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Learning: A Processural Outcome of Human Activity

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Abstract: Via a critical appropriation of ideas from cultural historical activity theory (CHAT), this paper addresses three shortcomings in adult learning theories: 1) insufficient guidance regarding how to systematically analyze learning that occurs in everyday life; 2) absence of mechanisms for overcoming subject-object dualism; and 3) insufficient analytic consideration for collective subjects.

Introduction

Although dominant theories of adult learning (such as self-directed or transformative learning) make general claims about how adults learn, the authors of this paper find in them little guidance regarding how to systematically observe and analyze learning that occurs in the everydayness of life. Moreover, theories of adult learning are beleaguered by a subject-object dualism that continues to plague classical behaviorist and cognitivist learning theories (Engeström, 1999; Vygotsky, 1978). In most adult learning theories, the subject and object of learning remain conceptually (and often physically) separated from each other; with no adequate mechanism provided for their interaction. Dewey's (1938) two principles of experience (continuity and interaction) were proposed, in part, to overcome the problem. But Dewey did not articulate a mechanism by which these two principles operate. Another concern of ours is how to examine learning that is produced and enacted by a collective subject. Adult learning theories do not deny that collectives can and do learn; but in most theories the focus is on individual learning. Even when collective subjects are emphasized (as is the case, for instance, with organization learning or discourse on the learning organization) a mechanism for empirically observing and analyzing the learning of collective subjects is not articulated. This paper addresses the concerns raised above by critically appropriating ideas from CHAT. We do not present an overview or critique of CHAT. Rather, within our space constraint, we discuss selected ideas we believe best address our concerns. They are: 1) mediation and mediating artifacts; 2) collective subjects and the hierarchical structure of activity; 3) activity systems; 4) relationship between learning and activity; and 5) multi-voicedness and contradictions (Engeström, 1987; Leont'ev, 1978; Vygotsky, 1978).

Mediation and Mediating Artifacts

Most learning theories assume that a subject and an object must interact in some way to produce learning; however, a direct relationship is often presumed. Behaviorists, for instance, presume that the subject is directly controlled by the operations of the object, while cognitivists presume that the meaning of the object is under direct control of the subject. Employing Marxist historical materialism, Vygotsky (1978) has introduced a third element—mediating artifacts—to overcome the subject-object dualism. Mediating artifacts are tools and signs (instruments). Tools are externally oriented means by which humans master and triumph over nature; we use them to change our external environment. On the other hand, we use signs to regulate our behavior; they are means of internal activity aimed at mastering ourselves. For Vygotsky, not only are subjects and objects always connected via mediating artifacts; they are also always co-constituted through this process of mediation. In mediation humans are rendered both producers and products of their

environments. Mediating artifacts not only provide a way to empirically connect subject and object; in mediation, the dynamics of the relationship between and among subject and object is also revealed. The idea of mediation also enables us to approach learning from a historical and cultural perspective—signs and tools are cumulative products of our history and culture (Engeström, 1987; Sawchuk, 2003).

Collective Subjects and the Hierarchical Structure of Activity

By distinguishing between individual action and collective activity, Leont'ev (1978, 1981) has extended Vygotsky's ideas to include collective subjects. Using the primeval hunt as an example of a collective activity, Leont'ev argues that, as a member of a hunting party, a bush beater's *actions* are rendered meaningful only when considered as part of a *collective effort*. With this example, Leont'ev demonstrates that an individual's *action* does not necessarily meet the objective of a collective *activity*. To further articulate his views, Leont'ev differentiates among three levels of human activeness—operations, actions, and activities—based on what directs each (Leont'ev, 1978). Operations, the most concrete level, are directed by prevailing conditions; actions, the intermediary level, are directed by goals; and activities, the most abstract level, are directed by motives. **Operations** are particular ways of performing a task—e.g., particular ways of peddling a bike, or memorizing an algebraic equation. Because individuals possess different levels of expertise, power, and resources, they usually perform the “same” task quite differently. **Actions** are a set of operations that are coordinated to achieve a particular goal. The authors of this paper distinguish between goals and motives. *Motives* are biologically-induced, culturally-mediated drives, desires, interests, etc., such as sex, recreation, entertainment, mobility, physical safety, economic security, dignity, and so on. *Goals*, on the other hand, are intermediary objectives, undertaken to satisfy one or more motives. Compared to goals, motives are more basic, more fundamental, more abstract, and more universal. For instance, drinking water and riding a bike may be regarded as goals, not motives; no one has a basic desire to drink water or ride a bike. Each of these intermediary objectives is undertaken to satisfy a more basic (biologically-induced) desire, such as thirst or recreation, respectively. A goal may also satisfy another goal which in turn may satisfy a motive. For instance, a 17 year old boy rakes leaves (a goal) to obtain money (another goal) to purchase an iPod (another goal) to satisfy his need for entertainment (a motive). The teenager may use his iPod, not only for his entertainment, but also to score points with the girls (another motive).

Two criteria differentiate a human **activity** from more concrete human behaviors: motive and collective effort. *Motives* were defined in the preceding paragraph. A *collective effort* involves a community (or communities) of practice operating under particular rules and divisions of labor. *Rules* are incomplete guides to action; they “specify how decisions should be made and how work processes are to be performed” (Hatch, 1997, p. 166). Rules may be formal or informal, and may be upheld by coercion (which includes social sanctions) or by ones' own internalized values (norms). *Divisions of labor* reflect the distribution or assignment of responsibilities among various actors. A *community of practice* is not merely a community of people with the same kind of interest, such as watching movies or fishing, but of people who share a repertoire of resources, such as experiences, stories, tools, ways of addressing recurring problems, etc., etc. In short, a community of practice refers to a group of people who have interacted over time on particular sets of objects (Lave & Wenger, 1991). The three levels of human activeness just described build on each other, with the more abstract being dependent on the less. Actions are accomplished only through operations, and activities are accomplished only

through actions. With practice and internalization, activities often collapse into mere actions and finally into mere operations. However, argues Leont'ev, the reverse dynamic is also possible.

Activity System

To foster systematic examination of human activities, Engeström (1987) has extended the ideas discussed above into an activity system depicted in Figure 1, below. The system consists of seven components (subject, instruments, objects, rules, communities of practice, divisions of labor, and outcomes) arranged as one large triangle with four sub-triangles embedded. The sub-triangles represent higher order functions that arise from mutual relations among the seven components (Holt & Morris, 1993; Nardi, 1998). Each sub-triangle represents an aspect of human activity: production, distribution, exchange, and consumption.

Production creates the objects which correspond to the given needs; distribution divides them up according to social laws; exchange... parcels out the already divided shares in accord with individual needs; and finally, in consumption, the product steps outside this social movement and becomes a direct object and servant of individual need, and satisfies it in being consumed. Thus production appears to be the point of departure, consumption as the conclusion, distribution and exchange as the middle... (Engeström, 1987, p. 78, cited in Marx 1973, p. 89).

The top sub-triangle in Engeström's model was originally created by Vygotsky to emphasize the mediating role of tools and signs. It consists of three components: subject, instruments, and object. Subject refers to either an individual or aggregate of individuals seeking to achieve goals or motives through action or activity. Instruments are tools and signs: means through which particular actions are carried out. They include both abstract and physical artifacts such as language, theories, computers, and houses. Instruments mediate the subject's actions toward the object. Objects are modifiable ends toward which activities are directed, and from which outcomes are expected. Objects may be material (e.g., a piece of wood in the hands of a sculptor) or non-material (e.g., a research problem on the mind of a research investigator). Objects give shape and direction to human activity and help to distinguish one activity from another. Rules, community of practice, and division of labor (defined earlier) make up the base of Engeström's activity system. Together with instruments, they represent the cultural and historical contexts in which particular activities are enacted. There seems to be, in Engeström's formulation, a blurring of the lines between rules, community of practice, and division of labor. Rules, for instance, are a necessary ingredient in defining divisions of labor; and both rules and divisions of labor are products of a community of practice. Furthermore, Engeström's physical separation of the four functions (into four separate sub-triangles) seems to run contrary to his own interpretation of Marx. On this matter Engeström writes:

Marx goes on to show that things are not so simple.... Production is always also consumption of the individual's abilities and of the means of production.

Correspondingly, consumption is also production of the human beings themselves.

Furthermore, distribution seems to be not just a consequence of production but also its immanent prerequisite in the form of distribution of instruments of production and distribution of members of the society among the different kinds of production. Finally, exchange, too, is found inside production, in the form of communication, interaction and exchange of unfinished products between the producers (Engeström, 1987, p. 79).

Engeström's physical separation of the four functions obscures their co-constitutive character; and his explanation for maintaining that separation does not convince us. Moreover,

we fail to see how this physical separation aids our analysis of learning. With Marx, we therefore emphasize the ‘organic wholeness’ and ‘mutual interaction of the four moments’, over their physical separation (Marx, 1973, 99ff).

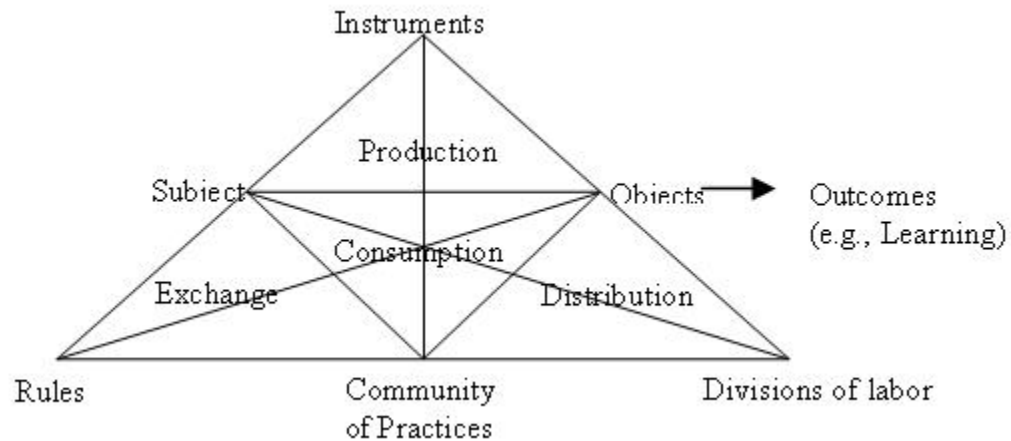


Figure 1: The structure of human activity system (Source: Engeström, 1987, p. 78)

Relationship between Learning and Activity

Outcomes, the seventh and last element in Engeström’s activity system, are the intended and unintended results of the collective effort. They include material objects, such as new and/or improved equipment as well as non-material objects such as new knowledge and skills. Learning (those relatively stable changes in behavioral potential that are made manifest through generation of new knowledge and skills) is one possible outcome of human activity. Learning may then be defined as *procedural* outcomes of human activities. Procedural harkens back to knowledge and skills. Dewey’s assertion that “knowing is something that we do” (1916, p. 331) breaks down the categorical distinction between knowledge and skills, knowing and doing. Indeed, skills are a specific kind of knowledge; skills are more obviously procedural—i.e., it is obvious that skills involve a set of coordinated operations. In arguing that knowledge is “shared procedures” Toulmin (1999) reminds us, however, that all knowledge is also procedural. To say that I have this or that knowledge, is to assert that I am able, in some small or great way, to communicate (with myself or another) a set of procedures about how to do something. It is the communicative (shared) aspect of the exercise that makes it knowledge. My knowledge is a measure of how well I am able to communicate those procedures. In CHAT those procedures are called operations. *Learning then are procedural outcomes of human activities that take the form of new and/or improved human operations.*

With proponents of CHAT we maintain that not all human activities result in learning. This assertion implies a crucial distinction between learning and activity: activities are a means and learning is one possible end. Consider, for instance, a form of learning, *L1*, derived from an activity, *A1*. Now *L1* may be used in a subsequent activity (*A2*) to facilitate new forms of learning, *L2*, *L3*, *L4*, and so on. But *L1* cannot bring about itself; for to do so is to collapse means and ends. There is an even more compelling reason for distinguishing between learning and activity. To qualify as a human activity, the behavior must not only be a collective effort; it must also be directed by one or more *specific motives*. There are no specific motives associated with the general term, learning. The authors of this paper are yet to meet anyone who is interested in learning in an ontological vacuum. People are always interested in learning *something*. It is this something (the motive) that gives definition and impetus to the activity. That activity, in turn, is

properly identified, not by its outcomes (of which learning is one possibility) but by its motive(s). For instance, the act of reading or grocery shopping signifies an activity; and although learning may be an intended or unintended outcome, the exact nature of either activity is made apparent only when their motives are revealed. So the activities (for which reading and grocery shopping are actions) are best defined and identified, not by what is learned, but by their motives. In contenting that learning is not an activity we break ranks with proponents of CHAT (such as Engeström, 1987) who regard it (at least expansive learning) as a special kind of activity. A major research implication for our assertion that learning is not an activity is this: to empirically examine learning we do not search for any *special learning process(es)*. Instead, we simply analyze everyday human activities and ask: what new and/or improved repertoire of operations has this or that activity generated. Those new human operations are what we call learning.

Multi-voicedness and Contradictions

We know of colleagues who have criticized Engeström's activity system for its presumed inattention to the complexity of subjects. The concern is that, in Engeström's subjects, issues of identify, individual differences, and diversity are not directly addressed. We believe that Engeström's notions of multi-voicedness and contradictions address well this criticism. According to Engeström (1991), an activity system cannot but have multiple viewpoints, cultures, traditions, and interests because division of labor creates different perspectives and participants create their own history. This multi-voicedness (augmented and amplified in networks of relations among activity systems) is always a source of trouble, conflict, improvement, negotiation, and change.

Engeström employs the term contradictions to explain how system change occurs. He argues that the force of system change arises from four levels of contradictions. Level 1 designates contradictions *within* components of the activity under consideration, e.g., contradictions *within* subjects, instruments, or rules (intra-component contradictions). Level 2 contradictions emerge from relationships *between* components, e.g., contradictions between subjects and community of practice (inter-component contradictions). Tertiary contradictions (level 3) emerge when representatives of culture introduce objects and motives of culturally more advanced forms of activities into existing activity systems, while quaternary contradictions (level 4) arise from tensions between the activity under consideration and its neighboring activities. Neighboring activities are not necessarily interdependent, but their subjects, instruments, and outcomes often come into physical contact—making cultural exchange inevitable. Tertiary and quaternary contradictions seem to provide the key to understanding radical innovation and change, i.e., changes involving the development of more culturally advanced forms of activities. Engeström argues that in tertiary and quaternary contradictions are found new instruments that function as 'springboards' for breaking the constraints of the double bind and for constructing new general models for subsequent activities (Engeström, 1987, p. 189).

Conclusion

We have critically appropriated Engeström's (1987) activity system as a framework for analyzing learning that occurs in the everydayness of life. The framework takes as a starting point that human activities are the primary vehicles through which learning is fostered and impeded. Any serious empirical investigation of learning therefore necessitates systematic examination of human activities, as a primary unit of analysis. Governed, however, by motives

that are often hidden from view, activities are not always plainly evident. Accordingly, our analysis often begins by examining goal-directed actions and the operations that constitute them. While our analysis of particular actions directs our attention to particular goals, examination of particular operations leads us to consider the unique conditions that give rise to particular operational expressions. Considered too, are particular composition and arrangement of instruments used in the execution of the activity, as well as particular characteristics of subjects involved (both collectives and individuals). Motives surface as our analysis proceeds, and their identification allows us not only to observe contradictions within and among activity systems. Identification of motives also helps us better understand the cultural-historical contexts in which particular activities are enacted. Communities of practice that advance particular motives come into view; and, with their discovery, complementary and competing rules, and divisions of labor, surface. With such analysis, learning (understood not as an activity or some special process, but as procesural outcomes of everyday activities) is relatively easy to detect, because they surface as new and/or improved forms of human operation.

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