps most acutely felt by writing instructors: If students have difficulty transferring the knowledge ascertained from a 100-meter tower problem to a 100-meter hole problem, can we really expect them to be able to transfer what they have learned in our writing courses to other rhetorical contexts? There are some indicators that the answer is no or, at best, not really. We now generally accept that there is no universal educated discourse that students can learn in a writing course and easily apply to courses in history or astronomy (Russell, 1995). The genre of universal educated discourse is perhaps really the genre of writing in the composition class, a genre that involves demonstrating various forms of rhetorical prowess by writing to an audience of composition teachers either general-interest essays on common argumentative themes or analyses of such essays. Wardle (2009) called this genre a “mutt genre” because it does not exist outside the unique activity system of the composition class.

The problem is even worse for those of us who teach professional and technical communication. If there is doubt about whether students can transfer their rhetorical knowledge and skill to neighboring academic disciplines—what would be known in learning transfer theory as (relatively) *near transfer*—there is even more doubt about whether they can do so to the professional workplace (*far transfer*). In this article, I contextualize this problem with an overview of three overlapping stages in our changing ideas about this kind of learning transfer. Then I present a quasi-historical overview of learning transfer theory itself—an area that is seldom explicitly referred to in studies of the transition between academic and workplace writing but that may provide us with insight on this vexing problem. I conclude with a synthesis of writing studies and specific practices drawn from the literature on learning transfer. Although this synthesis does not offer any new empirical data on learning transfer,

it does offer a new and more orderly set of principles for teaching in ways that encourage transfer.

Stage I: Closing the Gap

Some professional and technical communication researchers assumed that we could teach skills and knowledge that would be useful in the workplace as long as we had a clear idea of what sorts of skills were actually required there. This assumption led to a surge of what I call closing-the-gap studies (in fact, the word *gap* figures heavily in the titles or abstracts of such studies). These studies, which had their heyday in the 1980s but which continue to appear, seek to provide a clearer idea of what writing (and other) skills are really needed in the workplace.

Halpern (1981) surveyed on-the-job writers, who identified the following list of broad categories of skills as “the most important things they have learned”:

- to generate ideas and information for my assignments
- to adapt my writing for different audiences
- to clarify my purpose
- to organize my material effectively
- to control the tone or voice of my communications
- to polish my drafts of letters, memos, or reports (p. 39)

Green and Nolan (1984) began their study by articulating the commonsense notion that underlies this entire body of literature: “A successful technical communication program should prepare students to perform competently upon entering the profession” (p. 10). Pinelli, Barclay, Keene, Kennedy, and Hecht (1994) concluded that there is “a disconnect between the academic preparation of engineers and the world of work that they enter on graduation” (p. 501). And in 2004, Reave outlined “the gap between workplace demands and graduate skills” (p. 453), noting an earlier survey (Salazar, Suleski, & Coleman, 2002) that found that only 30% of employers were satisfied with their employees’ initial preparation in writing skills. Such studies typically conclude with the researchers’ suggestions on what professional and technical writing curricula should include, based on their findings on what employers want.

These closing-the-gap studies helped us move beyond thinking that all we have to do is teach a series of idealized forms (the memo, the report, the proposal)—or worse, bits of idealized forms (the definition, the process

description). Despite its face validity, however, the assumption that if we teach a list of skills that are valued in the workplace, students will come into the workplace better prepared has been seriously questioned by research that is driven by rhetorical genre studies, activity theory, and situated learning.

Stage 2: Glass Half Empty

In the late 1980s and 1990s, professional communication research informed by the nexus of three theories—rhetorical genre theory, activity theory, and situated learning theory—began calling attention to the question that closing-the-gap literature begs: Regardless of what skills novice employees should ideally bring with them from the academic world into the world of work, can we teach such skills in a meaningful way?

Rhetorical genre theory, first articulated by Miller in 1984, showed us that rhetorical genres are not static forms. Rather, they are active responses to particular rhetorical exigencies. Because such exigencies tend to arise repeatedly in varied but essentially similar forms, genres acquire a familiar set of features. In turn, because writers and audiences share expectations for these features, genres can act as intellectual shorthand, telling readers what to expect as they read and even telling writers what they are allowed to say (Bazerman, 2000). The fact that genres keep arising in essentially similar forms does not mean, however, that they exist apart from the rhetorical exigencies that drive them and the shared perception that those exigencies have commonalities that require similar rhetorical responses. Consequently, genres that arise in the workplace cannot necessarily be lifted out of that context and taught in the utterly different context of the classroom. We can try, and some argue that we can succeed albeit within limitations (more on this later). But the idea that rhetorical genres are deeply bound with particular exigencies seriously complicates the question of transfer from one setting to another (see Artemeva, 2009, for an excellent overview of rhetorical genre studies).

Activity theory takes the discourse about genres and rhetorical exigencies into the related but larger world of activity systems in general. The most salient feature of activity theory is that motives are an essential bridge between mere operations—the small, routinized actions that we perform every day—and the activity systems to which they contribute. The operations involved in taking a bus (standing at the bus stop, checking the sign on the bus to make sure that it is the right one, showing a transit pass, etc.) are essentially the same regardless of whether you are taking the bus to

work or taking it to see a movie. The activity in which these operations are embedded, however, is utterly different as a result of the different motives involved (earning a living vs. being entertained), and as a result, the constellation of operations takes on a different meaning. By extension, the activity system of a classroom may involve many of the same operations as the activity system of the workplace (e.g., talking, writing on paper or on screens), but the motives of these activity systems (learning and demonstrating learning vs. getting a job done) are totally different (Freedman & Adam, 1996). As a result, the similarities between the activities are superficial at best.

Adding an activity-theory perspective to rhetorical genre theory gives us a richer way of describing rhetorical exigencies as arising from activities and activity systems, and from the social motives behind them. But it only deepens the problem of transfer. If two instances of writing sentences on paper can be seen as part of two different activity systems as well as two different rhetorical genres, the gap between the two instances only increases.

Situated learning entered rhetorical consciousness with Lave and Wenger's (1991) seminal study. Through their studies of apprenticeship learning, Lave and Wenger showed how workplace knowledge is handed on to novices, not primarily through formal instruction but through their participation within the periphery of the workplace, often performing somewhat trivial functions but always as part of the larger community of practice in which they observe and gradually take an increasing part in the more complex activities of that system. Situated learning explains the learning of rhetorical genres in much the way that it explains the learning of other communal practices: as a deeply social phenomenon that is frequently tied to physical place but is more importantly tied to shared activity directed toward communal goals, such as getting a particular job done by using an appropriate genre. Genres only have utility—indeed, only exist—if they are shared. Situated learning offers a cogent explanation of how that sharing is accomplished.

Situated learning reminds us of how unsituated our classrooms can be. In the worst case, they are not even clearly situated in the larger activity system of the academy, possibly marooned in the special subsystem of first-year composition (e.g., Bergmann & Zepernick, 2007) or business and technical communication (Russell, 2007). Situated learning suggests that highly context-dependent skills such as rhetorical performance are best learned—perhaps can only be learned—when learners are immersed in the real context in which such skills must be performed on a daily basis.

The close relationships between these three theories should not be allowed to blur the distinctions between them. Artemeva (2008) claimed that, of the many studies using these perspectives, only Dias, Freedman, Medway, and Paré (1999) presented a large-scale empirical study that successfully brings all three theories to bear on the problem of connecting academic and workplace writing—and only by using the three theories in turn rather than as a single integrated theory. Artemeva ambitiously attempted to unite the three theories into a unified social theory of genre learning in much the way I have suggested here. To basic rhetorical genre theory, Artemeva added situated learning in order to describe how genres are learned and how they evolve. Activity theory adds a more fine-grained set of distinctions that define *communities of practice* as activity systems driven by shared goals, not just by shared actions. In short, despite the real distinctions between them, the three theories can be complementary, and writing researchers draw freely on constructs from across them. In this section and the next, then, I discuss writing research that draws on various combinations of the three theories without trying to draw fine distinctions between them.

In the subtitle of this section (“Glass Half Empty”), I suggest that some (though by no means all) of the work in this stage, particularly some of the earlier work, is deeply skeptical of people’s ability to apply what they have learned in one activity system to the job at hand in another. For instance, Freedman, Adam, and Smart (1994) studied business students doing a formal presentation on a case study—a pedagogical form that might seem to approximate the social realities of the workplace better than do most. The suits that the students wore symbolized the role-playing aspect of the simulation: The students were supposed to act and think as if they were really making a business presentation in a workplace setting. Of course, they were not really in a workplace setting, and the professor listening to them was not trying to find out how to best save his business. He was trying to find out how much the students had learned. Freedman et al. did acknowledge that such simulations, and professionally oriented education in general, have a role in teaching the stance and the ideology of a profession along with the discourse that produces and reproduces that ideology. To this extent, students come to the workplace primed with a set of values that help them to function there (or, some might argue, to be assimilated there). But the study primarily emphasizes how much the students will have to learn afresh as they enter a workplace where the purposes, readerships, and techniques of writing are vastly different:

When students leave the university to enter the workplace, they may have acquired, in part as a result of their writing in disciplinary courses, the intellectual stance, the ideology, and the values necessary for their professional lives. However, what they will still need to learn is “how to participate in the actions of [this new] community” (Miller, 1984, p. 165). That is, they will need to acquire new genres.

To do so, they will need to sense from the inside the nature of the social action entailed by these new genres: the instrumental and praxis-oriented social motives, the complex phenomena of multiple readerships (some remote in time and place), the different life cycle of their texts, and the different literacy practices surrounding the texts (reading practices and collaborative composing strategies). None of this know-how will have been made available through simulations, no matter how realistically or elaborately staged. (p. 221)

This emphasis on what learning does not transfer as opposed to what does leads me to characterize these sorts of studies as ones that see the glass as half empty.

Some studies, indeed, see the glass as being somewhat more than half empty. In one of the most influential and wide-ranging applications of activity theory to workplace writing, Dias et al. (1999) argued that the differences between the activity systems of school and work are, as reflected in the title of their book, “worlds apart.”

Like Freedman et al. (1994), Dias et al. (1999) credited schooling with teaching at least two kinds of knowledge that can be useful in the workplace. One is the content knowledge of a discipline, such as the principles of architectural practice, engineering, or finance. The other, more subtle knowledge is knowledge of the general stance of a discipline, its ideologies and ways of knowing. Law students learn to think in the dialectical patterns that characterize legal reasoning; finance students learn to think in terms of competitive advantage and to pay attention to matters such as debt ratios and liquidity—matters that their law-school colleagues would largely ignore. Dias et al., however, saw only limited opportunities for students to transfer their more detailed rhetorical knowledge to the workplace:

In activity theory terms, writing at work and writing in school constitute two very different activities, one primarily epistemic and oriented toward accomplishing the work of schooling, and the other primarily an instrumental and often economic activity, and oriented accordingly toward accomplishing the work of an organization. In that light, one activity, writing in school, is not

necessarily preparation for successfully undertaking the other activity, writing at work (p. 223).

Dias et al. (1999) were not implying that school-based writing is less valid than workplace writing: “We can argue that both activities can function effectively in their respective systems without necessarily bridging their two worlds” (p. 223). But they are deeply convinced that little in the one prepares people for the other. Even regarding cooperative education and internship programs, in which students are immersed in workplace communities of practice for significant periods of time, Dias et al. (1999) emphasized students’ difficulty in gaining entry to such communities: “Student interns and newcomers are unlikely to gain easy or immediate access to what may pass for ‘common knowledge’ within workplace communities” (p. 226).

In short, when transfer fails to happen neatly, we worry that it may not be happening at all. Worse, we worry that in theory it cannot happen, at least not in any meaningful way. As Tuomi-Gröhn, Engeström, and Young (2003) pointed out, this line of thinking, carried to its logical conclusion, can lead us to worry whether formal education has any value at all. Of course, worry tends to generate more research, and in this case, it has led to a search for ways in which we can nurture in our classrooms rhetorical ability that students can use in other contexts.

Stage 3: Glass Half Full

The evolution of our view of learning transfer is not a clear linear progression. Studies in what I characterize as the glass-half-full stage overlap with and sometimes precede those in the other two stages. But many more recent studies show increasing interest in strategies that can, if not be transferred neatly to, at least be reapplied to other situations. By giving us a compelling account of why learning transfer cannot be taken for granted, Dias et al. (1999) and others writing in that tradition presented writing researchers with a challenge that they could not resist.

Artemeva, Logie, and St-Martin (1999) showed how a form of transfer can be accomplished in a course closely tied to a specific discipline. They agreed with Freedman et al. (1994) that trying to import workplace genres wholesale into the academic world is futile. At the same time, they agreed with Dias et al. (1999) that the academic world forms a different but equally valid network of discourse communities. Artemeva et al.’s solution to the need for discipline-specific learning was to make maximum use of the

discourse community in which students are currently immersed. They described a communication course that is tightly coupled with the engineering courses that students take in their discipline. Materials for the course come from projects that students work on concurrently in engineering courses. This tight coupling of the course with disciplinary activities situates these genres in the real discourse community that students will inhabit for at least 4 years, “the discourse community of first- and second-year engineering students at Carleton University” (p. 310). The course introduces intensive teamwork to replicate the communal knowledge building that marks much workplace writing. Artemeva et al. claimed that these assignments, which grow out of the activity system of the academy rather than that of the workplace, will eventually translate to the workplace even if they do not transfer wholesale:

By introducing these assignments, we are attempting to equip students with skills and strategies that can be applied to their other engineering courses and that will facilitate their transition to the workplace. (p. 313)

In short, while acknowledging that knowledge transfer is neither simple nor inevitable, they also maintain that it can happen under certain pedagogical conditions. They see the glass as half full.

Smart and Brown (2002) provided a different take on learning transfer in their observations of a group of internship students nearly at the end of a professional writing program. Like most students entering a new writing situation, they had to quickly get a grip on new genres, new ways of behaving, and new criteria for success. Yet they seemed to pick up the new environment with relative ease. Smart and Brown explained what they were doing as “transforming” knowledge rather than transferring it. They had to relearn their skills in the new environment but were able to do so relatively easily because they had achieved sufficient expertise to have a wide repertoire of strategies to apply to the new environment. In particular, they appeared to have acquired skill in reading rhetorical situations and writing collaboratively that they could adapt to new writing demands. Thus, Smart and Brown reconceptualized transfer, seeing it not as a mechanical transporting of knowledge but rather as a way of using old knowledge as a platform for launching new knowledge. (Ford, 2004, came to a similar conclusion regarding transfer within the academic setting.)

Russell and Fisher (2009) discussed an elaborate workplace simulation using online tools to present students with situations resembling those that they might encounter while working at a software-development company. They received assignments presented in terms of deliverables, deadlines

that reflected a sequence of events on a virtual company's calendar and, perhaps most important, a dizzying array of documents that they had to mine information from as well as use as models of workplace genres. While directly acknowledging Freedman et al.'s (1994) contention that classroom simulations do not usually work well, Russell and Fisher also produced data to show that a more immersive simulation does offer a "transfer-encouraging environment" (p. 187): "Web 2.0 allows us to create fictional—and 'real'—chronotopes in virtual worlds that people literally write themselves into, act in, play in, and work in" (pp. 187-188). For Russell and Fisher, the quality of the simulation compensated for the fact that it was only an approximation of a workplace activity system.

Despite the number of glass-half-full studies in writing studies literature, it is difficult to glean from them a larger set of principles for designing pedagogical environments that encourage students to transfer their knowledge to, or transform it for, other contexts. A century-long body of research in learning transfer, however, provides a more generalizable account of how transfer might be accomplished. Many researchers in writing studies, including those I have noted, paralleled this research and, in some cases, reached similar conclusions, but few (with some notable exceptions, e.g., Teich, 1987; Wardle, 2009) have explicitly drawn on it. Researchers in these two disciplines should, in principle, have a great deal to say to each other, but in practice, they seldom seem to read each other's journals, attend each other's conferences, or reach across the disciplinary boundary in any way.

Learning Transfer as a Social Act

Perhaps we have been reluctant to tap transfer theory for answers to our writerly concerns because much of it is so resolutely cognitivist in the educational psychology tradition, a position that writing studies has moved beyond to concentrate on the social aspects of writing. Smart and Brown (2002), for instance, flatly reject cognitive theories of transfer, arguing that they portray "school-acquired knowledge and skills as commodity-like entities that are acquired by individuals, carried to new environments, and then applied" (p. 117). But transfer theory itself also started moving past this purely cognitive stance many years ago. The fact that one of the most prominent researchers of learning transfer, Yrjö Engeström, is also one of the most prominent researchers in activity theory should suggest that not all learning transfer theory is blindly cognitivist.

Tuomi-Gröhn and Engeström (2003) traced the story of formal transfer theory back to Thorndyck in the early days of the 20th century, which were

also the early days of psychology as a discipline. The prevailing pedagogical view at the time was that training in various subjects—mostly mathematics and classical language and literature—provides general mental exercise that develops students' powers of logical and orderly thinking. Thorndyck (1924) tested this commonsense view empirically and found it severely wanting (even though it persists in some folk pedagogy to this day). To replace it, Thorndyck proposed a theory of "identical elements." Learning from one situation should transfer to a new, more advanced learning situation and offer a stepping-stone to it if the two learning situations have enough identical elements in common. Therefore, each new learning experience should be as small an advance on the previous learning experience as possible to maximize the availability of identical elements. Thorndyck's theory, Tuomi-Gröhn and Engeström argued, led to attempts to analyze the curriculum into specific behavioral elements that could be taught in close sequence. Tuomi-Gröhn and Engeström perceived the foundations of modern "behavioral objectives" in this line of thinking (p. 20).

Judd (1939) challenged this identical elements theory, suggesting that it should be replaced by a theory of general principles. In his most famous experiment, he had two groups of children throw darts at a target under 12 inches of water. The experimental group received instruction on the basics of refraction that made the target appear to be in a different place than it was; the control group did not. Both had to practice many times to get good at hitting the target, and the two groups required about the same amount of practice. When the target was placed under 4 inches of water, both groups had to relearn their skills. But the children in the experimental group, guided by their knowledge of general principles, were able to learn much more quickly. There are interesting similarities between this theory and Smart and Brown's (2002) observation that their interns were aided by a general knowledge of rhetorical principles even though they had to learn to write anew. We need to be cautious here: Moving a target 8 inches is hardly comparable to entering an entirely new activity system, and Judd's work is still resolutely cognitive rather than social. Tuomi-Gröhn and Engeström (2003) suggested, however, that in Judd's general principles we can see the foundations of later theories such as those of Brunner "that emphasize the understanding of deep structures and general principles in different curricular subjects as the basis of transfer" (p. 21).

One significant departure from strictly cognitivist views of transfer is Bereiter's (1995) distinction between "transfer of principles," a descendent of Judd's (1939) work, and "transfer of dispositions." A dispositional view

of transfer calls attention to the possibility of transferring general habits of mind such as scientific thinking or moral reasoning. (We might add “rhetorical thinking” to this list.) Unfortunately, a transfer of dispositions is no easier to accomplish than any other form of transfer. Frequently, students who are painstakingly taught certain forms of scientific thinking, for instance, will resolutely fail to apply them to even somewhat new circumstances (Bereiter, 1995) in ways that are as frustrating as the physics students who could not see the similarities between a tower and a hole. But Tishman, Jay, and Perkins (1993) suggested that the problem may be rooted in pedagogical style. They argue that the sorts of dispositions we might want students to acquire, including intellectual curiosity and a desire to engage in metacognition, are ill-served by a transmission model of teaching. Tishman et al. preferred an “enculturation” model in which the classroom becomes an ongoing environment in which the desired ways of thinking are modeled and put into practice in a sustained, all-surrounding way: “The purpose of an enculturation model of teaching is to provide guidelines for creating a culture of thinking in the classroom that promotes, from all quarters, the development of good thinking dispositions” (pp. 152-153).

Other studies draw on the general idea of transferring mental habits without explicitly labeling the process *dispositional*. Campione, Shapiro, and Brown (1995) presented a technique that they called “fostering communities of learning” (FCL). Classrooms using this technique become complex academic communities of discourse in which students tackle inquiry through open-ended methods such as dialogic questioning and reciprocal teaching. Campione et al. described a sixth-grade class in which, owing to a reorganization of the school, approximately half the students had experienced an FCL environment in fifth grade and the other half had not. Despite a lack of specific prompting (the sixth-grade class was not an FCL environment), the former FCL students continued to use the strategies they had learned in fifth grade whereas the other students did not. The former FCL students also generally outperformed the non-FCL students on a variety of learning tasks, suggesting not only that the FCL students had transferred the disposition to use their dialogic strategies but also that this transfer served them well. (This “community of learners” approach is similar to one suggested by Dias et al., 1999, in the final pages of *Worlds Apart*.)

Going even further than Campione et al. (1995) did with their description of a single-class model, Pressley et al. (1995) described in detail two programs at the elementary school level, including one in a school for students who had not had success elsewhere. These programs created a culture of

interaction, inquiry, and complex thinking strategies that spanned several years and involved large teams of teachers. Like Campione et al., Pressley et al. did not specifically identify their approach as dispositional, preferring the more limited label “transactional strategies instruction.” But we can certainly see ways in which students in these programs began to develop a disposition to use the strategies they had been taught as a natural way of approaching a problem. Students who had experienced these immersive environments spontaneously used many of the same techniques, such as collaborative inquiry and reading for meaning rather than decoding, in new situations, often with little or no prompting. It is perhaps not comforting that achieving this level of dispositional transfer appears to require a consistency of approach across subjects and years that is beyond the reach of those of us who can only control the culture in our individual classrooms. These studies do, however, demonstrate that enculturation has promise in transferring dispositions and that this promise is fulfilled roughly in proportion to the consistency with which the approach is applied.

Despite Tuomi-Gröhn and Engeström’s (2003) criticism of certain aspects of situated cognition, forms of situated cognition are also conspicuous in the transfer literature. Whereas Lave and Wenger (1991) were interested primarily in learning within one or another community of practice and therefore did not deal extensively with the issue of transfer, others were interested in how learning in one community of practice influences learning in another. We can see this inclination in the studies of Campione et al. (1995) and Pressley et al. (1995): The classroom environments they described are examples of situated learning par excellence.

In short, transfer theory takes many forms, but its more recent forms are marked by an expansiveness and social emphasis that the more severely cognitivist forms lack. Social transfer theory admits that transfer is often difficult to measure and often does not seem to happen at all. But many theorists in the social transfer tradition attribute these apparent failures to highly limited studies, particularly laboratory studies. Campione et al. (1995) argued that

methodologically, the “training” phase in the majority of laboratory studies is very brief, allowing little opportunity for the development of any true understanding that would mediate transfer. . . . Transfer must be demonstrated by the participant in a specific way and at the whim of the experimenter: transfer now, or forever be seen as a nontransferer. We believe that this leads to an underestimation of the transfer or understanding capabilities of all, but particularly of young children. (pp. 38-39)

In reaction to highly limited understandings of transfer, especially laboratory-induced attempts at transfer, much of the more recent transfer literature insists on changing the concept of what transfer is and the contexts in which it is sought. Hatano and Greeno (1999) spoke of the problem not as a failure of transfer but as a failure of metaphor. They argued that, rather than looking for more or less exact replication of old skills in new surroundings, we should measure transfer by looking at the *productivity* of the old skills, that is, their ability to facilitate new learning in the new situation:

Productivity refers to the extent to which learning in some activity has effects in subsequent activities of different kinds. This term can refer to the phenomena that are considered in cognitive and behaviorist theories in the topic of transfer, but it does not seem to presuppose that the phenomena are attributed to knowledge as a kind of mental entity stored in the brain (p. 647).

Hager and Hodkinson (2009) spoke of “reconstruction” or simply “becoming.” In a new situation, such as one’s first entry into a workplace, people use all their resources, including prior knowledge, general principles, and general ways of being in the world, in order to become part of the new community. They likened these resources to those described by Bourdieu as cultural capital: “In ways parallel to and interrelated with dispositions, cultural capital acquired prior to entering a firm can be highly significant in the ability to fit in and do the job once appointed” (p. 632). Similarly, Tuomi-Gröhn et al. (2003) argued for replacing crude notions of transfer with the more complex notion of boundary crossing. When crossing boundaries between, for instance, school and work, we enter new activity systems that require “significant cognitive retooling” in which prior knowledge is transformed not just transferred.

In short, transfer theory tells us that transfer is fraught, elusive, difficult to measure, and by no means automatic. But it also assures us that it happens, and indeed happens often, given the right conditions and a sufficiently expanded notion of what it means to transfer learning across the wide spaces between activity systems.

What does this theory tell those of us in writing studies when we feed it more explicitly back into our own research concerns and pedagogical practices? In the following section, I deliberately stop short of listing highly specific practices: Specific pedagogies must be developed to suit the educational, rhetorical, and political contexts of specific classrooms. Rather, I use transfer theory to point a direction for developing both research and pedagogical practices that suit particular situated contexts.

Rhetorical Instruction in the Light of Transfer Theory

Transfer theory has implications for both research and pedagogy.

Implications for Research

One implication of transfer theory is the research agenda it sets. Perhaps one of transfer theory's most important lessons is what it tells us we ought not to put on that agenda. We should not expect to discover how to impart knowledge in our classrooms that can be lifted wholesale and reused in other classrooms and in the workplace. Certain kinds of knowledge may be transportable in this way, but on the whole, such knowledge is likely to concern more basic operations such as how to construct a well-formed sentence or cite a source (and transfer even at this level cannot be automatically assumed). To determine whether students have been able to reuse higher level knowledge, we need to search for evidence of prior learning that has been transformed or used as a platform for further learning rather than merely transferred. As Wardle (2007) archly put it, we should not look for apples when they have already been made into an apple pie (p. 69). Of course, searching for transformed knowledge makes our research task more difficult because it is hard to know what such knowledge looks like when it is applied to a new rhetorical context.

If it is hard for us to know what transformed knowledge looks like, it must be even harder for our students. If we simply ask students what they have learned in their program that is directly applicable to their workplace, the answer may be disappointing. Students asked such questions point-blank may search for obvious ways in which a nugget of knowledge learned in Business Communication 101 came in handy when they needed to perform a recent writing task. But we know from the situated nature of knowledge that it is unlikely to transfer in such an obvious fashion. Indeed, newcomers to a workplace, in the disorientation that frequently accompanies such boundary crossings, may be so struck by the differences between academic and workplace writing that they feel quite hurt by their institution's failure to provide them with easily transportable knowledge. Rather than directly probing students for explicit instances of transfer, we will need to infer from field observation or rigorous interviews, or both, the academic experiences that students are using as background to their new learning.

Reciprocally, we need to know much more about how to provide expertise that students can transform. We have already seen suggestions that

general rhetorical knowledge, not specific, context-bound rhetorical strategies, seems to help students the most when they must adapt to alien territory (Smart & Brown, 2002). Wardle (2007) concurred that metacognition in the form of rhetorical awareness seems to be one of the most transferable, or transformable, contributions of prior learning. This observation is consistent with transfer literature that, from Judd (1939) forward, claims that in the long run, high-level generalizations have the most potential to aid relearning in the widest range of contexts. But we are not yet sure just what kind of general rhetorical knowledge is the most helpful, or how to teach it.

Implications for Pedagogy

The classroom, of course, can never wait for all the research results to trickle in. While we gather more data on what transformed knowledge looks like and how we can help students develop the expertise that is most amenable to transformation, we can set out a tentative pedagogical agenda using what we already know from research on transformation-friendly teaching.

Long-Term Enculturation and Development of Expertise

As I have noted earlier, many studies in learning transfer emphasize long-term pedagogical experiences that are aimed not at providing modules of transferable knowledge but at creating a deep well of expertise and enculturating students into the long-standing mental habits, or dispositions, that will enable them to use that expertise in new situations. This kind of enculturation depends on repeated and consistent exposure:

Practice that occurs in a variety of somewhat related and expanding contexts will force the cognitive element in question to adapt in subtle ways to each of these contexts, yielding an incrementally broadening ability . . . Transfer aside, evidence for a gradual accumulation of a varied and flexible repertoire emerges plainly in the contemporary work on expertise. (Salomon & Perkins, 1989, p. 120)

If we think, for instance, that the ability to collaborate is an important part of our students' mental equipment, then it will do little good to give them one collaborative assignment and move on. Collaboration must be deeply built into the structure of the entire course, or better yet the entire program, just as it is deeply built into the structure of most workplaces. Similarly, any rhetorical knowledge that we want to stick will need to be woven through the fabric of rhetorical education. If we cannot enable year-long or program-long

experiences, we must at least ensure that each course represents a coherent community of discourse that supports the values and skills we want our students to take away.

Teaching for General Principles, Mindful Abstraction, and Metacognition

The debate over how much instruction should be explicit and how much should come through self-discovery has persisted long enough that I do not need to add to it here. But one of the most important and recurring themes in the transfer literature from Judd (1939) forward is the importance of general principles and mindful abstraction—what Salomon and Perkins (1989) called *high-road transfer*: “the deliberate, usually metacognitively guided and effortful, decontextualization of a principle, strategy, or procedure, which then becomes a candidate for transfer” (p. 126).

In this vein, we can see how explicit discussions of genre knowledge—what genres are, how they operate, and perhaps most important, how to learn them—would help students learn how to transform their rhetorical knowledge. Studies of students learning to write in the workplace almost universally point to the importance of their finding models of workplace genres and abstracting from them the writing strategies and genre principles that are valued and expected in that domain of activity (e.g., Schneider & Andre, 2005; Smart & Brown, 2002). But we also encounter cautionary tales of newcomers who learn their writing strategies from the filing cabinet only to end up reproducing inefficient, poorly designed writing formats simply because those are what they found (Johns, 1989). If our students have a deep understanding of how genres operate, how they are replicated, and how they develop as circumstances change and also have practice in using a variety of examples in order to generalize the features of a genre, they will be equipped with conscious strategies that will help them transform their genre learning in the workplace. Perkins and Salomon (2004) called this technique “bridging”: helping students build an explicitly understood conceptual bridge from one context of learning to another.

Explicit discussions of the ways that people typically learn in the workplace may also help students avoid making the same mistake as did Julie, an intern described by Dias et al. (1999):

One intern, Julie, viewed each task as though it was set in a university context, with its clearly defined beginning and end, and its clearly demarcated occasions for learning (in class and through assignments). Consequently, she

consistently insisted on “getting on with her work,” rather than availing herself of the learning opportunity offered her every day by the supervisor who invited her to take a short walk with him and another intern. Every day she refused the opportunity for shared reflection on and learning about what had been happening in the complex political and social rhetorical context of their workplace. (p. 197)

It is not enough, then, to be immersed in a workplace activity system with its rich opportunities for situated learning. One must also know how to take advantage of it.

Mindful abstraction and metacognition also imply reflection. Reflection, too, is a time-honored staple of various writing studies traditions, but it is more commonly associated with first-year composition and other more general traditions of liberal-arts rhetoric. Yet structured reflection is almost pure metacognition—individuals’ conscious awareness of their own thinking and processes for thinking. Schön (1983) is the most well-known advocate of reflection as a component of practice itself, but reflection can also make knowledge more readily accessible to transfer by raising it to a more conscious level. Gardner and Korth (1997) described an educational program explicitly founded on (among other perspectives) Kolb’s experiential learning cycle: concrete experience, reflective observation, abstract conceptualization, and active experimentation. “Reflective Observation activities,” they explained, “are emphasized for their ability to help students learn from experience, but also they serve as a major component in reinforcing individual and group learning as a ‘way of life’ that can serve them throughout their personal and professional lives” (p. 52). In other words, such reflective activities enhance the transfer of dispositions.

Cuing for Transfer via Simulations, Case Studies, and Mentoring

This emphasis on mindfulness and particularly on metacognition should come as no surprise to people in writing studies, for whom metacognition has been a staple since the early work of cognitivists such as Flower and Hayes. But transfer theory goes further in suggesting that it is important to provide explicit cues that encourage learners to consider the relation between the source and target of transfer—in this case, between writing practices in the classroom and those in the workplace: “If learners fail to see the similarities between particular tasks or contexts, then it is improbable that they will engage in the mindful transfer of conceptual or procedural knowledge across tasks or contexts” (Alexander & Murphy, 1999, p. 564). These cues may be *forward reaching* (i.e., learners are cued to look

ahead to situations in which they can use what they are learning) or *backward reaching* (i.e., learners are cued to think about earlier lessons that they can apply).

This principle might have helped the physics students to recognize the crucial similarity between a tower and a hole when considering a falling-object problem. Perhaps those physics students would have done better if, at some point in their learning about the acceleration of gravity, the professor had said, “Now think of some falling-object problems we have done. What’s the one crucial component of each problem that you had to look for? Does this apply to dropping a ball from a balcony? Down an elevator shaft? Into a mine?”

Simulations and case studies provide a more sophisticated version of forward-reaching cuing, providing a rich source of opportunities for teachers to point out how learning can be brought to bear on workplace experiences. As with other aspects of a pedagogical program, simulations appear to work better in proportion to the thoroughness and consistency with which they are designed. Freedman et al. (1994) did not think that wearing suits to class for one day of a simulated presentation could have much effect, but Russell and Fisher (2009) showed how an entire classroom could be organized around an extended simulation that students can draw from when they encounter similar situations in the workplace. Of course, the students in such simulations, to the extent that they are performing for marks rather than to accomplish a real task, will still be rooted in an academic rather than a workplace context, but that fact should not discourage us from doing what we can to import elements of workplace practice into the activities we design for our students.

Backward-reaching cuing can take the form of explicit mentoring from someone who is familiar with both the workplace context and the sources of previously acquired expertise that the newcomer may bring to it. Vygotsky (1978) used the term “zone of proximal development” to describe the area of performance in which the learner can perform new tasks with direct mentoring but cannot yet perform them independently. This principle of mentoring is also related to Wenger’s concept of the “broker” as a mediating force during boundary crossing (Tuomi-Gröhn & Engeström, 2003). Studies of workplace learning invariably emphasize the role of old-timers and other knowledgeable experts as brokers for newcomers, along with the role of inanimate boundary objects such as models and written guidelines. Rather than leaving the workplace itself to do all the work of mediation, however, we should also ask what we as educators can do to improve the likelihood that students will be able

to reuse what they learn in our classrooms and how the classroom can actively extend its reach into the workplace.

Smart and Brown (2002), for instance, mentioned almost as an aside that one source of the interns' relative ease in boundary crossing is "the support the interns received from us and from one another in the two-hour weekly seminar" (p. 122). In other words, the interns were not just given a repertoire of skills and knowledge in the classroom and then sent out on their own to use it. Rather, the classroom followed them, helping them to make sense of their new learning at the time they were immersed in it. Tuomi-Gröhn and Engeström (2003) extended this idea in their discussion of "developmental transfer" and "expansive learning," describing programs in which "teacher and students act as mediators between educational institutions and workplaces" (p. 32) to bring about development, not just in individual students but also in the workplace activity system itself. Tuomi-Gröhn (2003) showed us how such programs work in practice in a detailed discussion of a practical nursing program that created for students a rich zone of proximal development founded on a deep collaboration between school and workplace.

This level of collaboration may not always be practical. Often we will need to settle for more restricted measures such as encouraging reflection in the report that students typically turn in at the end of a co-op work term or holding a single reflective seminar in the middle of a work term. The larger point is that learning transfer between activity systems that are as different as school and work cannot depend on our being able to bring our students to a complete "state of readiness" before they go out into the world. It also depends on our giving them as much support as we can once they are out there.

Concluding Reflections

The entire foregoing discussion, of course, begs the question, How much should we in the academic world target our teaching to prepare students for the world of work? Foucault (1979) argued that industrial-age education, with its emphasis on uniformity, punctuality, and regulated simultaneous activity, was intended to supply "docile bodies" that were perfectly suited to a life of factory work. We might be forgiven, then, for wondering whether too great an emphasis on the transfer of learning to the workplace is little more than a modern-day, highly professionalized equivalent, with the only difference being that higher and more complex skills are required of "knowledge workers." That is not a pleasant thought even if we try to ameliorate our concerns with the assumption (even more difficult to test than

school-to-workplace transfer) that we are also teaching characteristics (critical thinking, creativity, good communication) that help students become fully developed citizens and human beings as well as productive engineers, managers, and health care workers.

The problem remains, however, that learning transfer of some kind is necessarily fundamental to the academic enterprise. If all we do is teach our students how to be good students who cannot apply their expertise to anything other than schoolwork, our entire enterprise becomes circular and self-serving.

I do not intend to argue these deeply fraught philosophical issues here. I raise them only to point out that the issue of learning transfer has political and moral depths that open into more inky darkness the more deeply we penetrate them. Here, I am mostly concerned with showing that the field of writing studies in general, and professional and technical communication in particular, has encountered the issue of learning transfer by way of rhetorical genre studies, activity theory, and situated learning—all of which provide rich new insights on rhetorical learning—while seldom drawing directly on transfer theory itself.

Overall, the literature on transfer is, like all literatures, a hotbed of internal controversy, including the controversy over whether *transfer* is a suitable guiding metaphor. But many of its messages are surprisingly consistent: an emphasis on learning fundamental principles, on being mindful, on explicitly cuing learners to help them make connections that might otherwise elude them, and on mentoring and providing scaffolding to help them survive the shock of boundary crossing. These messages, and others like them in the transfer literature, can provide rhetorical educators with a rich broth of testable ideas on how our pedagogical practices can help students learn and relearn the skills that they will need outside our classrooms. But perhaps the most important lesson of the transfer literature is to show that, however messy and complicated the world of transfer may be and however wide the gulf between academic and workplace activities, we can be confident that the glass is at least half full.

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