Rethinking Genre in School and Society: An Activity Theory Analysis

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Abstract

This article attempts to expand and elaborate theories of social "context" and formal schooling, to understand the stakes involved in writing. It first sketches ways Russian activity theory in the tradition of A. N. Leon'tev may expand Bakhtinian dialogism, then elaborates the theory in terms of North American genre research, with examples drawn from research on writing in the disciplines in higher education. By tracing the relations of disciplinary genre systems to educational genre systems, through the boundary of the classroom genre system, the analyst/reformer can construct a model of the interactions of classroom practices with wider social practices. Activity theory analysis of genre systems may offer a theoretical bridge between the sociology of education and Vygotskian social psychology of classroom interaction, and contribute toward resolving the knotty problem of the relation of macro- and microstructure in literacy research based on various social theories of "context."

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What makes one conversation more meaningful than another? For either an individual, a dyad, a collective, or even a culture? When three African American students who hope to be doctors some day sit down on one particular day to write a laboratory report in a college cell biology course, what are the stakes involved in those marks on a screen? For the students and their families and their neighborhoods and churches? For the instructor and his university and his profession of biology? For the profession of medicine and its patients and its government regulators? How can a student or teacher or researcher understand the meaningfulnesssthe stakesof some (act of) writing.

Vygotsky and his immediate successors did not use genre as a category of analysis. But in the last decade, a number of Vygotskian theorists have incorporated into their work various theories of genre. I will propose a synthesis of a number of elements from these theories, drawing most heavily on Charles Bazerman's (1994) analysis of genre as systems of speech acts within an overarching framework of Vygotskian activity theory (Leont'ev, 1981; Engeström, 1987, 1993). The goal is to move toward a theory of writing useful in analyzing how students and teachers within individual classrooms use the discursive tools of classroom genres to interact (and not interact) with social practices beyond individual classroomsthose of schools, families, peers, disciplines, professions, political movements, unions, corporations, and so on. In other words, I am attempting to expand and elaborate theories of social "context" and formal schooling, to understand the stakes involved in writing. Literacy, Brandt (1990) persuasively argues, is "not the narrow ability to deal with texts but the broader ability to deal with other
people as a writer or reader" (p. 14). This study explores one way to analyze the breadth and depth of people's involvement with others using writing.

As Nystrand et al (1993) rightly pointed out, theories of writing in composition studies, as well as in literary criticism and linguistics, have in the last forty years expanded from formalism to structuralist constructivism and, in the 1980s, to neostructuralist social constructionism. Social constructionism generally views writing in terms of metaphors of social context (Martin, 1993), variously theorized as rhetorical situation (Bitzer, 1968), or community (for reviews and critiques see Harris, 1988, and Kent, 1994). In this way, they attempt to account for the social dimensions of writing as well as the textual (formalist) or cognitive psychological (constructivist) dimensions (e.g., Flower, 1994). But as Nystrand et al (1993), Kent (1994), and Prior (in press) have pointed out in different ways, social constructionists have, like their predecessors, reinscribed structuralist views. The theories have in the main been based on metaphors that suggest an underlying neoPlatonic or Cartesian dualism of something contained and its container, text and context, mind (knowledge, interpretants, etc.) and society, individual and community. In social constructionist theories, some theoretical construct (e.g., "discourse or interpretive community," "social context," "paradigm," "communicative competence," "social norms," "social forces," "ideology," etc.) is bracketed off, posited as a deep explanatory structure, and treated as an underlying "conceptual scheme" (Kent 1994) or "tertium quid" (Rorty 1979) or "underlying domain or form" (Nystrand et al) or "neostructuralist trope" (Prior, in press) to explain behavior, including writing. While neostructuralist theories have made a central place for social analysis, they beg the question of the relation between context and activity, of the genesis and operation of the underlying conceptual scheme.

More recently, poststructuralist theories based wholly or in part on Bakhtin's pioneering work in literary criticism (Bakhtin, 1981, 1986) have challenged these social constructionist assumptions. These dialogic theories explain discourse, including writing, not in terms of some bracketed underlying conceptual scheme but as a dynamic, functional, intersubjective process of reciprocal negotiation among writers and readers, where discourse mediates interactions among conversants. There is no conceptual bracketing of text and context, conversant and context. As Holquist put it, "Discourse does not reflect a situation, it is a situation" (Holquist 1990, p. 63, qtd. in Nystrand et al p. 300).

By substituting metaphors of conversation and dialog for metaphors of context and its contents, dialogism expands theories of writing to allow a more dynamic and interactive or ecological approach, where one can pursue a more thorough and symmetrical analysis than is possible with theories that posit some underlying conceptual scheme to explain writing and learning. Because "cognition is always, already social," there is no Cartesian or Neoplatonic split between knowing and doing, mind and society. Dialogism thus goes further than social constructionism toward solving the problems of the relations among language, the individual and the social; language, knowledge, and action.

Yet dialogism's conversation metaphor, like any other, is also limiting in several ways. Perhaps because Bakhtin's object was the analysis of literary texts, he "he links dialog and meaning construction only to signs, and to words in particular" (Engeström, R., 1995, p. 198). By focusing on dialog and "voices," by limiting the unit of analysis to oral and written utterance as discourse, dialogism brackets off a wide range of non-conversational actions and the material tools through which they are carried out, the ongoing social practices in which speaking and writing operate along with a host of non-linguistic tools. This can be a particular limitation in studying writing, because
writing is used to organize ongoing actions over much larger reaches of time and space than face-to-face conversation does, mobilizing other material tools in much more regularized and powerful ways. Thus, a broader unit of analysis may be useful.¹

In addition, dialogism's conversation metaphor tends to focus attention on the dyad as the level of social analysis, leading analysts to examine pairs of conversants in their conversational turns, their utterances, within the classroom (Nystrand et al, p. 303). It analyzes the behavior of collectives beyond the conversational moment in terms of broad social languages and the relation between collectives in terms of the heteroglossic interpenetration of voices from different social languages in conversation. Yet many collectives, such as disciplines, professions, governmental and educational institutions, have long-term objectives and motives beyond conversation, which constrain and afford participants' actions (including writing) in powerful ways. In this broader level of analysis, the object(ive) of dialog is not ordinarily the conversation itself (as it might be in casual talk among friends or literary productions) but some shared object and long-term motive of the dyad or collective, to do some things to and with some things beyond talking (Engeström, R. 1995). Moreover, dialogism does not focus on the long-term objects of activity and the motives individuals and groups have for acting (including writing) in certain ways and not others, which grow out of social practices beyond the classroom. How shall we include these objects/motives in an analysis, moving in a principled way from broad collectives (social languages, in Bakhtinian terms) to the microlevel behavior of writing for some specific purpose, and vice versa? (And as we just noted, collectives use powerful tools not easily analyzed in terms of conversations and voices, e.g., buildings, machinery, demarcated physical space, financial resources, data strings).

Finally, dialogism focuses on the dialectical relation between the cognitive and the social, or between individuals engaged in reciprocal utterances (usually dyads). However, the dialectical relations between and among collectives are not ordinarily the focus of analysis, apart from the reciprocal interpenetration of dialogic voices drawn from social languages. But how and why do certain voices and not others arise in classrooms? Voices of the mind (Wertsch's [1993] phrase) not only embody the local construction of referentiality in the ongoing conversation, but also the global activity of collectives such as institutions and the stakes the various stakeholders have. What lies in between social languages and the voices and speech genres of conversational moments? What motivates a particular heteroglossic concatenation of voices? Collectives pursuing different objects and motives interact with one another in a host of ways over time, producing not only microlevel local conflicts but also deep, ongoing dialectical contradictions within and among social practices at the macrolevel (Engeström, R., 1995). How shall we analyze the mid-level relations between the two? To understand the writing and power relations of people in and among institutions such as schools and academic disciplines, it may be useful to have (1) a broader unit of analysis than text as discourse, (2) wider levels of analysis than the dyad, and (3) an expanded theory of dialectic that embraces objects and motives of collectives and their participants as well as reciprocal interactions among minds and texts in the interpenetration of social languages.

In this article I will first sketch the alternative offered by activity theory, then elaborate the theory in terms of North American genre research, with examples drawn from research on writing in the disciplines in secondary and higher education. This

¹ Volushinov (1973) briefly discusses "behavioral genres" in an attempt to emphasize that "the sign may not be divorced from the concrete forms of social intercourse" nor communication from "the material basis" (pp. 20-21, 96-97), but the concept has not been much developed in Bakhtinian dialogic theory.
systemic genre analysis may be helpful to literacy efforts that must deal with diversity among students (e.g., critical pedagogy) and specialization in schooling and beyond (e.g., WAC). As Brandt (1992) has pointed out, apart from the feminist analysis of Smith (1984), ethnomethodological approaches have generally lacked a theory to connect locally produced events with other events that "intrude upon and regulate a local event," particularly as writing in modern bureaucratic societies mediates events widely separated in space and time (p. 351). I hope that analysis of genre systems may offer a theoretical bridge between the sociology of education and Vygotskian social psychology of classroom interaction, and contribute toward resolving the knotty problem of the relation of macro- and microstructure in literacy research based on various social theories of "context" (Layder, 1993).

**Activity System versus Context and Conversation**

The tradition of activity theory now encompassing many different strands was first developed out of Vygotsky's socio-historical theory by one of his two main collaborators, A. N. Leont'ev, beginning in the late 1930s (Kozulun, 1990; Nardi 1991, 1996). It has evolved into a major direction in Russian social psychology and now has adherents world-wide, influencing studies in education, language socialization, computer interface design, and expert work, among others. Like social constructionism, activity theory traces cognition and behavior, including writing, to social interaction. Like dialogism, activity theory does not posit some underlying conceptual scheme or deep structure for explaining behavior (including writing), and it looks at the reciprocal mediation of behavior in mutual, intertextual exchange and negotiation. Both dialogism and activity theory are socio-historical, moving from the social to the individual in their analysis. The object of analysis is neither texts nor minds nor conceptual schemes per se, but what is in between, the social intercourse.

However, instead of using metaphors of context and contents or conversational dialog, activity theory develops the metaphor of interlocking, dynamic systems or networks, embracing both human agents and their material tools, including writing and speaking. The system or network metaphor can perhaps facilitate analysis of writing and learning (socialization/ acquisition/appropriation) by allowing us to theorize and trace the interactions among people and the inscriptions called texts (and other material tools) without separating either from collective ongoing directed action over time. In this way it may be possible to overcome the macro-micro distinction and other Cartesian dualisms by locating and analyzing a particular action or group of actions in both their synchronic and diachronic relations to other collective actions, even those relatively remote in time and place where writing is often crucial. In this way, an activity theory of writing can satisfy Witte's two criteria for a theory of writing: "(a) comprehensives with regard to stipulating the means of bringing together the textual, cognitive, and social and (b) viability with regard to how writing is defined operationally (i.e., in practice) through its production and use in the culture" (1992, p. 242). And activity theory can do so in a way that allows us to understand the stakes the meaningfulness of reading and writing.

Activity theory posits the activity system as the basic unit of analysis of behavior, individual and collective (Engeström, 1987, 1993; Cole & Engeström, 1993; Leont'ev, 1981). An activity system is any ongoing, object-directed, historically-conditioned,
dialectically-structured, tool-mediated human interaction: a family, a religious organization, an advocacy group, a political movement, a course of study, a school, a discipline, a research laboratory, a profession, and so on. These activity systems are mutually (re)constructed by participants using certain tools and not others (including discursive tools such as speech sounds and inscriptions). The activity system is the basic unit of analysis for both groups' and individuals' behavior, in that it analyzes the way concrete tools are used to mediate the motive (direction, trajectory) and the object (the "problem space" or focus) of behavior and changes in it. (See Figure 1 below.)

Figure 1: An Activity System (Fundamental Unit of Analysis of Social Practices)

The subject is the agent(s) whose behavior (including that kind of behavior called discourse) the analyst is focusing on. The identity of both individuals and collective groups is conceived in social terms as the history of their involvements with various activity systems, because both individuals and collective groups can be involved in multiple activity systems. Individual identity—the uniqueness of each individual—results from the intersection of the person's history of involvements with multiple activity systems in combination with idiosyncratic factors (genetic and epigenetic).

Tools refer to material objects in use by some individual or group for some object/motive to accomplish some action with some outcome; that is, tools-in-use, as I will sometimes refer to them, to remind us that a material thing is not a tool unless it has been put to some use, and the uses of a single material thing may differ over time and across different actions and activity systems. A Bible can be an object of worship, textbook, literary work, doorstop, source of cigarette paper, and so on. Similarly, a text with chronological ordering devices can be a novel, genealogy, research methods section, grant proposal, instruction manual, and so on.

The object/motive refers to the "raw material" upon which the subject(s) bring to bear various tools in ongoing interaction with other person(s): the "object of study" of some discipline, for example (e.g., cells in cytology, literary works in literary criticism) and the direction of that activity, its purpose (e.g., analyzing cells, analyzing literary works). That is, the object of an activity system also incorporates an objective, a direction or motive.

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3 This is a deliberately simplified version of Engestrom's model of an activity system (1987) and Leont'ev's (1981) discussion of object and motive. I combine the terms object and motive to emphasize the full identity of the two.

4 This concept is similar to the concept of "subject position" in cultural studies, but the AT formulation gives equal weight to the non-linguistic material conditions and elaborates the analysis in a systematic way, as we shall see. For epigenetic factors, see Edelman, 1992.
Like other species, humans act purposefully and have biological motives for their ongoing activity. But unlike other species, human behavior may differ radically among groups. The use of tools (including vocalizing and marking) and most importantly the division of labor that tools allow mediates humans' interactions, separating the biological motive from the socially constructed object of activity. With the social division of labor, a range of ongoing systems or networks of activity arise and proliferate. The use of tools mediates the activity in specific and objective ways that are realized historically in and among collectives, through a developing cooperation and/or competition in the specialized use of tools arising from the social division of labor (Leont’ev, 1981, p. 2).

For this reason, activity theory is called a cultural-historical or socio-historical theory. For humans, realizing biological motives may involve a whole range of activity systems, each with different object/motives, each interacting with others activity systems through tool mediation. For example, from the division of labor involved in ancient grain production (involving planting, harvesting, milling, baking, accounting, surveying) to modern agribusiness (involving these plus economics, genetics, technical writing, national and international governmental agencies, corporations, labor unions, courts, agriculture courses, etc. quasi ad infinitum), human beings satisfy the biological motive of securing food by organizing themselves into various intersecting and interdependent social practices (activity systems) mediated by a vast range of toolsoften including inscriptions as discursive tools. These activity systems can stretch out in space and time and multiply through social division of labor to become large, powerful, and immensely varied, as their histories are played out variously and dynamically. Each of the three aspects of an activity system change historically. The identity(ies) of the subjects, the purpose (object/motive) of their actions, and their tools-in-use are historically (re)constructed, over a few seconds or many centuries.

Finally, activity systems and their "social languages" (in Bakhtin's terms) do not operate independently but interact, as institutions interact in the lives of their participants leading, motivating participants to move in different directions (even in the same individual). Thus there may be dialectical contradictions that arise in an activity system, as other activity systems pull participants in different directions. These contradictions may be analyzed to trace the genesis of heteroglossic voices, in a classroom or in any other locus in the system. For activity theory, these contradictions are crucial to understanding the circulation of texts (or "voices") in both individual and collective behavior. However, for any given action of an individual, dyad, or group, the analyst looks for a leading activity: the activity system that ultimately motivates the action (including instances of writing), though the leading activity may change.

**Genre as Operationalized Actions:**

**A Social-Psychological Perspective on Learning to Write**

In thinking about genre in relation to activity theory and the whole Vygotskian tradition of educational analysis, the first step is to go beyond the conventional notion of genre as a set of formally definable text features that certain texts have in common across various contexts (however defined) important as these are to any principled analysis and consider genre in relation to systems or networks of social activity and action. From this perspective, genres can be defined, following Miller (1984), as typified tool-mediated ways of purposefully and dialectically interacting among people in some social practice (and across various linked social practices), some activity system(s).
Activity theory demands that genres not be seen merely as texts that share some formal features but as shared expectations (perceptions, predictions) among some group(s) of people of how certain tools (including vocalizations and inscriptions) may be used to act together to accomplish shared purposes, to further the object/motive of the activity system. In this sense, genres, as Bazerman (1994, p. 1) says, are not best described as textual forms, but as "forms of life, ways of being, frames for social action. They are environments for learning" and teaching. As "forms of life," genres and the activity systems they operationalize are (temporarily) regularized, stabilized, through routinized, typified tool-use within and among (sub)groups/genres.

As the list of mediational tools in Figure 1 suggests, this activity theory view of genre differs from Martin/Rothery school of Hallidayan theory (Martin, 1993), from dialogism (Nystrand, 1986; Wertsch 1991), and from deconstruction (Derrida, 1980) in that it does not privilege linguistic tools over others. Witte (1992) persuasively argues that Vygotsky intended signs to include non-linguistic signs and summarizes the relevant research. This interpretation is necessary to the activity theory analysis I am pursuing here. The term genre in this analysis may apply to the typified use of material tools of any type by an activity system, often in conjunction with one another. Indeed, the term genre has often been applied to painting, music, clothing design, architecture, and so on, and might even be applied to heavenly bodies as they are used by sailors for navigation (Hutchins, 1995). For the purposes of analyzing classroom interactions and their relation to wider social practices, genres of manipulating scientific apparatus (Velez, 1995) or computers (Haas, 1996) may be crucial.

Because of their particular material properties, the sounds people make with their mouths (language is etymologically "tongues," langues) and marks they make with their hands (writing and other inscriptions) are tools that have extraordinarily wide uses for (re)constructing systems of human activity. They are very quick and inexpensive to make and, in the case of writing, highly mobile. But there is nothing mysterious about these inscriptions or speech sounds. As widely useful as speaking and writing are, other tools may do the same kinds of jobs, though less efficiently (gestures for speaking, arrangements of small objects for writing, for example). And there are many interactions that cannot be mediated with speaking or writing. Other tools are necessary to the human systems or networks in which work goes on. And those tools may be more important to particular activity systems or constellations of activity systems (Witte, 1992; Smagorinsky & Coppock 1994; 1995). However inscriptions are particularly suited to constructing long and powerful systems or networks of the modern world, through systems of written genres, as we shall see.

A second step in connecting genre to activity theory is to see genre at work at the individual, dyadic and collective levels of analysis. How shall we analyze the changes mediated by writing at both the individual/dyadic micro level (psychological and interpersonal) and the collective(s') macro level (sociological or cultural)? Leont'ev (1981) proposes three levels or lenses for analyzing social practices, including institutions (see Figure 2 below). Activity systems are made up of specific goal-directed, time-bound, conscious actions, which are in turn operationalized by variable mediational means (choices of tools) in response to conditions.

Figure 2: Leont'ev's (1981) Levels (Lenses) of Analysis of Social-Psychological Functioning
As Wells (1993) and R. Engeström (1995) have argued, a genre is ordinarily best analyzed at the level of operation, a typified use of some tool(s), some mediational means, to carry out a typified, routine action, an action which in turn furthers the motive and acts upon the object of some collective (activity system). (A routine is, etymologically, a path cut through the woodst to make the next trip easier). When an individual, dyad, or group (subject) takes some goal-directed action (e.g., taking turn in a conversation or writing an article to persuade an interlocutor, heating water to prepare a meal for a family, performing a pH test to complete a classroom laboratory experiment), the subject might choose from a range of tools (e.g., lexical and syntactic items, heat sources, types of pH test). Yet in an activity system, typified actions have over time been routinized (operationalized), temporarily stabilized in ways that have proven useful in carrying out the object/motive of the activity system.

In this sense, genre is an analytical category useful for understanding both individual behavior (psychology) and collective behavior (society or culture). By operationalizing recurring actions into genres, individuals participating over time in an activity system come recognize and perform actions in typical ways using typical tools, thus appropriating ("picking up" or learning) the tools (including discursive tools) and perhaps the object, motive, and subjectivity (identity) of the collective. Similarly, by operationalizing recurring actions into genres, collectives [re]create and temporarily stabilize their object, motive, tools (including discursive tools), and collective identity.

Because genres have operationalized (routinized) many actions recognized to be of the same type, experienced participants in an activity system do not ordinarily need to choose each time they take action unless conditions change and require new ways of acting, which in turn may be operationalized and alter or transform the old genres (if the new conditions persist). The use of some tool in some way is, psychologically, a response to some need for action with others. Its routinized, operationalized use is a way of continuing to work (operate) with other though a way that may be forsaken at any time, with more or less but never entirely predictable consequences. The first time one takes the action of using a new tool (whether a clutch pedal or a semicolon) it requires a conscious decision to act, but with repeated use it may become a routine operation, usually unconscious. So it is with genres.5

5 Research in neural science increasingly points to a very pastic capacity of human beings to categorize sensory input in relation to survival values (Edelman, 1992). In this sense, emotion and intellect are functionally inseparable, and unconscious and conscious processing interact reciprocally and dynamically to structure behavior (Damasio, 1994). This tradition of neural sciencederived in large part from Vygotsky's collaborator A. R. Luriaprovides a neurological and psychological grounding for activity theory and, I would argue further, for genre theory, in that typified responses to conditions perceived as recurring is a fluid and dynamic process of categorization on value, rather than a process of stable schema formation (Shank & Abelson, 1977) in the tradition of information processing cognitive psychology or even "cultural schema" formation in the tradition of cognitive anthropology (DuAndrade & Strauss, 1992; Gee, 1992).
Put in simplest terms, a genre is the ongoing use of certain material tools (marks, in the case of written genres) in certain ways that worked once and might work again, a typified tool-mediated response to conditions recognized by participants as recurring (to paraphrase Miller, 1984)). My daughter Madeliene and I are participants in the activity system of our nuclear family, which must act upon an object (food) to satisfy a biological and socio-cultural motive (to eat). In the broad division of labor in our society, our family activity system interacts with the activity system of a local supermarket, Save-U-More (though we could choose to use the farmer's market, local farmers, or take up farming).

Some years ago Madeleine and I jotted a list of items to get at the store and found this discursive tool made the shopping trip go better, that it helped us carry out some specific action toward a specific, conscious goal getting the family's groceries for the week that would satisfy an ongoing motive/object of our activity system. Trips to Save-U-More are a typified action in our family, and because we found the list useful tool of interaction with the other activity system, we made another list the next time we went shopping. In time, using a grocery list became a routine, a habit, an operation for us, often unconscious. We do not have to decide each week how to organize and carry out our interaction with the grocery store. The list has become a useful tool of our family's activity system by operationalizing (routinizing) our interaction with another activity system, the weekly trips to the grocery store. It is now one of our family activity system's genres.

Over the years the list has changed in response to changing conditions. It has a history. Indeed, I picked up appropriated the grocery list genre from my seeing my mother make a similar list; it passed from one nuclear family to another related family system and its cultural history stretches far and wide. It is reconstructed dynamically in response to changing conditions. When the list became long and our time short, my daughter and I organized the list by aisles to save time, and then reorganized it when we changed to Cub Foods. The tools we use to (re)construct it have changed. To save time in copying items, we have printed out a list of the items we usually buy, organized by store aisle, and photocopied it to post on the refrigerator. Its use is recognized by the other family members (and by the grocery sackers, who say "Is this your grocery list?" when we absent-mindedly leave it on the counter). They know when we are list-making and why, what that paper is on the refrigerator door and why, what happens if they move it (we get irritated). Its use has been appropriated from the dyad to the collective: we even have more or less successfully enlisted the other members of the family to mark the items we need as they run out and add items they want. But the division of labor in the family activity system is preserved. Madeleine and I make the list and the others complain when we don't return with an item that they marked on the list and don't complain (or complain less) when we don't have an item they wanted but didn't put on the list.

Our grocery list is a very simple instance of a written genre, as I will use the term. The first time one or more persons in an activity system (or between activity systems) is confronted with a need to carry out a specific action, to achieve a specific goal, the person(s) must choose some means of action, using some tool(s). If the person(s) perceive(s) the choice of tools and their use in a certain way has accomplished the goal, they might choose it again. Over time, people may be confronted with what they perceive as a similar need to act in similar conditions, and pick up and use appropriated some of the same or similar discursive tool(s) (form of words) in some of the same or similar ways for the same or similar use. That is, they appropriate and perhaps eventually operationalize what the participant(s) perceive(s) to be similar
actions using what they perceive to be similar tools and uses of the tools (ways of writing). They create what I am calling a genre. If what they pick up is "inappropriate" does not work then it does not become operationalized (unless of course conditions change so that it becomes "appropriate," i.e., appropriated by others).

Texts recognized by participants in an activity system as belonging to some genre may not share a specific set of definable formal features (that is, what participants in that activity system [or another, such as linguists] point to when asked how they know this is one kind of text and not another). Participants may recognize these texts as belonging to the same written genre as long as these texts as operationalizing the actions of participants in the activity system. As Swales (1990, pp. 49-52) points out, following Wittgenstein, we recognize and categorize genres using "family resemblances," a loose and shifting constellation formal features rather than strict definitional criteria. Through pointing out shared features, it is possible to make anything resemble anything but only from the point of a distanced observer (from another activity system, in the terms I am developing here). "Family resemblances" among texts, shared formal features, are understood as belonging to a written genre by the "family," the participants in the activity system, in complex ways that involve shared experience and complex categorization over time (history of use). As in a family, we "inherit" genre categorizations not biologically, not abstractly, but in the quotidian experience of them among people who share purposes (object/motives) and tools-in-use, which is why views of genre that focus on text features are not very helpful for an activity theory analysis (Kent 1994).

For example, Witte (1992) found grocery lists of shoppers in the same market differed significantly in their linguistic features, yet he and the shoppers recognized all the documents as grocery lists. However, not all lists of grocery items are recognized by participants as grocery lists. The store's buyers and stockers have lists of grocery items that mediate their interactions with wholesalers. These they call order forms or stock lists, not grocery lists because they operationalize ongoing interactions with different activity systems, and are tied to a different set of tools, discursive and not: stockrooms, loading docks, delivery trucks, invoices, inventory lists, cartons, forklifts, instead of aisles, parking lots, shopping carts, bags, register receipts, etc. How far a generic label will stretch is an empirical question that can be answered only by interviewing and observing participants. Participants' shared recognition of the typified actions that a genre operationalizes is the key to distinguishing one genre from another.

Conversely, texts that share a number of formal features may not belong to the same genre because they are not all used to mediate the same recurring (typified) actions of an activity system. A single text may successfully function as a tool for mediating the actions of participants in more than one activity system. That is, a single text may function as different genres, in the sense that the text(s) mediate the actions of participants in different activity systems. By this definition of genre, a single text (e.g., Hamlet) is not the same genre when it is used a script for actors as when it is an object of literary or philological analysis, because each of the three activity systems will use it with a different object/motive though there may be much mutual appropriation and one rare individual may indeed be a full participant in all three activity systems, simultaneously a philologist, literary critic, and stage director.6

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6 This view of genre differs from the Martin/Rothery version of Halidayan systemic functional linguistics (SFL) in that genre is seen as specific to some social practice (AS), not an overarching discourse strategy shared by many unrelated social practices (e.g., report, recount, etc.) (Martin, 1993). For a discussion of North American versus SFL versions of genre, see Freedman & Medway (1994) introduction.
Genres as Systems:
A Sociological Perspective on Learning to Write

This activity theory of genre emphasizes the dynamic functional circulation of texts through intertextsthe shifting mediation of change and power over time, historically. Those who have not routinely interacted with the participants (and tools) of an activity systemnewcomers, in whatever kind of interactionmust appropriate (pick up for use or, in the conventional term, learn) at least some of those routinized tools-in-use (genres) in order to expand their involvement with (or, sometimes, against) others in the activity system. This is the process of reproduction, of more or less but never entirely maintaining genres in the face of new conditions brought about by (if nothing else) newcomers to the activity system. Reproduction is routine, the operationalized workings of subjects (identity), object/motive, and tools-in-use of some social practiceand among social practices. In activity systems where writing is a tool-in-use, at least some (but usually not all) newcomers must appropriate for some use (learn to write) some (but usually not all) of the written genres, whether the newcomers are patients filling out a form, or union leaders revising work rules, students learning to write an abstract of an journal article, or political activists writing banners and lists of demands to carry to the demonstration (and probably filling out parade permit forms).

This need to interact using (dynamic) genres is not to say (as some critics of genre analysis argue [e.g. Dixon, 1987]) that change is one-directional and inevitably reproduces existing structures. Activity systems and genres are dialectically structured. To appropriate a tool-in-use, newcomers do not copy exactly the tool and/or its use. Because newcomers bring with them tools and ways of using them from other activity systems, when newcomers pick up and use the genres of the new activity system, those genres and the activity system may be changed in the process of appropriation, however slightly. In this sense, newcomers may change the conditions of an activity system as they expand their involvement with it over time. The very presence of even a single a newcomer, no matter how powerless, can change an activity system, as every family that has had a new baby can attest! But an influx of newcomers from a different activity system(s) (e.g., open enrollment at CUNY in the 1970s), or a single newcomer linked to a more powerful activity system (as a new dean) have a greater potential to reform an activity system, in the process of themselves changing through ongoing participation in its interactions. These dialectical changes through appropriation of tools across boundaries are accompanied by conflicts, resistances, before conditions are restablilized (Berkenkotter & Huckin, 1995).

For humans, reproduction is never final, whether social or biological. Through the actions of individuals and groups with tools, interactions between and among activity systems may dialectically change those activity systems over time. A newcomer(s) may pick up (appropriate) some tool from one activity system, carry it back to a familiar activity system, and put it to use (perhaps a very different use), transforming that activity system in the process. For example, a student in a general education course of some discipline might apply something they have learned to meet a need in a family or peer group unrelated to the work of that discipline (Geisler, 1994; McCarthy & Fishman, 1991). This dialectical appropriation of tools across (temporarily) stabilized boundaries is often operationalized in part through written genres, as well as other tools, including money, machines, buildings, and so on. And it is often a complexmessyprocess to analyze (Prior, in press).

In complex activity systems, including those of formal schooling, there are typically many written genres, which participants combine to organize interactions. Bazerman
has developed a theory of genre systems, which "are interrelated genres that interact with each other in specific settings" (1994). These "settings" I conceive as activity systems, which systems of genre mediate, producing coordinated actions (though contradictions and conflicts are part of those coordinated actions). In the genre system of some activity system (or among activity systems), "only a limited range of genres may appropriately follow upon another," because the conditions for successful actions of each activity system are conditioned (constrained and afforded) by their history of previous actions (Bazerman 1994, p. 80). Through repetition of typified rhetorical actions, the system of written genres in conjunction with genres in other media operationalizes the goal-directed actions of the participants in regular (and usually unconscious) ways, bringing stability and through the process of appropriation change to social practices and institutions. Operationalized microlevel interactions (re)create, over time, what Bourdieu calls the habitus, (1990) or what activity theory calls the activity systems, the operationalized habits of tool-mediated behavior. 

Because of the division of labor within (and among) activity systems, not all of the participants must appropriate all of the written genres. Participants at certain more or less (but never entirely) stable positions within the system(s) interact in ways that make it more likely they will use (and perhaps transform) certain genres (and not others) at certain times (and not others). The teacher writes the assignments; the students write the responses in classroom genres. The administrators write the grade form, the teachers fill it out. The parents and/or the government officials write the checks; the administrators write the receipts and the transcripts and reports (Law, 1994). It is through this circulation of genres in systems, these regularized shared expectations for tool use within and among systems of purposeful interaction, that macrosocial structure is (re)created. And at the same time in the same fundamental way the identities of individuals and groups and subgroups are (re)created. Change in behavior (including that kind called learning) occurs in myriad complex ways.

Similarly, in this theoretical view, power (social control, domination, hegemony, exclusion, etc.) is not some force that is mysteriously transported or conspiratorially hidden in discourse. It is rather to borrow Latour's (1993b) formulation a particular but dynamic network (system) of affiliations, mutual alliances, enlistments, enrollments all mediated by tools (including writing) where people marshal for some purpose (object/motive) longer (more extensive) system of people and their tools-in-use. The longer the networks a person (or group) has enrolled with the mediation of a system of genres, the greater the power, the more effectively one can "pull strings." Power is analyzable in terms of those tools-in-use and the object/motive, the shared direction of the people and tools-in-use of the activity system. To understand power in modern social practices, one must not only "follow the money" but also follow the other genres (written and otherwise). Power appears in specific, locatable occasions of mediated action, and is created in the network of many localized instances. It is not an inchoate climate of force or terror, although such atmospheres and responses are (re)created by the operationalizing of specific actions operationalized in mediated systems.

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7 For a genre system analyses using Bazerman's theory, see Berkenkotter and Rivotas studies of the metal health care system (in press). For an activity theory analysis of the genres of medical interviews in Finland, see Ritva Engestrom (1996). For genre system analyses from other similar perspectives, see DeVitt (1991) on accounting; Diaz et al. (in press) on social work and central bank management; Van Nostrand (1994) on government research and development (with an alternative form of genre mapping).

8 Latour's actor-network theory (1987, 1993) is finally incompatible with activity theory because it insists that nonhuman agents be analyzed symmetrically as agents (for critiques see Myers, 1996). But a number of Latour's insights into the macrostructural workings of mediated networks, I believe, can appropriated to extend activity theory to consider macrostructural sociological objects in new and useful ways.
Nor are genres, in this view, Foucaultian capillaries, microlevel conduits carrying power (1981); rather genres come historically to fully mediate human and other technical interactions in such a way that some people (and some tools) have greater and lesser influence than others because of their dynamic position(s) in tool-mediated systems or networks. The technology (tool) we call writing, the deployment of inscriptions is an extremely flexible and handy amplifier of involvements, alliances, enrollments. It can make long strings to be pulled but only if those strings are attached (networked) to other mediational means (money, buildings, demarcated spaces, machines, clothing, etc.). To borrow examples from Latour (1993a), through the characteristically modern written genres known as forms and file cards (etymologically a file is filum or string), one can be involved in the lives of literally millions of people and string together a massive network (system) of power relations. Through publication one can ally and align millions of people. But one must be positioned in systems to have access to the files and the presses, to the people who can call up the files (and rule the Panopticon), mobilize a large book distribution network and [re]create ideology. The modern world, with its vast reaches of power, is impossible without the string of data inscriptions in the vertical file (or today, the electronic file), impossible without the amplification of inscriptions in the rotary press (Yates, 1989). Thus an activity theory analysis can do more than trace Foucault's "surfaces of emergence," it can trace the operations, the genres, as they use material resources of all kinds to fully mediate power relations (1981). One asks: How long is the network of affiliations? What people and tools are enrolled for what purposes? Who pulls what strings of tools-in-use that are attached to what other people and tools in the genre system? How does a person(s) come to be in a position to pull them? What do networks of formal schooling have to do with people getting to those positions? And how can the systems of affiliations be rewoven, reformed into a new activity system?

Because structure is (re)created and (temporarily) stabilized through micro-level interactions that become amplified through tools (including those powerful inscriptions we are concerned with), boundaries among activity systems are dynamic, though maintained always conditionally by genres, routines, as the borders between nations are maintained and sometimes renegotiated through maps and files and signs and treaties and laws and all sorts of other genres (Latour, 1993). Boundaries sometimes merge, sometimes stretch under the strain of changing conditions and dialectical contradictions in object/motive and sometimes break entirely when conditions change radically enough or people are "at cross-purposes" to the extent that they can no longer cooperate successfully.

This activity theory view is in accord with some versions of cultural studies such as Ohmann (1976, 1987) and Trimbur (1993), who find inadequate the structuralist accounts of class, race, gender, and other such static sociological categories (whether Parsonsian, Althusserian, or others). "Rather," to quote Ohmann, "in all my doings from day to day I and the people I mingle with am affected by constantly create my class position" and, I would add, positions of race, gender, profession, and so on (1987, p. 286). What activity theory adds is a way to carry on a principled and concrete analysis of the microstructural mingling of people with mediating tools (including writing) in their circulation. It allows us to trace as Ohmann has called for (1976) the concrete relations between writing instruction and wider macrostructural social formations (the military-industrial complex was most on Ohmann's mind). In this view, power, race, hegemony, gender, class, and so on are not "permanent fact" but "something that continually happens" though microstructural mediation in activity systems (286, qtd. in Trimbur, 1993, p. 392). (See also Berkenkotter & Huckin, 1995; Frankenberg, 1993.)
An Example:
Systems of Written Genres in Intermediate Biology Courses

Though the system of written genres in a family or small business or advocacy group, for example, may be very complex, it pales by comparison with the system of written genres in a modern university or comprehensive secondary school, which selects and (perhaps) prepares students for a wide range of social practices (activity systems). As the very names imply, these activity systems of formal schooling bring together a range of other activity systems with vastly different and often contradictory motives, and their written genres are myriad. A university or comprehensive secondary school actually functions at the boundary among a number of activity systems: those of students' family, peer, hobby, political activity systems, and so on, with those teachers' disciplinary, professional systems. Brandt (1994, 1995) has movingly traced the complexity of these involvements and their importance beyond the usual formulations of "prior knowledge." "Being literate in the late twentieth century has to do with being able to negotiate that burgeoning surplus" of literate involvements (p. ).

Students and their teachers continually appropriate tools and object/motives to (re)construct their identities (to use the traditional term) or expand their complex of affiliations with various activity systems. This goes on collectively and individually within intersecting social practices (activity systems) mediated by systems of genres. Some but not all of those who interact with an activity system will enroll in and be enrolled by the activity system and pursue its direction what Leont'ev terms appropriating the object/motive of the activity system. Some will expand their involvement in the activity system (etymologically, "to be rolled up in," as the names are "enrolled" on a roll of parchment), and use more of its written genres to operationalize that expanding involvement.

The appropriation of the object/motive and consequent (re)construction of the identity of an individual or group is not at all the adopting of or adapting to a predetermined social "role" in the Parsonian sense. This enrollment, this appropriation of object/motive like the appropriation of tools-in-use such as written genres is dialectical. The very object/motive of the activity system may change under the influence of newcomers, as may the identity and "roles" of the more experienced participants. The outcome of deep contradictions within an activity system may be a qualitatively different system after interaction with newcomers (and the tools they bring to the system). Changes in written genres or in other tools-in-use such as machines, as well as changes in the overarching object/motive of the activity system, may be rapid, changing virtually overnight (as when a factory is sold and retooled to produce a different product) or exceedingly slow, extending over centuries, (as Bazerman has shown in his history of the genres and activity of the experimental article in science [1988]).

How might we analyze the role of writing in activity systems of secondary and higher education? Figure 3 (below) sketches the genre system of a typical intermediate second- or third-year university cell biology course, based on the growing literature on writing and learning in US undergraduate biology courses (e.g., Velez, 1995; Haas, 1994; McCarthy, 1987, Russell, 1997; Rivard, 1994; Conrad, 1996) and social studies of knowledge in biology (e.g., Myers, 1990; Berkenkotter & Huckin, 1995; Latour & Woolgar, 1979). Some of the most salient activity systems in terms of the written genre system are indicated by triangles: the professor's research lab, the course, and the university administration. In the lower left vertex of each triangle, in italics, are the
subjects/agents involved in face-to-face interaction directly (Goffman’s interaction order [1988]). The object/motive of each activity system (from the point of view of the professor, at least) is indicated in italics by the right vertex. Texts in certain genres are used as tools by each activity system. Some of the genres that mediate the activity of the activity system (mainly written genres, since that is the focus of our analysis) are indicated at the top vertex (there are also genres in oral, gestural, machine apparatus, architectural, monetary, and other media). Texts in certain genres also operationalize the outcome or product of the activity system’s functioning, indicated by black arrows.

**Figure 3: Genre System of an Intermediate Cell Biology Course**

- **Activity System of Cell Biology**
  - Contradictions:
    - Teaching vs. research
    - Pure vs. applied research
    - Use value vs. market value

- **Activity System of Intermediate Cell Biology**
  - Contradiction:
    - Selection vs. introduction

- **Activity System of University**
  - Contradiction:
    - Disciplinary excellence vs. social equity

- **Various Publics**
  - Patients
  - Consumers
  - Constituents/voters

- **Advocacy Groups**
  - Patients' rights
  - Consumer groups
  - Minority organizations
  - Women's organizations
  - Animal rights, etc.

- **Drug Companies**

- **Government Research Agencies**
  - NIH

- **Related Disciplines**
  - Animal ecology
  - Veterinary Medicine

- **Legislature/Congress**

- **Families**

- **Secondary Schools**

- **Textbooks**
  - Simple (older) instruments
  - Research articles
  - Reviews (e.g., NIH)

- **Grants Proposals**

- **Research articles**

- **Grade reports**

- **Legislation**

- **University administrators**

- **Students**

- **Universities**

- **Cell biology**

- **Labs reports**

- **Exams**

- **Certificates**

- **Brochures**

- **Reports**

- **Various Publics**
  - Constituents/voters
  - Alumni
The major activity system that might be said to largely constitute the professor's professional involvements (and hence leading activity and identity) is cell biology, of which her research lab is a sub-activity system (there are many other similar labs in the activity system) in the intersection of the discipline with the university. Ethnographic studies of biology research labs—most notably Latour & Woolgar (1986)—have described the primary product of such research labs as research articles, a genre. Research labs with the same or very similar object/motive use each others' highly specialized research articles. Some of the core researchers' highly qualified and contested statements (tools-in-use), found in the genre of the research article, come to be accepted as ( provisionally) true by core researchers blackboxed, in Latour's (1987) term, or operationalized, in activity theory terms, as taken-for-granted "facts" of the activity system. These statements were forged in the heat of controversy among core researchers, using the genre of the research article, which has copious intertextual citations to other documents (data and other research articles).

The genre system does not stop here. In addition, research scientists produce research reviews (another genre) that mediate the core lab's boundary interactions with other activity systems of research in related disciplines (e.g., medicine, ecology). Research scientists translate (Latour's [1987, 1993] term) research articles into research reviews, which typically do not cite directly the genres of data or lab notes but only other research articles. In this way researchers commodify their discursive tools for use by other activity systems that have a different object/motive. In the diagram, translation and commodification in the genre systems are indicated by gray arrows.

Notice that the activity system of cell biology research is not confined to universities. It is also carried on in boundary activity systems of drug companies and government medical research facilities that both provide written genres. These dialectical boundary interactions are mediated by other written genres: requests for proposals (RFPs), proposal reviews, and contracts are produced by the granting agencies; grant proposals and reports are produced by the lab, in addition to research articles and reviews (Van Nostrand, 1994). Yet we have only begun to trace translation and distribution and circulation of discursive (and other) tools occurs by means of the written genre system of this professional activity system.

Some of the operationalized actions of a research lab may eventually be further translated into commodified statements in other genres for those in other activity systems after being almost entirely stripped of their qualifications, citations, and history of heated dispute. Statements forged in the heat of highly technical controversy are cooled and hardened (at least for a time) into "truths" through successful persuasion and the enlistment of other activity systems in and beyond the wider activity system of cell biology. In activity systems of formal schooling we have the genres of textbooks. In that constellation of activity systems called "the public" we have genres of popularized science. These commodified statements, translated into various genres, are what introductory students, patients, clients, customers, newspaper readers, TV viewers, voters, and so on are presented with as factual information (our bodies are made of cells; Shakespeare wrote 46 plays; flossing prevents gum disease) (Latour, 1987; Bazerman, 1988, 1994b; Myers, 1991, 1996; Fahnestock 1986; Geisler, 1994). These various activity systems of schools and "publics" are continually (re)constructed through an interplay of various organizations, including advocacy groups of various
kinds. In turn they can have a dialectical influence on research laboratories, though their
generic links are usually even more indirect, as we shall see.
The activity system of the university, as an institutional entity, has officially three
object/motives, inscribed in its official documents as "teaching, research, and service." In relation to a single undergraduate course, the most salient of these is teaching; the object is the students and the motive their productive affiliations/interactions with activity systems beyond the university, usually those of the disciplines represented. But the university also has important interpenetrating boundaries with various academic disciplines and professions (as the presence of a research lab suggests); the legislature (mediated by a board of regents), which supplies funds and many genres such as laws and policies; secondary schools, which supply many genres of written records as well as oral genres that students appropriate from their secondary school work; and most importantly, numerous families and peer groups, who supply students and funds, as well as many (primarily oral) genres that the students appropriate from their home and peer activity systems to actions in the university (Walvoord, 1991; Mulvaney, 1997; Prior, in press). The university also interacts with various "publics," which are continually (re)constructed through an interplay of various organizations, including advocacy groups of many kinds. Their influence, their generic links, are also usually indirect, as we shall see.

For a discipline/profession, the university not only supplies resources for research but also resources for selecting and preparing future professionals. It is a site of reproduction, in Bourdieu's (1990) sense of preserving the social (and power) relations of the discipline, but also, at times, for expansive innovation, for preparing students to respond in new ways to changing conditions of its functioning among other activity systems that supply resources and use its products (Clark, 1987). In industrial societies, disciplines and professions recognize the need to change to expand their system and sometimes transform it; though the ways an activity system should expand and (re)form are always a matter of contestation within an activity system and among activity systems.

From the point of view of many (perhaps most) students, the university is a place to expand their involvement, to a greater or lesser extent, with one or more of the activity systems that intersect with the university, an involvement which typically leads to becoming an active participant in one or more of them, to maintain and perhaps transform that activity system(s). Students come to position themselves within these systems to "make a difference," in Giddens' phrase (1984). To do so, one must literally be "enrolled" in the university and, simultaneously, the genre circulation, the curriculum, etymologically, the cycle of some disciplinary activity system(s). One must come to recognize, appropriate, participate in and perhaps transform, in ways small or large, the system of genres that operationalizes this system, that makes this form of life work (all puns intended). That involves highly regularized genres of grade reports, transcripts, certificates, reports, as well as catalogs, admissions forms, and so on, that mediate and operationalize the activity system in (usually) routine ways.

The course in cell biology thus forms a complex site of boundary work (Geiryn 1983) between cell biology and the university and the activity systems with which the university has further boundaries, primarily families of students. The boundary is both maintained and constantly renegotiated through a system of written genres. The texts that routinely mediate the work of the course belong to various genres. The professor has students read a biology textbook that takes statements from research reviews written by research scientists and reduces them to summarizes. But since this is an intermediate level course, students also read some actual research reviews, though these are relatively
old. In addition, they use some laboratory apparatus (also rather old) to conduct experiments that are also old.

The textbook, research reviews, laboratory apparatus and written procedures, lectures, conferences, and so on we will call, following Christie (1985, 1993), "classroom genres," genres that develop in educational activity systems to operationalize teaching and learning (and selection) (Christie, 1993). Within a university or comprehensive secondary school, there are myriad classroom genres, in many media. These genres operationalize the more or less (but never entirely) routine interactions among students' activity systems (families, peer groups, etc.) and the activity systems of disciplines: written genres such as dissertations, theses, research papers, essays, book reports, precis, lab reports, and so on (not to mention oral, gestural, architectural, and other genres).

Ordinarily, students and professors perceive the classroom genres as operating in the genre system of the university more immediately and directly than in the genre system of a discipline (Freedman et al, 1994; Freedman & Adam, in press; Russell & Booker, 1997; Anson & Forsberg, 1990). In Leont'ev's term, the leading activity for the students is school. They perceive their involvement in terms of the object/motive of schooling, the grade or certification. Students are graded by the professor and those grades are marked on a grade report form (another written genre), collated with other grades on a student grade report, and eventually on transcripts, diplomas, reports to the government, and so on. Students are "doing school." They are not doing disciplinary work, or motivated by a desire for further involvement in the discipline, appropriating its object motive. Walvoord et al (1991) call this a "text-based" approach to learning; Geisler (1994) calls it "arhetorical." Yet it is active and rhetorical in terms of the activity system of schooling.

To elaborate our example, the system of written genres continues over time, as transcripts, diplomas, and other documents become tools for helping students select and selecting students for further involvements, perhaps in cell biology research but more likely in one of the boundary activity systems where some previous involvement with (knowledge of) cell biology research is useful: e.g., medicine, agronomy, animal science, veterinary, plant pathology, and so on. These disciplines/professions require their students to take cell biology because they will likely have to use some of its discursive and other material tools in their future professional activity (interact with its system of genres). But given the students' limited interactions with these various professional activity systems and genre systems, the usefulness of a particular genre may not be apparent, and because students will take many paths through many related activity systems, instructors and disciplines must decide what tools/genres to offer (teach) in order to accomplish both selection for their own activity system (specialization) and an offering of a broader range of tools useful to participants in related activity systems (introduction). The choice of genres students will read and write is thus involves difficult negotiations. What will be "relevant" to whom and for what object/motive?

For the students who will continue to expand their involvement with the activity system of cell biology research (perhaps a tiny minority), the course provides a range on entry points into the genre system. Each of these genres is modeled on and bears an analyzable relation to a genre(s) of a professional activity system, a discipline. A classroom genre is a translation of some professional genre, a way of changing its direction (motive) from that of the research lab or professional application to a pedagogical use, a means of redirecting or pointing (some) students toward (and sometimes some away from) the activity system. Historically, curricula in secondary
and university education have appropriated and transformed genres of professional practice to mediate the boundary between the profession/discipline and the educational institution, both to initiate and exclude students (Russell, 1991). These classroom genres form genre systems, for individual courses, for curricula, and for the wider bureaucratic structures of selection within the activity system of the educational institution.

The students in an intermediate biology course typically produce certain written classroom genres: lab reports, research reviews, abstracts, and examinations. The classroom genres resemble research articles of a research laboratory, review articles, and textbooks, but the classroom genres do not ordinarily mediate the interaction of research scientists or practitioners in the activity system of cell biology as students and professor are all well aware (Conrad, 1996; Diaz et al, in press). Classroom genres almost always mediate interactions that repeat or recapitulate earlier interactions in the history of the activity system, actions that led, over time, to the actions of research labs today. What students in introductory cell biology are doing/learning/writing is of course old news to research scientists at the core of the activity system but terribly valuable, both to (some) students and, indirectly, to core researchers in facilitating future involvement in the activity system of cell biology and thus continuing (reproducing), expanding, and perhaps transforming the activity system.

Indeed, professors sometimes ask certain students (and not others) to work as technicians in his research lab based in part on their writing of these genres (McCarthy, 1997; Haas, 1994; Velez, 1995). And it is possible that a student might do something with a classroom genre that the professor might appropriate for his laboratory work, though this is infrequent because of the differences in motive/object and tools-in-use (including financial resources) of the students and the core researcher the distance between then activity systems of the course and the research lab. Students typically do not have a sufficient history of interactions with the system to have much agency or power. They are not (yet) in a position pull the strings even if they knew where they are and which ones would be likely to effect the changes they desire. As Bazerman (1993), Berkenkotter & Huckin (1995), and Kress (1987) have pointed out, most students are not in a position to challenge the genres (and therefore forms of life) of powerful disciplinary systems. I would add the obvious: they will never be if they do not develop a history of interactions with the discipline, through its genres and the genres through which it interacts with other activity systems (including schools, governments, advocacy groups, etc.).

Contradictions and Change in and Among Activity Systems

Thus far we have sketched only the "normal" or (temporarily) stabilized functioning of an activity system's genre system. But because an activity system constantly interacts with other activity systems, as participants themselves have many affiliations (identities, subject positions) with many other activity systems, ongoing social practices constantly change as tools-in-use are appropriated across boundaries and are eventually operationalized (sometimes in new written genres) to transform activity. Engeström's analysis (1987) of contradictions in activity systems leads to an analysis of the ways written genre systems mediate change in activity systems. As an activity system interacts with other activity systems in a complex dialectic of boundary work, contradictions arise that drive changes in an activity system and its participants, individually and collectively, as well as in the genres that mediate dynamic activity. An activity system "is constantly working through contradictions within and between its elements" (Engeström, 1987). In this sense, an activity system "is a virtual disturbance-
A contradiction is, etymologically, a "speaking against" voices in discussion or debate. But these contradictions are not merely microlevel conflicts over the means (actions and operations) to a shared end (object/motive). They are fundamental dialectical contradictions about the object/motive of an activity system, the direction of collective activity, and they require fundamental choices with long-term consequences for the activity system that threaten or promise (depending on one's point of view) a new form of activity. Moreover, these contradictions involve material tools beyond writing and speaking tools of all kinds, machines and money, and buildings, and real estate literal turf.

These macrolevel contradictions extend over time and condition (constrain and afford) microlevel actions and social-psychological operations through which those actions are carried out, leading, at times, to qualitative transformations of the activity system, such as a different direction (object/motive). When people are at "cross-purposes," pulled by contradictory objects and motives, systems are continually stretched, and sometimes fundamentally transformed. At the level of individual psychology, people experience double binds, seemingly irreconcilable demands placed on them by the pull of two competing motives.

To continue our example (see Figure 3), students at various points in their negotiations with universities are forced to announce a choice of career, of life-direction, and may experience social-psychological stress in the choice of a "major" a leading activity, in Leont'ev's terms. Students may be forced to choose a direction away from activity systems of family, neighborhood, friends, through which ethnic, racial, gender, and class are primarily constructed. This forced choice may cause students to experience double binds. What is "learning" to the university or a disciplinary activity system may be perceived by other activity systems as "selling out." The simplest actions in choosing discursive tools writing a paper in a certain genre, for example, or even using a formal term from a discipline rather than a familiar one from family or friends may cause deep tension, and rightly so. These actions are linked to new objects and motives, to new and often strange people, to future and sometimes frightening changes in identity, to loss as well as gain. Many qualitative studies of students in activity systems of higher education describe students wrestling with identity conflicts and contradictions in learning to write in the disciplines: Prior (in press), Velez (1995), Greene (1993), Fishman & McCarthy (1991), Mulvaney (1997), Chiseri-Strater (1991).

Instructors also experience double binds through the deep contradictions in and among activity systems. The interaction (mediated through genre systems) between boundary activity systems and the activity system of research cell biologists produces contradictions and double binds, as each activity system moves in a different direction (has different object/motives). For example, to gain funding from some outside source (NIH or a drug company), the research lab might have to change its direction (motive) and take up different problems (object), or at least appropriate some of the discourse of the funding activity systems to write a successful grant proposal a proposal that would frame the lab's work in terms of furthering the motive of the funder (Myers, 1985, 1990). Hence there is the contradiction between what are sometimes called pure and applied research. Or a contradiction may arise when a lab must choose between funding from a for-profit and a non-profit activity system, between the use value versus the market value of the lab's products. In the interaction with the activity system of the university, cell biologists may experience a contradiction between teaching and research. Similarly, the university may be pulled by the demands of disciplinary activity systems for strict selection what they perceive as "excellence" and the demands of
activity systems such as families, political institutions, and often labor unions for less strict selection what they perceive as "equity" (Clark, 1987).

These contradictions within and among activity systems are played out dialectically through "boundary work" (renegotiation) in zones of proximal development (ZPD) such as the introductory cell biology classroom. The classroom contains zones of proximal development not only in Vygotsky's original sense of the difference between what a person can do alone and what s/he can do with assistance, but also, in macrolevel terms, a ZPD can be thought of as the "distance between the everyday actions of the individuals and the historically new form of the societal activity that can be collectively generated as a solution to the double bind potentially embedded in the everyday actions" (Engeström, 1987, p. 174). The systems of written genres are pulled (sometimes apart) by these contradictions, these people at cross-purposes. But it is in these "contact zones" (Pratt, 1987), that change takes place, including that kind of change called learning to write.

For example, one central contradiction in the introductory cell biology course for both the professor and the students is selection versus introduction. As we noticed earlier, students must have a major to graduate, but only a fraction of the courses a student takes will directly move them in that direction. The activity system of cell biology must have new core researchers to realize its object/motive (selection). But only a fraction of the students in even an intermediate cell biology course can (or want to) become core researchers. In the process of selection that goes on constantly in the activity systems of higher education, some students will select and be selected by the activity system, in a process of recruitment and exclusion, choosing and rejecting. The majority of students will pursue one or more different though related directions (object/motives) in various other activity systems that have boundaries with cell biology. Consequently, they need to be offered a wide range of the activity system's commodified tools (such as research reviews and diagnostic procedures), which they will use if they move into related activity systems (introduction). After being introduced to the commodified tools of the activity system of cell biology, they will appropriate them for some use outside (though often bounding) the activity system of core research in cell biology. But they will not ordinarily go beyond the introduction (Velez, 1995; Powell, 1985). And of course there are students who will pursue entirely different directions, changing majors or college or even leaving the university entirely, students whose object/motive is purely and simply the grade.

The professor must attempt to skim the cream and pour away the rest, but in such a way that enough of the rest will carry away with them useful tools for other related (linked) activity systems. The students must negotiate their involvement with the "material" based on their affiliations, their object/motive, from full-scale appropriation of the discipline's object/motive to an abject rejection of it and resistance to it. This dance of selection and introduction is not only played out with oral and written tools in a range of genres, but with a range of other tools: curricular time, money, graders, laboratory space and apparatus, and so on, all of which are deployed to both select the few for the activity system the instructor represents and send the others away with enough useful tools for related activity systems (Velez, 1995). The tensions, compromises, negotiations generated by this contradiction are played out differently in different institutions, classrooms, iterations of a course, in different kairotic pedagogical moments, as various (written) genres are brought into play in and among activity systems.

The selection/introduction contradiction is conditioned not only by the instructor's (and department's and institutions') perception of the potential further participation of
the students but also by the students' past interactions and the constructions of the motives they bring with them, their directions in entering the activity system. The participants in a zone of proximal development of an educational activity system bring different discursive tools from the activity systems of their previous interactions and different object/motives to the classroom activity system. In Leont'ev's example, elementary school children may initially view school as a place to play with their friends, appropriating the tools of the school activity system for the object motive of the activity system of their play group (a phenomenon not unusual in universities). Indeed, children may well "play school" outside of school, appropriating classroom genres wholesale to mediate the activity system of their play group. However, most students are gradually "enrolled" in (identify with, accept) the activity system of school in the sense that they come to appropriate the object/motive of the school activity system from the perspective of adults: wider involvement in the culture. Similarly, the genres of school (talk, textbooks, student writing, etc.) may incorporate the genres of play, through, for example, reading lessons incorporating stories about play, math lessons with story problems about play.

The selection/introduction contradiction is played out for the students in terms of "doing it for the grade." Some "highly motivated" students (from the perspective of the discipline) entering the course may have already appropriated the object/motive of the activity system through extensive earlier interactions with it also mediated by various genres: family talk, hall talk with previous instructors, extensive personal reading of popularized genres related to the activity system, friends or e-mail discussants in the activity system (Mulvaney, 1997; Chiseri-Strater, 1991). For these students, the grade may merely be a confirmation of their direction, a marker on a path already laid out, and not an object/motive in itself. Some of the cell biology students appropriate the object/motive of the activity system of cell biology during the course and proceeded with not only an undergraduate major but with graduate school and post-doctoral work, leading to full participation in an core research lab. Others will appropriate various tools potentially useful for involvements with related professional activity systems, but not the object/motive of the activity system (medical school being the most common for biology). Some, as we noted, will merely appropriate the sufficient tools to achieve the object/motive of the educational activity system a sufficient grade in the course to go on to other unrelated activity systems, as with humanities or social sciences students taking the course to satisfy a "general education" requirement.

The operations that students and teachers bring to the classroom as their legacy of involvement with other activity systems and their motives, the genres read and written and spoken and otherwise, are mutually appropriated (or resisted) in the ongoing dance of selection, depending on the stakes involved for the various stakeholders, the meaningfulness of the ways with words (and other tools).

**Writing and Learning in Secondary and Higher Education**

From this theoretical perspective, coming to write in new ways for an individual or a collective means establishing new tool-mediated interactions (links, involvements, mutual enlistments, alliances, enrollments) with an activity system or activity systems appropriating and transforming discursive tools, appropriating and remaking written genres to operationalize routine responses to typified actions (with other material tools). The process of "learning to write" can be analyzed by tracing students' and teachers' mutual appropriation of new discursive tools within and among genre systems and the activity systems they mediate.
The development (reconstruction) of agency and identity means appropriating new object/motives, which requires the use (and often transformation) of certain genres (often written ones). Teachers may "pick up" students' ways with words. But students more often appropriate the discursive tools (and genres) of a discipline or profession, because those involvements, those affiliations, can yield greater power, agency, and identity ("empowerment," in the honorific phrase). The much longer and "better-disciplined" activity system of the discipline usually involves many more people and their tools than the activity systems of individual students (their family and peer networks, for example). Individual students or even groups of students have not typically marshaled the resources over time to require disciplines to appropriate their ways with words (though organizations of students have often done so through collective action, as in France in 1968 [Fraser, 1988]). Students are weak, but in time, through their interactions with organized others, they (may) become more powerful.

One question for teachers/analysts/reformers, then, is which (written) genres at which points in students' histories of interaction will best facilitate (from some perspective[s]) those developing involvements? This is the question of scaffolding (Applebee, 1996). The question for students is, "How can picking up certain ways of writing (and not others) help me expand in new ways into systems I what to become more a part of?"

Through naturalistic research methods and discourse analysis, one may trace the dialectical appropriating of object/motives and tools, including written genres, among activity systems. In this way an teacher/analyst/reformer or student can connect, in a principled way, the microsocial interactions of a classroom(s) to the wider macrosocial interactions ordinarily analyzed by sociologists at the macro-structural level of institutions or "social forces," in the Parsonian sense (Layder 1994). And because activity systems of formal schooling regularize (to a greater or lesser extent) the interactions of disciplines with newcomers, through their genres, we can expect to find similarities in the written classroom genres of various disciplines at various points on the boundaries between school and professions, within a particular educational institution and educational system.

That is, in a secondary school or university, it may be possible to provisionally categorize zones of proximal development, broadly conceived, in their relation to the intersecting, dialectical activity systems and genre systems of disciplines and professions, through an analysis of the relation between classroom and other professional genres. This is crucial because students and teachers (and many other stakeholders in schooling) need more powerful theoretical tools for helping them decide what kinds of things to read and write in classrooms of various kinds and when. How does a history or literature or sociology or biology student or teacher at a certain school at a certain level with certain motives for learning or teaching decide what kinds of reading and writing are worth the time learning and teaching, what genres will likely lead to further involvements of what kinds with what people pursuing what objects with what motives? If we have a principled way of tracing the genre links between classrooms and families and ethnic neighborhoods, disciplines and professions, business and government and advocacy groups, and so on, then the role of writing in curriculum making and taking may be clarified. And with activity theory as a theoretical tool, it might be easier to say why some way of using writing in learning worked well or poorly (from students' and teachers' and other stakeholders' perspectives). In other words, one can go beyond tracing the dialogic, heteroglossic voices of the classroom, with their intertextual links, to trace the wider investments participants have in writing the stakes in involved in ways of writing as genre systems mediate powerful social practices (activity systems).
I want to tentatively suggest here three kinds of ZPDs based upon the relation of the classroom genres that mediate their activity to the wider system of genres in the activity systems that form a boundary: ZPDs for advanced professional education, beginning professional education, and general/liberal education. It is important to remember that these categories I am proposing are developed for US education; other nations will have different practices. Moreover, many other categorizations are possible even for US education, depending on the needs of the analyst/reformer and participants. And the categories are fluid. A single course may have a number of dynamic ZPDs, facilitating different levels and kinds of involvement in the activity system of the discipline for students and different involvements with the activity systems of students and educational institutions for faculty.

Figure 4 below sketches the type of involvement and characteristic written genres of various kinds of ZPD sites of change (including that kind of change called learning) from the point of view of the activity system of cell biology. One might construct a similar diagram for any discipline, including those in the humanities, to help visualize the ways writing mediates the (re)construction of knowledge and power (though the activity systems of humanities disciplines are smaller, enrolling fewer participants and tools and therefore less powerful).

Each triangle represents an activity system within (or at the boundary of) the activity system of cell biology research. At the top apex of each triangle are some of the written genres that commonly mediate the actions of participants. At the right apex are some of the written genres that are commonly produced and offered to (an)other activity system(s) to carry on or disrupt the circulation of the genre system. Note that there are actually far more written genres than are depicted in this already overly-complex diagram. And there are vastly more genres in other media: written, mechanical, architectural, gestural, and so on, with which the written genres operate. Moreover, the diagram does not attempt to depict the many genres, written and otherwise, within a particular activity system (myriad memos, data files, internal reports, contracts, policies, instructions, etc.) (See, for example, Johns, 1989; Doheney-Farina, 1992). Finally, one must remember that individuals (and sometimes groups) may be active participants in (identify themselves with) a number of the activity systems. For example, one student in a graduate course may also be a worker in a research lab, a graduate student union officer, a member of the African-American Students Association, a Democratic precinct chair, and a patient. One core researcher may also be a voter, a patient, a member of Act Up, a science journalist, and so on.

The concentric circles sketch kinds of ZPDs, on the basis of varying degrees and kinds of involvement with the activity system of core researchers. I begin at the bottom left of the diagram. As the arrow on the left indicates, the diagram suggests a process of increasing commodification of the statements of core researchers as they are translated into other written genres for use by boundary activity systems, including the ZPDs of formal schooling. As we noted earlier, the core researchers, whether in or out of academia, use highly specialized research and theory articles for their interactions among themselves. They furnish research reviews, instructions, and other highly genres to practitioners and researchers in closely related activity systems. Some of these fields in turn further strip statements of their qualifications and translate them from less commodified genres into fully commodified genres for various "publics," such as patients, clients, legislatures, and so on at the furthest reaches of involvement with the activity system (the top of the diagram). There are the brochures one reads in the doctor's office (produced by medical professionals and public relations or advertising departments of public health agencies and drug companies), the reports of "discoveries"
one reads in mass-circulation newspaper stories and popularizations (typically produced by science journalists).

In the dialectical circulation of tools-in-use that genre systems mediate, there are a range of ways that individuals and groups, including students, can affect the activity system of core researchers indirectly, through affiliation with organizations that bring to bear pressure on related fields. Various "publics" produce texts in various genres that are used (or ignored) by those in related fields and sometimes by core researchers themselves (downward arrows). Among there are responses on forms (collected in data files and vote tallies, summarized by related activity systems such as election commissions, epidemiologists in government research agencies), letters of complaint and lawsuits (from clients/patients), laws and regulations (from legislatures and regulators), and the position papers, lawsuits, direct mail campaigns (from advocacy groups and lobbying organizations). Statements in these genres affect core researchers indirectly as they are translated into the such genres as RFPs, which may influence the direction of core research if they are linked sufficiently to statements in other written genres (vote tallies, appropriations, checks) and, more importantly, other material tools (buildings, machines, etc.) (Whitley, 1984).

The written genres that typically mediate that influence, that power, are not those of core researchers but of related (usually professional) activity systems: science journalism, medical professions, granting agencies, drug companies, science education, and so on. Yet there is always the possibility that other activity systems (even previously unrelated ones) can introduce new written genres into a system to mediate changeas with sit-in demonstrations and their written genres of the placard and list of demands. An analysis of genre systems can help students, teachers, and curriculum reformers trace the affiliations of the ZPD with various activity systems related to the discipline, and in the process see options for introducing and changing genres in a course or curriculum, for tracing the strings that must be pulled, in textual or other ways, to mobilize people and gain power as with the successful campaign for increases in breast cancer funding (Altman, 1996).

The ZPDs and classroom genres of formal education use a range of written genres between these extremes of research article and newspaper article popularization, theoretical treatise and informational brochure in the clinic. These genres of schooling are also linked to various "publics," through the genres of educational institutions, primarily, in enrollment reports, mission statements of priorities, diplomas, and so on, as we noticed in Figure 3. The closer one comes in the genre system of the discipline to the activity systems of core research, the closer the genres resemble the genres of core researchers, and vice versa. In this way, the commodified tools of the disciplineits "factual" informationis circulated in the genre system and future participants are selected for further involvement. From students' perspectives, they have access to discursive (and other material) tools for expanding involvement, individually as agents, from the abstract and commodified "content" into the ongoing activity systems of various social practices.
ZPDs for General/Liberal Education

At the furthest boundary of a professional activity system's interaction with educational activity systems, students are constructed by the disciplines as outsiders, the vast majority of whom will have no ongoing future interaction with the disciplinary activity system outside of the activity system of school, except perhaps as future consumers.
(patients, clients, voters) of its most highly commodified products (including genres). Here at the furthest boundary are highly commodified classroom genres, usually textbooks, whose statements are only loosely connected intertextually to the day-to-day workings of the professional activity system of cell biology research, statements that are so old and thoroughly operationalized as to be unconscious, tacit assumptions for core researchers.

But for individual students in the ZPDs characteristic of general/liberal education courses, those commodified statements are not yet operationalized actions of the discipline. The students are only acting on the edges of its collective life. Statements in these commodified genres constitute what is sometimes called the "material" or "content" of general/liberal education. As these metaphors of physical objects suggest, the statements tend to be commodified, stripped of the process of their construction within the activity system, which over a long period of time has gradually been operationalized by participants. These "facts" (from the past participle of facere, "to act, or do" hence: "what has been done" in the past) are abstractions to students, removed from the concrete life of the discipline. These abstract, commodified tools are offered as discrete "facts," often to be memorized, "facts" whose immediate use is usually viewed by students in terms of a grade (a tool used to mediate the selection motive of the educational institution) but also potentially as tools for some unspecified further interaction with some social practice outside school (though because students have not sufficiently specialized appropriated the motive of a professional activity system these potential uses remain vague). The abstract, commodified statements are waiting to be picked up and used by students motivated to expand, through further actions, into the concrete life of the disciplinary activity system. Those further actions in the life of the discipline will be eventually be operationalized for them in similar (though never identical) ways to more experienced participants in the disciplines.

As commodified tools, the connection between the discourse and the activity system that produced and commodified them is not apparent, any more than the myriad factory processes are apparent in a consumer product on the supermarket shelf. The genre of textbook, class note, and so on mediate a certain kind of disciplinary involvement and forestall others perhaps for political reasons (Klammer, 1990); perhaps because students have not had sufficient interaction with the activity system to use other genres, written and otherwise (Velez, 1995); perhaps because of both. Haas summarizes research studies that suggest "beginning college students approach academic tasks as if they believe that texts are autonomous and context free. Treating texts as if they believe that texts are autonomous and context free may be facilitated both by features of academic discourse itself . . . and by a culture of schooling that encourages students to see texts primarily as repositories of factual information" (Haas 1994, p. 46). Activity theory suggests that students do not perceive texts as context-free; it is schooling that is the "context" the activity system that these genres primarily mediate. Texts appear "context-free" (to students, teachers and, often, researchers) because general/liberal education courses in the activity system of schooling are only at the distant boundary of the activity system of the discipline. But from an activity theory perspective, schooling matter the distance from professional activity systems is always part of the rhetorical process of facilitating and retarding and rejecting the entry of individuals and groups into various activity systems and, through that selection, of producing both structure and changereproduction and transformation for both students and teachers (McCarthy & Fishman, 1991).

ZPDs for Beginning Professional Education
As students begin to specialize (choose a "major," in the US institutional parlance) they may begin to construct themselves as potential active participants in the discipline/profession. Similarly, instructors in such ZPDs begin to construct students as people who are likely to appropriate the object/motive of the activity system. The classroom genres are more connected to the interactions of core researchers, more deeply involved in the genre system (through citation, laboratory practice, etc.). Here the written classroom genres begin to include the research summaries that core researchers use to disseminate their statements to related activity systems, or documents that dimly echo written genres of core researchers (such as lab reports of dummy-run experiments that were first conducted by core researchers in the activity system decades) (McCarthy, 1987; Freedman & Adam, in press).

(Some) students reach a stage of expanding involvement when the commodified abstractions begin to "make sense" in terms of the concrete activity of the discipline, to be more than abstractions. As (some) students expand from those abstract commodified tools into further and more powerful concrete involvements with the activity system, they may begin to appropriate its object/motive. They may be said to be learning the values and ideology of the disciplinethough also perhaps, eventually, transforming the values and ideology, as they bring tools and object/motives from their previous involvements in other activity systems (Haas, 1994; Anson & Forsberg, 1990; Freedman et al, 1994; Freedman & Adam, 1997 in press). For disciplines do change, however slowly, as participants change them (and themselves).

As potential active participants, students begin reading to explore the activity system, and they read less to find and memorize discrete commodified tools. As some (but by no means all) students more and more appropriate the object/motive of the disciplinary activity system. They are beginning to operationalize a number of discursive tools-in-use of the activity system until they are routine, which will eventually operationalize further involvement (Haas, 1994; Velez, 1995; McCarthy, 1987). More and more, the assumptions and values of the activity system, as reified in textbook statements, go unstated, unexamined, for students have appropriated and operationalized these tools for expanding involvement, as using the brake pedal becomes unconscious tacit driving (McCarthy 1987; Freedman et. al, 1993).

In ZPDs for beginning professional education, classroom genres mediate more interactions withand therefore come more and more to resemble genres of insiders such as practitioners, technicians, and even core researchers. Students are expected (and authorized) to take actions that resemble those of participants in those activity systems, yet they are not expected to take actions that have important consequences for the disciplinary activity system, for obvious reasons (Velez, 1995; Freedman & Adam, in press). Mock experiments and case studies are common. Some students expand their involvement through contacts outside of the classroom and classroom lab. They sometimes serve as lab technicians or research assistants or tutors for lower level students, or as interns in related activity systems. Some have "field experiences" where they observe the activity system's tools and subjects in use in specific actions (Winsor, 1996).

However, the case studies of biology students such as Dave (McCarthy 1987) and Liza (Haas 1994) suggest individuals experience double binds and accompanying anxiety in this movement from commodified abstraction to concrete action with others in the activity system, from the first puzzling encounters with the textbook commodified facts, to a range of often mysterious actions in classroom and laboratory, to (perhaps) an eventual operationalizing of the discourse and other tools-in-use of the discipline, until
the student has expanded participation though never unproblematically and "learned" to write the discourse of the discipline.

Issues of subjectivity and identity are particularly thorny for students in ZPDs of beginning professional education. Moving from being a relatively passive consumers of commodified tools in general/liberal ZPDs to being a potential active participant authorized to act more and more fully in a disciplinary activity system requires students to continually renegotiate their position as agents among various related activity systems, and in doing so make choices about their future involvement and thus identity. The literature on writing and learning in such ZPDs is replete with accounts of deep identity struggles in individuals and groups (e.g., women, African-Americans) as they sort out their life-directions in relation to activity systems of family, peer group, and so on, as they (re)construct their identities from among contradictory object/motives of various activity systems (Velez 1995, Haas 1994). In the ongoing dance of selection, some will sort themselves and/or be sorted into medicine, related areas of biological research, science journalism, advocacy groups, and so on. Writing is difficult in part because the process of appropriating (picking up) certain tools-in-use and not others implies (implicates them in) certain life directions, certain affiliations, with long-term consequences (Walvoord et al, 1991).

**ZPDs of Advanced Professional Education**

As students select and are selected for the most specialized involvement in a professional activity system (often in graduate school in the US), the genres are much closer to those of core researchers (theses and dissertations, for example, which are expected to be an "original contribution to knowledge in the field"). Eventually, some of students choose to pursue advanced work (greatly expanded involvement) in these ZPDs, to eventually be certified to become much more powerful agents in the professional activity system, authorized to take actions that have direct consequences for other core researchers and require much larger expenditure of the activity system's resources. Indeed, core researchers sometimes read and cite dissertations, include graduate students in grants, and allow them to supervise lab staff.

When the activity system of schooling is fully linked to that of a profession, as in professional schools, participants assume that all involved have already appropriated the object/motive of the activity system. Disciplinary and professional excellence is most valued. Students in advanced professional training participate in the complex division of labor and system of rewards of a disciplinary activity system. Objects (and thus problems) become more specialized (from chemicals to brain chemicals to peptides; literature, to modern American literature to Joyce Carol Oates). The classroom genres of ZPDs for advanced professional training are not quite yet the written genres of professional practice, though the differences are sometimes so small as to be functionally indistinguishable (and some graduate schools are attempting to erase the distinctions by encouraging students to write a series publishable papers in lieu of a dissertation).

But the path through the genre system of the activity system is not smooth in these ZPDs either. Students also come to experience the contradictions in activity systems as psychological double binds. Students typically become a part of the competition as well as the collaboration that motivates participants in most disciplines. They are drawn toward and choose to expand into various sub-activity systems where there are various kinds of rewards, with complex and high-stakes choices for future agency and identity (e.g., pure or applied research, affiliations with subdisciplines). Students negotiate
commitments, personal/professional alliances, with each other and with mentors (Prior, in press; Blakeslee, 1997). Indeed, the genres of academic and professional life at this level gradually construct advanced students as competitors with core researchers, and competition and selection operate in the genre systems of grant proposals, conference papers, authorship position, and so on. Authority is contested frequently through professional rivalries. In one oral genre, students must "defend" a thesis argue their case against those who have greater experience in the activity system (Abbott, 1988).
Yet in these ZPDs, students' power and agency increase. They affect the activity system (and hence genres) of core researchers directly and routinely, and in the process they fully appropriate the activity system's motive/object. They are identified with it to the extent that they may come to see themselves no longer as a student but as a biologist. Yet the object/motive and written genres (and values or ideology) of the discipline come to be transparent, part of the form of life in the activity system and thus more stable and resistant to change.

Conclusion

In this paper I set out to synthesize a version of Vygotskian activity theory with a strand of North American genre theory, in order to expand dialogic theories of context in formal schooling. I have suggested that dialogic theory is expanded in three ways: in a broader unit of analysis than text-as-discourse, in wider levels of analysis than the dyad, and in an expanded theory of dialectic that embraces objects and motives of collectives and their participants to explain reciprocal interactions among minds and texts, which dialogism theorizes as the heteroglossic interpenetration of social languages.

By tracing the relation of a disciplinary genre system to an educational genre system, through the boundary of the classroom genre system, the analyst/reformer can construct a model of the interactions of classroom with wider social practices (including the social practices of the researcher[s], reflexively). Again the rule of thumb is: follow the (written) genres. By examining how ZPDs of specific courses and curricula interact with activity systems at the boundaries of formal education and what genres (and contradictions) are appropriated across boundaries it may be possible to analyze more fully the rhetorical choices teachers and students (and researchers) make in negotiating the boundaries. The crucial elements of the analysis are 1) the co-constructions of the identity of subjects (agents), including the contradictions in those constructions; 2) the co-construction of the object/motive of the activity and the contradictions in that; and 3) the tools used to construct subjects and object/motives, particularly the operationalized (routinized) rhetorical choices we have called genres.

Social change (macro- and micro-level) and cognitive change (inter- and intra-mental) are both analyzed as the operationalizing of typified actions using material tools (including writing). Identity, agency, and power relations are analyzed as the mutual appropriation of dynamic tools-in-use and the operationalization of those tools-in-use in genres. Similarly, knowledge is analyzed as the work of an ongoing activity system abstracted and commodified into more or less (but never fully) stabilized "content." The microstructural interactions are (always temporarily) stabilized into macrostructural activity systems and formalized interactions among activity systems, which in turn condition and constrain (but never determine) further microstructural interactions. The

\footnote{Like certain versions of cultural studies, activity theory resists an Archimedian point of view for the analyst, and instead emphasizes the involvement of the researcher in the activity networks, and the potential for dialactical change in the interaction between the researchers' activity systems (and thus subjectivities) and those of the people studied (Engestrom, 1990).}
actions of individuals with others and shared tools-in-use construct both individual and collective identities and behavior (including writing), thus providing for agency (individual and collective) and the (always conditional and temporary) reproduction of macrostructures analyzed as ongoing activity systems.

In this way, this synthesis of versions of activity theory and genre theory satisfies Witte's two criteria for a theory of writing: "(a) comprehensives with regard to stipulating the means of bringing together the textual, cognitive, and social and (b) viability with regard to how writing is defined operationally (i.e., in practice) through its production and use in the culture" (1992, p. 242).

Ultimately, by applying Bazerman's theory of genre systems within a framework of activity theory to interactions among education and other social practices-school and society, in Dewey's phrase it may be possible to bridge, in a principled way, the analytical distance between social languages (macrostructural analysis) and dialogic interactions of individuals in classrooms (microstructural analysis). Such an analysis may be useful to research and reform efforts that must account for and involve themselves within the ways writing operates in and among the diverse communities that make up the past and present of students, as well as the ways writing operates in the specialization of knowledge/work into which students will expand, through myriad written rou(t)ines, in the future. Helping teachers, students, educational institutions, and professions understand the ways their various written genres are (re)negotiated within and beyond classrooms may help them appropriate and (re)construct genres to make those systems of human activity more inclusive and just.

References


