

ACTIVE SOCIAL SYMBOLIC SELVES: VYGOTSKIAN TRADITIONS

Vygotsky's fertile starting place for understanding the formation of individual consciousness within social activities mediated by the culturally available tools gave rise in Russia to two direct lines of work of rather different character, developing different potentials within Vygotsky's work. One associated with his student and collaborator A. N. Leont'ev elaborated the idea of individual and group activity. The other associated with his other major student and collaborator A. R. Luria pursued the development of individual consciousness within the interaction of neurobiology, language development, and functional production of behavior.

Each of these traditions brings an important perspective to issues of writing though neither addresses writing as directly as Vygotsky did. Though Leont'ev does not consider writing or even language much, beyond his recognition that language mediates activities and provides a vehicle for social learning, his work extends and elaborates the notion of activity and its relation to larger systems of social organization. His framework, particularly as elaborated by Engeström, helps us articulate the ways in which writing dynamically mediates communally organized activities. Though Luria specifically focuses on spoken language, he provides ways of thinking about the interaction of language and brain within dynamic activity that have consequences for literate production and reception—writing and reading. Luria's work suggests the deepest mechanisms by which we absorb and use language—mechanisms which have continuing currency within cognitive neuroscience, a field he is recognized as pioneering. These mechanisms have consequences for how we look on our own language formation and interpretation processes, including writing and reading, and therefore how we reflexively manage them. He gives us means for extending Vygotsky's analysis of consciousness as acts of agency incorporating and building on our linguistic experiences, in relation to our material and biological conditions. While Luria several times identifies writing as beyond his scope of interest by suggesting that writing opens up entirely new domains and dynamics of consciousness because of its removal from immediate circumstances and its particularly close bond with inner speech (Luria, 1959, 1969, 1970, 1976), his analysis of spoken language and consciousness provides an important basis for understanding how further structures of consciousness can be formed to deal with the removal of communication from immediate circumstances.

ACTIVITY, OBJECT, AFFECT, AND SOCIAL SYSTEM: LEONT'EV

Alexander N. Leont'ev's line of activity theory attends to the activity of the individual and group, which gives focus and meaning to cognition (Leont'ev, 1978). Conscious orientation to an activity distinguishes impulse from irritation. Cognition is motivated by desire and impulse that fastens upon an object—that is, a concrete thing or state of affairs one wishes to bring into being. The realization of this object forms the activity one is engaged in. Because the activity arises out of fundamental impulses, it is saturated with affect and desire; it is the very expression of what one wants to have and to be and to do.

This impulse to bring something material into being dialectically raises an emergent consciousness or cognitive awareness of what one desires and how to go about obtaining it. This state of heightened and directed consciousness oriented to specific ends makes one particularly receptive to perceptions, information, relationships, and other intimations of things in one's environment that are perceived as somehow relevant to that end. One's awareness of these relevancies shapes one's perception of the situation and one's opportunities within which one may frame specific actions that pursue the activity. These instrumental actions may be at some distance from the initial impulse and the affective drive; they may be more planned, reasoned, and distant, with perhaps lessened affect. They are more workmanlike. So an impulse to prepare an exquisite meal for a friend (perhaps saturated with complex socially and culturally shaped identities and desires) may lead one (at this historical moment in cultural taste and economic distribution of goods) to contemplate and plan a menu with awareness of what hints one has about the friend's taste and range of gustatory experience, available new fashions in food that one may have read about, currently available produce, and a dozen other things that might appear relevant in light of this task. One may even start writing down menus and shopping lists. One goes shopping, cleans the kitchen, checks the cookbook, sets the table, chops the garlic, and undertakes many other actions. While each of these actions are imbued with motives that have set one in motion, they have a consciously planned aspect requiring a more instrumental mind set, perhaps affectively surrounded with pride in one's workmanlike efficiency and competence.

In the course of these consciously planned and consciously monitored actions, one employs many habitual behaviors or operations that one needs hardly think about, such as how to form the letters and spell the words in making the shopping list. While in chopping an onion one may need to attend to the particular shape of the onion and the way the outer skin is or is not pulling off, yet the holding of the knife is likely to take little of one's attention.

The distinction Leont'ev makes among activities, acts, and operations is a key to the conscious attention and affective load demanded by various components of activity. Activities arise from impulses that take shape and are realized through the activity and thus carry the deepest weighting of motive and affect. While the object realizes the emergence of impulse into action and crystallizes one's mental impulses, it may not be fully known and monitored consciously nor is it necessarily open to complete reflective understanding. The object may be more of an emergent phenomenon, only coming into conscious awareness as it coalesces around a knowable project.

The middle level of actions is what we are most aware of and reflect upon, so as to carry them out in the most effective and efficient way. They can be creative in the pursuit of goals, drawing on resources we are only dimly aware of, but as we draw these resources and creative means of accomplishment we become to some degree aware of what we are doing and how our actions are chosen to carry out our intentions. By implication, we may also say, though not explicitly stated by Leont'ev, that the emotions that attend actions are correspondingly more distant and reflective—somewhat separated from the original motive and aware of how well we are doing.

Operations—those tasks that are so familiar and routinized within one's neural system that one can do them without conscious thought, carry little creativity beyond immediate adjustment to the local circumstances—the placement of the chopping block and our fingers as we cut. We are likely to have little attitude or awareness of what we are doing, and the emotions, if any, will be such as the comfort of doing the familiar or the tedium of repeated actions that have become distant from their motivation. Nonetheless, under the right circumstances, operations can come to our attention, as when we notice the knife getting a bit too close to our fingers and we readjust.

These categories of activity, action and operation, are fluid ways of differentiating motivating, focal, and peripheral attention that can change from person to person, event to event, moment to moment. Learning to transcribe the alphabet may well be the primary activity of a young child extending the limits of motor skills, perception, and conscious attention; writing letters may encompass the child's total orientation to a situation. Later, the transcribing of a letter may be an action in spelling a word, with the recording of a cherished word defining the main activity. Both transcription and spelling later will likely become thoroughly operationalized, as the child attends to creating a meaning or making an impression. In the pursuit of goals we may carry out many levels of work with different levels of intention and complex relations of superordination and subordination. In each case of writing we need to unpack the work in relationship to the complex of events and cognitive acts. Often bringing the

textual object into being is the realization of the activity—a realization that one does not fully grasp until one has realized it as a material object and as a cognitive commitment. This phenomenon has given rise to the many statements of the sort “how do I know what I think until I write it.” Sometimes we may not fully realize the total meaning of a text until long after we have written it, perhaps months or years. Nonetheless, despite not comprehending the full implications of what we have written, we can understand each of our sentences and carry out the larger structures of our text in a workmanlike way. Recognizing the appropriateness, timing, and techniques of each of the actions of text-building helps us realize vaguely perceived intentions with some sense of craft, efficiency, and effectiveness. It is just the total object we have made that escapes our full comprehension. In a sense we are learning, structured by the work of text making, but we have not yet developed sufficiently to comprehend what we have written. Our externalized meaning making has not yet crystallized into an internalized set of structured relations that would make the text fully and immediately transparent.

On other occasions, however, the text to be written is easily anticipatable and can be produced entirely in a workmanlike manner, with no surprises about what we have made. Perhaps when we write an email to colleagues to arrange a committee meeting, the email text and meaning is fully predictable. In that case, perhaps, the activity is only emergent in the work of the committee—we do not quite know what the committee will end up proposing; nonetheless, we seem motivated to get there.

To identify just those activities that present the greatest challenges at the moment, but are most driven by the desire to develop our capacities, identity, or mode of being, Leont’ev (1981) elaborates Vygotsky’s (1967) concept of leading activity, particularly with respect to school settings. The leading activity identifies, within the zone of proximal development, the activity which captures the imagination of students most, and which they are working most centrally on mastering. Individually or in a group, we might say this is the thing that we are trying to work out as we engage in the activity, the particular way we are working towards expanding (in Engeström’s 1987 formulation).

Leont’ev, from a materialist perspective, was particularly interested in activity as an external working out of innerly-driven impulses. Even mental activity he sees originally situated and driven, no matter how distantly, by some material object in the world, though embedded in cultural history and social practice. He would dissolve the mind-body distinction by seeing mind as an embodied capacity we have developed to be better able to cope with a material world. But mind is not reducible to body, for consciousness having developed then influences the embodied behaviors; mind brings objects into being through activity.

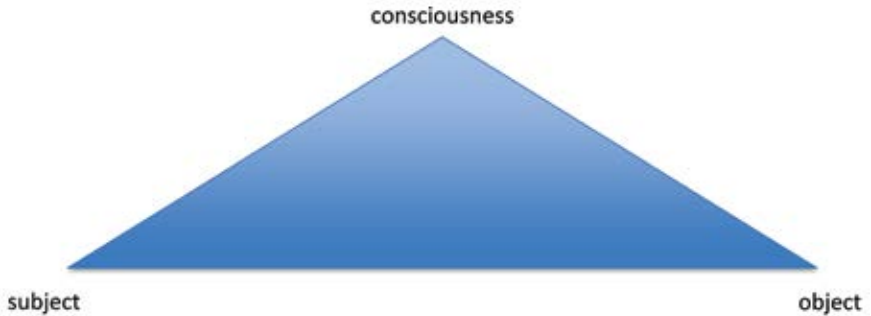
The development of mind and its realization of impulses occur not just in the material circumstances of individual lives, but in the social life of the commune. Leont'ev points to the regularized social activity systems that give meaning, value, and intelligible familiarity to the activities of individuals. He cites the example of the paleolithic hunt of mastodons, where the activity of one group of people is to be beaters, making noise and shaking foliage. The activity of these people seems senseless as a way to capture creatures, which they are most clearly scaring away. The noise making only makes sense in relation to the activities of other people, such as those who build corrals and those who guard and close the corral (Leont'ev, 1981, pp. 210 - 213). Activities emerge in groups, and actions are negotiated and assigned to individuals, employing their separate capacities. Operations also occur on the group and individual level, as people's response to each other's signals in coordinating the hunt becomes as routinized as the technique of hitting the drum for the individual. People learn to form goals and activities in relation to the activities of others as they emerge historically in stable and anticipatable forms that allow people to organize work in ways that coordinate with the work of others. The sense arises within the system in which individual takes part, getting meaning from participation in larger collective activity.

The developed functional systems of actions and operations, group and individual, that regularly pursue repeated activities express regularized orders of behavior and activity organization that in turn comprise a social order. A functional system perspective provides a basis for seeing how individual acts of writing and reading, shaped within the regularities of genre, participate in larger social systems of activity, rising above individual acts into carrying out larger social endeavors. Thus we have a link here between the inner contents of consciousness of people engaged in acts of reading and writing, a phenomenology of literacy, and the largest social orders of activity within which we organize our lives.

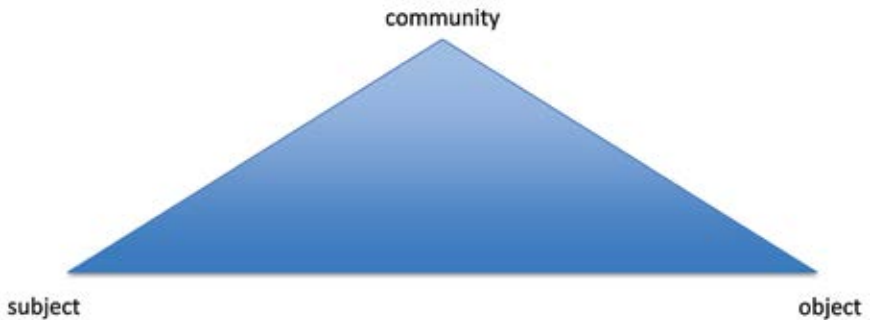
COMPLEX ACTIVITY SYSTEMS: ENGESTRÖM

Yrjo Engeström, starting with problems in the coordination of work in organizational settings, has elaborated this idea of socially formed activity systems, functionally organized to carry out particular activities through conjoint work. The work and coordination of various participants to produce a shared object is aided and organized, materially and socially, by division of labor, rules of work and participation, and the tools available to carry out the work. To help analyze the operations (in the Leont'evian sense of unreflective

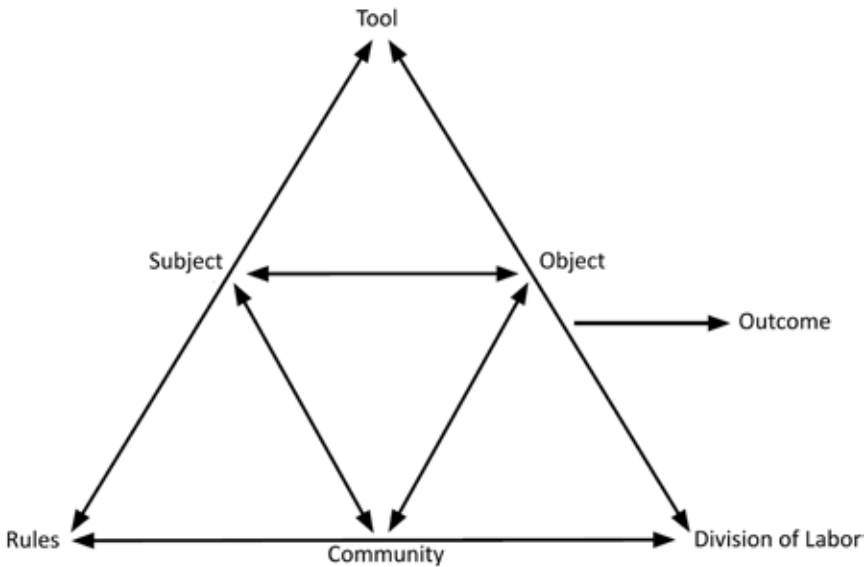
automatic practice) of any organization, Engeström has developed a heuristic diagram, which makes visible and open to reflective readjustment processes that have been so long in place they are not usually consciously attended to (Engeström, 1987). Engeström's model is based on Vygotsky's triangle which interposes consciousness in the relation between stimulus and response, or subject and object.



Engeström, following Leont'ev elaborates consciousness as communally formed in shared activities, refiguring the triangle accordingly—the individual working in relation to a community in the functional pursuit of a communal goal or object.



The subject's relationship to the community is shaped historically by the rules that identify roles, responsibilities, transgressions, expectations, rewards, penalties, exchange arrangements, etc. The subject's relationship to the object is mediated by the cultural tools (created through a history of social interactions) by which the object is produced. And the community's relationship to the object is mediated through a division of labor which both distributes and aggregates the total work in production.



This heuristic helps parse the factors usefully brought into consciousness for intelligent reflective choice-making in what Engeström calls stage III activity theory. Stage I he considers the unreflective interposition of consciousness within a stimulus response of an individual, as investigated by Vygotsky. Stage II activity theory is the placing of individual consciousness within communal activity, but without reflective understanding of the activity system as a whole or one's place within it. Stage III brings to reflective consciousness the social activity system, so as to allow one's reflective adjustment of the system and one's actions within the system.

In any particular case these arrangements are historically emerged both in the larger pattern and the local instantiation. Hospitals, courts, schools have long histories that establish large patterns of arrangements, but each hospital and perhaps each ward, each court, each school and each classroom have developed their own particular set of tools, rules, and division of labor in the formation of local community. Further these are constantly changing in relation to problems, contingencies, opportunities, changing resources, change of personnel, new tools, and so on. So an analysis of any given organization could examine the historical process of emergence of the system to understand the forces the current arrangements respond to, the operations of the current system, and the impulses to change the system.

Engeström has been particularly interested in historically emerged contradictions within activity systems that act as forces to bring about reflection and change. That is, insofar as organizations operate by ingrained and historically

emerged habits that do not seem to have any sticking points, they have little motive to change or even to look upon their operations, except as routinely monitored in the systematic operations. We might take this as an analogue to Kuhnian normal science, where puzzles are solved, but only as paradigmatic or made typical and habitualized in the system (Kuhn, 1962). So the management of a paper clip manufacturing company would likely monitor sales, inventory, supplies, number of employees, and the like to adjust the level of operations, but they might not contemplate changing the way of doing business, replacing the machinery, changing the product line, or any other element that might reorganize the activity system in a serious way. Only when a contradiction in the system arises—such as workers being unable or unwilling to follow the work rules, or when the machinery breaks down and cannot be repaired according to operating procedures, or when new machinery no longer demands the same division of labor, or when markets shrink for the product—are participants in the organization likely to problematize and rearrange the practice in a more satisfactory way. It is at these moments of emerged contradiction and tension that organizations become smarter, or learn by expanding their reflective awareness of their operations (looking on them as actions), perhaps even reconceptualizing and reorganizing their fundamental object and activity.

Engeström has carried out a number of intervention studies to assist organizations (or activity systems) to learn by expanding their awareness of their operations, and thereby rearrange their world to carry out their functions more effectively or even to adopt more powerful functions. He has had all workers within a hospital analyze their own activity position within their organization, using his heuristic triangle as a guide to consider for example, who provides them the tools, who authorizes the tool purchase and distribution, who sets rules and who monitors them, who sets the distribution of labor, to whom are these various procedures accountable, and so on (Engeström, 1987, 1993). These questions allow participants to reflect on how the system operates and whether adjustments may be made. Tensions exist in the organization if, for example, nurses must request equipment and supplies from a supplies office which is accountable for holding costs down by a financial office, but they must take their work orders from doctors who demand certain procedures requiring supplies be administered, at the same time the nurses are driven by their perception of the object of patient care. Such discoordination leads to multiple contradictions that call for reflective understanding and resolution. Engeström has also studied instances where individuals who are empowered to initiate reflective actions (such as judges who can revise the rules of procedure in their own courts) spontaneously note some difficulty in procedures and engage various participants (opposing lawyers, social workers, other officers of the

court) in problem solving to come to novel or flexible arrangements (Engeström et al., 1997). These reflective activities focus attention on the renegotiation of practice within the activity system.

Writing occurs within historically emerged, but constantly changing, circumstances and arrangements. Writing also makes information and textual objects visible for reflective contemplation, opening possibilities of noticing and resolving of contradictions. An important functional element of most activity systems involved with writing is to bring new information or viewpoints into some kind of group contemplation, information sharing, or coordination of perspective. Thus writing regularly offers opportunities to attend to contradictions and tensions, resolving them through wise choice-making in what to include, how to represent and reason with the inscribed material, what stances to take toward the material and readers—all of which goes in to deciding which words to include and how to put them together. The act of writing also usually affords time for thought, the ability to look on and revise earlier plans and revisions, and distance from the place of text circulation—all heightening the opportunities for reflection and process monitoring. Writers and readers, therefore, are regularly in a position of “learning by expanding” (to use Engeström’s 1987 term), meeting new challenges of texts and gaining some sense of the contexts or systems within which their reading and writing operates. This opportunity, however, is not always taken and contradictions can remain hidden, often by unthinking adherence to long-standing conventions and practices. Engeström’s heuristic in such circumstances can help the writer identify and address the activity contexts it contributes to, and how the text may be brought into greater coordination and effectiveness, perhaps even resolving tensions within the system.

Engeström has pursued another aspect of Vygotskian thought as elaborated by Leont’ev—the emotional attachment we have in the realization of our objects. Objects engage our committed effort to bring something new in the world, fulfilling our needs and desires. In particular, Engeström & Escalante (1995) have studied the systemic contradictions that may arise from the different emotional attachments people have to an object. In studying an electronic vending kiosk as produced by an entrepreneurial company, as actually used by consumers and as considered by other workers at the site of use, Engeström & Escalante found that participants had different and conflicting sets of motives, attitudes and emotions. These conflicts ultimately were part of the failure of the device in becoming a regular consumer tool. The producers of the sales kiosk were deeply attached to the technology they had developed under government contract to test for long-term adoption by the post office, for it was the realization of their designs, plans, and action. They, like most

makers of technology, were in love with what they had made and assumed others would share those sentiments. Consumers, however, only using the machine in the course of other daily activities, assessed the machine from a different perspective, and found it frustrating to operate. The postal workers at the office, whose good will and cooperation could help support consumer use and aid the adoption of the system, saw in the kiosk a disruption of their orderly activities, a reorganization of the distribution of labor, and ultimately a threat to employment. They became antipathetic. Such systemic understanding of emotions is applicable in thinking about the attachment or disengagement people feel for texts they produce and use. Deep attachment is often necessary both for the production and the effortful recreation of complex meanings, but writers' strong attachment to their words are not always matched by the emotional stance and commitment of their readers. The success of a text is dependent on how use of the text contributes to the readers' objects and their engagement with the text.

WRITTEN GENRES IN ACTIVITY SYSTEMS

If we conceive of each act of writing as a reflective participation in an activity system, then we can see how each act of writing is an historically embedded act of coordinating with others. In these acts of literacy our focus of attention, our objects and goals, may be various but they are directed towards human systems of communication and activity. A writer may be obsessed with developing the narrative technique of an unreliable narrator as a distinguishing characteristic of her fictions or may be most interested in tapping her own depths of subconscious. On the other hand, the writer may be primarily concerned with selling a product or asserting new scientific findings. But in all cases these various literate activities, actions, and operationalized skills only make sense within socially organized systems—whether of literary entertainment or commerce or scientific knowledge production.

Genres are designed for social action, designed to bring about changed material states in the world, transforming our social and material scenes of existence and being. Thus the genres within which people frame their utterances can be seen as also being vehicles for participation in historically emerged activity systems and their ongoing maintenance. By learning to write in the typified forms available at one's time and social place, one learns not only means of participation but the very motives and objects one might have, as Miller (1984) pointed out. Genre—conceived as the form discursive action takes—is part of the larger social activity structures within which action takes place.

Insofar as those social structures are discursively constituted and maintained by the circulation of discourse, the genres themselves are major constituents of that social activity structure, and every individual's use of those forms carries those systems forward. Insofar as individuals orient to those structures as the sites of their actions, and thus find their objects, goals and motives by participation within those social activity systems, their very forms of action emerge as meaningful. Genre-shaped utterances themselves become then vehicles of the production, reproduction, and evolution of the systems within which the genres are meaningful.

My investigations of the emergence of the experimental report in science (Bazerman, 1988, 1991) found that the activity of trying to assert what one has seen—in order to create an empirical account of the material world—required people to learn to argue for the validity, accuracy, and meaning of their claims within the emerging social space of scientific correspondence, societies, and journals. The particular characteristics and dynamics of journal publication provided rhetorical challenges in terms of the publicness of the audience, the enduringness of the text, and the temporal sequence and pacing of articles and responses (contrasted on one side with spontaneous on-the-spot oral response in a small group and on the other with the appearance of books years apart). The typical features of the emergent and evolving form of the experimental report represented rhetorical solutions to the problem of asserting one's findings within such a structured and contentious field. This activity was carried out with great passion and commitment by a number of the early modern natural philosophers such as Isaac Newton and Joseph Priestley, who themselves were major rhetorical innovators and influences in shaping the genre. The normative rules, roles, tools of investigation, production of journals, the positioning of scientists with respect to other contemporary socio-cultural entities, and other aspects of the social and activity structure of science evolved simultaneously with the discursive forms of participation—with major consequences for how knowledge was produced, what forms it appeared in, and what counted as knowledge.

Devitt (1991), similarly, was able to identify the activity of working tax accountants with the production of a set of genres of tax letters that sat in particular relation to the tax code and the client's financial records. Each of the letter types was positioned somewhat differently with respect to client and government documents and needs, carrying out a different action, in a distinctive form. Yet together, in comprising a case file, they together defined the actions taken on behalf of a client in a case. Schryer (1994) similarly has examined the way alternative reporting forms for veterinary care are tied to basic alternatively different versions of what the activity of veterinary care is about;

she also notes how adherence to one or another form covers over unresolved tensions and contradictions in the field.

Certain central documents may take a major role not only in defining the terms of a social activity system, but in organizing the genres of surrounding discourse. McCarthy (1991), for example, has examined how in psychiatry the Diagnostic Statistical Manual in its various editions and revisions was intended precisely to be such a vehicle of disciplinary organization and has succeeded in creating a common nomenclature and nosology (taxonomy of diseases or disorders), and has influenced all other documents of the field from the production of case notes to admission documents, case write-ups, patient records, and insurance reporting forms. A follow-up study (McCarthy & Gerring, 1994), however, also reveals how political negotiation of nomenclature leaves fundamental medical contradictions unresolved beneath institutional decisions. This is similar to the findings in Bazerman, 1987a that institutional regulation of the forms of reporting in experimental psychology achieved through dominant groups in the American Psychological Association in the middle of the twentieth century, kept unresolved contradictions in the field that became visible again in the latter part of the century as theoretical interests in the field opened.

Related genre work (reviewed in Russell, 1997b and Bazerman, 2008) makes similar points. In order to provide some theoretical model for these organizational coherences, I presented a model of how genres stand in recognizable relation to each other within social groupings, often with implications for typical and coherent sequences of production of documents within social structural constraints (Bazerman 1994a, 1994b). Thus, for example, in classrooms, syllabus sheets assigning readings are typically followed by students reading those assignments in advance of lectures and discussions; these are then followed by paper assignment sheets, submission of papers, and teacher comments. All ends with exams and grade sheets. Any missing or weakly performed component in this sequence disables the continuation of the genre sequence and learning activity, and disorganization of sequence can lead to incoherence in the activity.

Russell (1997a) explicitly ties this notion of systems of genre to Engeström's model of activity systems, with attention to the particular problem of understanding the relationship of classroom activity systems with various public and professional discourses related to the course discipline. My book on the *Languages of Edison's Light* concretely attempts to trace the historical development of the discourse activity systems Edison must engage in and then locate his interventions within specific moments and sequences of utterances within these activity systems (Bazerman, 1999a).

REFLECTIVITY IN INDIVIDUAL AND GROUP WRITING ACTIVITY

Because writing is embedded within social systems, both the activities and the systems are open for reflection at each juncture. Indeed almost every act of writing requires reflection and thought—in part because the writing is likely to occur at some physical and temporal remove from the exigencies that drive it and the people who are to be influenced by it. Only in very immediate and brief writing, such as when we are asked to fill in our name on a form by a clerk standing next to us, might we carry out writing with little thought. Rather, acting through a second order symbolic system with signs on the page to contemplate, we are likely to think about what we are doing even though the depth of contemplation and understanding may vary,

This reflective cognition opens up the opportunity for rethinking our aims and our place within the activity system. Each new act of reading and writing reinvigorates and in a sense remakes the activity system, carrying it forward. The more we are able to reflect on the system, the greater the possibility for adjustment, change, remaking, and reinvigoration. The reflection may be directed at any aspect of the activity system, whether the choice between two near-synonymous words to evoke different sets of associations or the choice of fundamental strategies to engage audiences in issues they have not been attending to. Even attempts to transgress, surprise, or disrupt require reflection on the usual patterns of discursive activities so as to know where one might most effectively plant one's provocations and disruptive surprises.

At the same time as reflection allows potentially broad-ranging contemplation, creativity, and reconfiguration of activities, the orderliness of activity systems serves to reduce the necessary sphere of contemplation, perception, and cognition—as suggested by Edwin Hutchins' (1995) study of navigation techniques in traditional cultures and modern naval systems. In the cases Hutchins studies, the techniques and tools of navigations focus the individual navigators carrying out specific limited tasks which are then collected and coordinated by other collaborating individuals. Each person only has limited tasks to accomplish. For a deckhand on a naval aircraft carrier this may mean aligning an identified site point to a cross hair in a sighting tool and then at designated moments calling out a number indicating the placement of the crosshair on a scale on the navigational tool. Such numbers permit the captain to align a caliper-like tool on a map, marking the position of the ship and setting a line for the continuing course of the ship.

For writers, the orderliness of genres constrains and focuses the writing task. A person writing a research report on a psychological experiment knows

specific things should be attended to and specific kinds of information should be reported in the text according to a fairly stable and recognizable organization, deploying standard formulations, techniques, and phrases. One hardly has to create a text *ex nihilo* or search the whole world for relevant material and phrases. Similarly, someone reading that report can approach it with a fairly focused set of expectations of what to look for and what interpretive and critical techniques that need to be deployed (Bazerman, 1985, 1987a). Writers and readers can, therefore, limit their conscious reflection and choice-making to a few issues, unless they uncover serious contradictions, problems, or limitations that challenge the standard way of doing things and taken-for-granted knowledge. Such contradictions and disruptions may lead writers and readers into what are considered the deeper questions of the field. In research and knowledge-producing fields these deeper questions concern assumptions, standard investigative and argumentative procedures, the codified knowledge relied on from the literature, theoretical predispositions, and the very social organization of the epistemic or activity field. Each of these questions has consequences for writing. Similarly, in business fields such issues as basic economic relations, marketing and production strategies, organization and task structure, and representation of products all have consequences for reshaping writing and organizational collaborative writing practices to carry out one's business effectively.

MEANING, CONSCIOUSNESS, AND ACTIVITY: LURIA

The third member of Vygotsky's troika, Alexander Romanovich Luria, focused on functional systems within the individual rather than within the social activity system, as Leont'ev had. Luria became widely known in the West for his work on cognitive neuroscience, which grew out of his work on brain damage and aphasia. But his work was directed by interests that preceded his work on brain physiology, and his findings in neuroscience are consistent with his findings from psychological and developmental studies. He viewed the brain not as the aggregate of specific locales each with discrete knowledge or directing a discrete skill (nor did he take the extreme opposite view that the brain operated only and always as a whole), but rather he viewed the brain as the differentiated neural ground on which functional systems developed as the child grew through activity-driven social experience and learned language which mediated most social activities. The development of spoken language was particularly crucial for the development of higher mental processes and functions. These functional systems brought into dynamic relation multiple parts of the differentiated brain directed from the cortical regions. Spoken language provides the means

for conscious and voluntary action and is implicated in all higher mental functioning (see Vocate, 1987).

We can see Luria's interest in role of language most explicitly in the twin study (Luria, 1979; Luria & Yudovitch, 1959). A pair of five-year-old male twins, as a consequence of delayed phonological development, had only limited and idiosyncratic language development, and largely communicated only with each other. They mostly played with each other in embodied action, rather than language-guided interaction. When entering a kindergarten they did not play much with peers and had limited abilities in such creative tasks as block-building or role playing. They had almost no narrative or planning speech. After investigators separated the twins to aid in their social, linguistic, and intellectual development, the one with the least language development was given special instruction in discriminating and articulating sounds and in engaging in adult speech. After ten months of separation both children had developed in their general use of language and in their use of narrative and planning speech. Even more strikingly, the more backward child who received special instruction wound up using more narrative and about the same amount of planning speech as the child who was originally more advanced linguistically. Both the planning speech and narrative speech of the child with extra training were more likely to apply to objects not in the immediate environment. Further, this child had a greater ability to comprehend complex grammatical constructions and inflections. The growth in language of both twins correlated with major changes in their play incorporating objects into their plans and game rules. The play became restructured around verbally formulated projects and articulated objectives. The child with additional training, although previously the follower in the twins' play, had become the leader, learned more rapidly, and assimilated more easily new learning into his activity.

Throughout his career Luria carried out a number of similar studies, from his early studies with Vygotsky on the use of signs to aid in the organization and regulation of tasks to work in the 1950s on verbal regulation and inhibition of behavior. In these latter experiments, for example, two-year-olds, holding a rubber bulb, when told to squeeze the bulb when a red light appeared, would immediately squeeze upon hearing the word "squeeze." Further, they would not squeeze when the red light appeared. Children at age three and four, however, were able to follow instructions, regulating their behavior accordingly. Further complications appeared when children were given two differently colored lights to respond to or were given instructions not to press. Not until age six could the children consistently regulate their behavior according to complex verbal instructions, although even the youngest child subjects could repeat the instructions and apparently understood them at a verbal level. Children

with learning disabilities had greater specific problems with these tasks through later ages. Luria interpreted his results around the development of higher order regulation of complex behaviors based on the internalized meanings of words gradually overtaking “natural” responses regulated by immediate stimuli (whether material or verbal) (Luria, 1961).

These studies provide some insight into Luria’s longitudinal study of someone with an extraordinary memory begun in the 1920s and continuing into the 1950s (Luria, 1968). The subject’s powerful eidetic memory worked through direct images, associating words with verbal images, synesthesia, and direct sensory perceptions or associations, but the memory seemed unordered, unregulated and undirected by verbal means. At times the subject even failed to notice the sense, meaning, or logical sequencing of material he memorized. He constructed complex eidetic schemes where a simple noticing of symbols, such as a numerical or alphabetic sequence, would serve. His typical method of ordering was to place various images along a mentally imagined road or a hallway, and then to mentally walk down the road calling out what he saw. These memories were so powerfully planted as direct sense perception, as eidetic memory, that his mind became cluttered with unforgettable images, particularly as he earned his living as an entertainer performing prodigious feats of memory. He tried various devices of sensory imagination to expunge these memories, such as erasing a mental blackboard or covering it over with a canvas. However, such devices frequently failed and memories of images from previous memory performances would return. He then attempted to write the material down which he wished to forget, under the reasoning that if it were written down he would no longer need to remember. But even this did not work. Only when he noticed that a memory did not appear and he was able to tell himself it was because he didn’t want it to appear that he was no longer bothered with unwanted memory. Although this process, as Luria notes, is somewhat mysterious, the verbal regulation of his mental process, announcing to himself that he did not want to remember these images, was an important part of the process.

The role of consciousness as substantive parts of people’s life is thematic in Luria’s work. Investigating the role of consciousness in a person’s mental operations and behavior led Luria to what he called a romantic science, which attempts to understand human mind and behavior in all its richness rather than to reduce psychology to abstracted principles. Thus his study of a man with a war-time brain injury (Luria, 1972) was not so much the story of a reduced capacity as of how the person coped with the new conditions of mental life he found himself living with. Within the capacity and tools available to the self, a person must create functional systems to carry out the operations, actions, and activities of life. Under normal circumstances many of the functional systems

arise in a preconscious coordination of the parts of brain and behavior—though complex functional systems may develop later in life, building on early established functional systems and integrating tools, artifacts, and social organization. Under more extraordinary conditions, the individual must consciously create new functional systems to do what other people do without conscious thought, such as relearning to read after parts of the visual processing mechanisms having been destroyed by brain injury. In recent decades Oliver Sacks has pursued romantic science exploring individual personalities coming to live with atypical neuropsychological or perceptual conditions (See O. Sacks, 1985, 1989, 1995, 1996).

One of the important implications of functional systems and their reconstruction incorporating tools, artifacts, and social organization is that the specific cognitive functional systems involved in reading and writing need not have evolved over a long biological heritage nor be present and activated in the early development of embryo and infant. Rather, they may develop late within human history in concert with the historical emergence and elaboration of the potentials of written language over the last five thousand years, although built on upon earlier and longer-standing human biological capacities and social inventions, such as language. The functional systems associated with language become transformed and reconfigured as they are applied to written language. Thus, while directives and even principles of justice could be articulated in purely oral conditions, only with the emergence of written laws could the relationship of large and complex sets of laws be readily examined, compared, regulated, and ordered. The cognitive functional systems of modern legal thought would not only be of little use under oral conditions, they would have little occasion to be used and therefore to develop.

Similarly, in each child organized approaches to reading and writing emerge only well into a child's development, typically at the fourth or fifth year or later, building on earlier biological capacities, cultural resources, and social experiences. Even at the level of visual perception, eyes need to be trained to focus on small marks on a page (which the young child notices older children and adults orienting towards), scan in the organized path of the particular writing system (such as right to left and then down the page), make fine discriminations between letters, organize letter perceptions within words, and then regulate it all by assigning meaning to the collections of marks. Similarly, learning to inscribe letters requires the development of functional systems that are dependent on cultural practices embodied in the writing system (such as alphabetic, syllabic, or ideographic), the technologies of inscription (stylus, pencil or keyboard), and the associated motor skills. Beyond these most basic skills are the many systems of interpretation, contemplation, personal association, evaluation,

stance taking, synthesis, and idea building which may occur largely internally (though having their origin in some interpersonal experience and training). The development of our cognitive capacities employing literacy is a major theme of the entire educational system.

Since literacy is such a late arrival in human evolution, it is unlikely there are biologically determined pathways for the cognitive development of the fully functional systems of literate participation, although some lower-level components such as visual discrimination and motor control do have biological substrates. Consequently there is no biological guarantee that literate systems will regularly develop in different individuals in the same way. That is, individuals may address the challenges and solutions of meaning making from signs differently. Each person building on biological constraints and affordances, must innovatively build their own functional cognitive systems out of their experiences, instructions, and the existing prior relevant systems they can bring to bear to the task.

Because literacy involves such a later-adopted restructuring of consciousness around newly developed functional systems that embody and adapt to new cultural tools, Luria clearly distinguished between spoken and written language and had only limited comments on writing, primarily to distinguish it from spoken language and to identify its onset as a new stage in development. In an early article, from 1929 (Luria, 1978), he points out that children first learn writing only as a series of scrawls, thinking that this external practice is the full extent of what is entailed in writing, and only later does the child start to develop an understanding of how signs are distinguished and meaning mediated by them. Thus the process of understanding meaning transmission and construction within literacy does not flow directly and naturally from an understanding and use of spoken language, but develops through the formation of new functional systems. Writing near the end of his short life Vygotsky (1978) has similar but more developed comments about the way in which children move from a sense of writing as an external practice to a sense of graphic symbolic communication through drawing and then only after the transcription of sounds that themselves convey meaning—a sign of a sign, as Vygotsky says. That is, in alphabetic languages the letters signify sounds and then the sounds are the vehicles of the meaning.

Following this perception that different functional systems must be developed to process meanings embodied in written language, Luria says that higher mental processes have two distinctive components that differ in origin, function, and structure. Among the differences that Luria notes between learning speech and writing is that the embodied physical context that usually accompanies spoken language aids in its interpretation, whereas written language must typically

carry more of its situation and meaning through its own verbal presentation—thus adding a conceptual abstraction of situation to the abstraction of phonetic expression and the relation of phonetic expression to meaning.

Because of this removal from the immediate situation and the engagement with texts that seem to draw us out of our immediate behavioral contexts, written language is much more deeply implicated with inner speech than spoken language. While reading and writing may originally have been associated with spoken performance and rehearsal of texts—scripting of speeches and communication of personal messages through letters read aloud—yet over time written language use moved inward as people read extended texts to themselves whether or not they vocalized the words or adopted the later practice of silent reading. Similarly, writers as they gain in skill develop ever more extended texts, prepared at their isolated desks to be delivered for other people's contemplation. The semi-privacy and delayed release of writing has created extended space for composing processes of interaction with one's own emerging text, available for planning, reflection, evaluation, self-censorship, revision and refinement. These composing activities support the development of more elaborated and extended consciousnesses. Luria noted this very close association between written language and inner speech, and suggested this as another reason writing needed to be considered separate from spoken language in its effects on cognition and consciousness (Luria, 1970).

In order to explore this new level of consciousness that Luria and Vygotsky associated with the onset of literacy, they undertook some expeditions in the 1930s to Uzbekistan and Kyrgyzstan in central Asia in order to understand the reasoning processes of peasants with little experience of schooling or literacy. Using ethnography, interviews, and puzzle tasks, they found that those with less schooling tended to answer questions and solve puzzles more on the basis of their own experience and immediate knowledge than on logical abstractions, deductive reasoning, superordinate categorization, and similar devices associated with uses of literacy in schooling. While they attributed the differences primarily to the acquisition of literacy, there was no attempt to disentangle the effects of cultural experience of schooling from the learning of literacy, nor was there any attempt to document the particular experiences and uses of literacy within the lives of the communities and individual studies. Rather literacy was treated as an undifferentiated new stage of consciousness. The studies of Scribner and Cole (1981) disentangle these effects more precisely, and point toward how culturally specific the uses and practices of literacy are and correspondingly how specific and varying the cognitive consequences are.

Scribner and Cole's studies were in response to a large number of studies during the sixties and seventies that explored the cognitive consequences of

literacy (by such people as Goody, 1977; Havelock, 1971, 1981; Ong, 1958, 1982) that considered the consequences of literacy to be general and uniform. When this earlier work is reinterpreted through lenses of cultural specificity and social history (as Goody began to do in the *Logic of Writing and the Organization of Society*, 1986), this opens up an analysis of how human cognition has changed in relation to the emerging functional social systems of literacy (Bazerman, 2006) as well as the cognitive functional systems of individuals (Bazerman, 2009).

Since literacy itself is an historical cultural accomplishment, we would expect cultural practices to loom large in guiding individual development, such as the Jewish practice of placing honey on letters so the child can associate written words with basic biological pleasures. The frequent ritual oral repetition of certain communal texts in public can shape the functional systems of literacy as can extensive, structured phonics instruction, or the ambient profusion of texts incorporated in daily life activities. Our ways of incorporating literacy into our cognitive practices can be influenced by a cultural expectation that we use literacy to memorize and hold texts precisely fixed or that we use it for creative projection of personal meanings. Equally, social environments of argument over texts, or of fear of the power of words to control one's life, or of irreverent humor supporting heterodox culture will all influence how the individual orients toward literate activity and constructs functional systems to participate.

Our functional systems of literacy develop in relation to social circumstances and practices and in relation to our capacities evoked in such circumstances. Even within homogenous cultures, individuals may come to interpret texts differently and to write different texts, both within the bounds of orthodoxy and on the transgressive edge of heterodoxy. When cultures support profusion of experiences and novelty of expression, the individuality of development flowers into great differences of interpretation and expression in many domains, from poetry to business plans to theories of fundamental particles. The styles, relations to audiences, text organizations and processes proliferate as individuality of literate experiences is supported and rewarded. Writing development, rather than moving towards a single ideal, proliferates differences and the most developed writers write the most uniquely, even though some limited aspects (such as spelling, grammar, or even preferred style) may be regulated by cultural norms. The importance of both culture and individual experience in writing development bring together Leont'ev's social approach to functional activity systems and Luria's more individual approach to functional systems. Individuals develop their internal functional systems of reading and writing while participating and establishing roles within the communal

functional activity systems in evolving societies. This interconnection between individual and social development should caution us against over-generalizing about the cognitive systems engaged in literacy, even though reading and writing are fundamentally cognitive acts of meaning making.

The elaboration of Vygotsky's work by his collaborators and heirs, Leont'ev and Luria, helps give further shape to our understanding of humans as active social symbolic selves, developing consciousness in relation to language uses that arise within our organized social lives and employing our historically developed cultural tools. Spoken language and then written language transform consciousness and allow us to participate in more complex and reflective activities and actions. In the next two chapters we will explore some parallel developments in European and American social science that provide different perspectives on the forms of expression, consciousness, and social organization that have been intertwined with the development of literacy.