

THEORIES OF LEARNING

9. ACTIVITY THEORY

9.1. Overview

Activity theory is an umbrella term for a line of eclectic social sciences theories and research with its roots in the Soviet psychological activity theory pioneered by Lev Vygotsky, Alexei Leont'ev and Sergei Rubinstein. These scholars sought to understand human activities as complex, socially situated phenomena and to go beyond paradigms of reflexology (the teaching of Vladimir Bekhterev and his followers) and physiology of higher nervous activity (the teaching of Ivan Pavlov and his school), psychoanalysis and behaviorism. It became one of the major psychological approaches in the former USSR, being widely used in both theoretical and applied psychology, and in education, professional training, ergonomics, social psychology and work psychology. Activity theory is more of a descriptive meta-theory or framework than a predictive theory. It considers an entire work/activity system (including teams, organizations, etc.) beyond just one actor or user. It accounts for environment, history of the person, culture, role of the artifact, motivations, and complexity of real life activity. One of the strengths of AT is that it bridges the gap between the individual subject and the social reality—it studies both through the mediating activity. The unit of analysis in AT is the concept of object-oriented, collective and culturally mediated human activity, or *activity system*. This system includes the object (or objective), subject, mediating artifacts (signs and tools), rules, community and division of labor. The motive for the activity in AT is created through the tensions and contradictions within the elements of the system. According to ethnographer Bonnie Nardi, a leading theorist in AT, activity theory focuses on practice, which obviates the need to distinguish 'applied' from 'pure' science—understanding everyday practice in the real world is the very objective of scientific practice. The object of activity theory is to understand the unity of consciousness and activity.

AT is particularly useful as a lens in qualitative research methodologies (e.g., ethnography, case study). AT provides a method of understanding and analyzing a phenomenon, finding patterns and making inferences across interactions, describing phenomena and presenting phenomena through a built-in language and rhetoric. A particular activity is a goal-directed or purposeful interaction of a subject with an object through the use of tools. These tools are exteriorized forms

of mental processes manifested in constructs, whether physical or psychological. AT recognizes the internalization and externalization of cognitive processes involved in the use of tools, as well as the transformation or development that results from the interaction. The origins of activity theory can be traced to several sources, which have subsequently given rise to various complementary and intertwined strands of development. This account will focus on three of the most important of these strands. The first is associated with the Moscow Institute of Psychology and in particular the "troika" of young Russian researchers, Vygotsky, Leont'ev and Luria. Vygotsky founded cultural-historical psychology, a field that became the basis for modern AT; Leont'ev, one of the principal founders of activity theory, both developed and reacted against Vygotsky's work. Leont'ev's formulation of general activity theory is currently the most influential in post-Soviet developments in AT, which have largely been in social-scientific, organizational, and writing-studies rather than psychological research. The second major line of development within activity theory involves Russian scientists, such as P. K. Anokhin and N. A. Bernshtein, more directly concerned with the neurophysiological basis of activity; its foundation is associated with the Soviet philosopher of psychology S. L. Rubinshtein. This work was subsequently developed by researchers such as Pushkin, Zinchenko & Gordeeva, Ponomarenko, Zarakovsky and others, and is currently most well-known through the work on systemic-structural activity theory being carried out by G. Z. Bedny and his associates. Finally, in the Western world, discussions and use of AT are primarily framed within the Scandinavian activity theory strand, developed by Yrjö Engeström.

9.2. Russian and Scandinavian Activity Theory

After Vygotsky's early death, Leont'ev became the leader of the research group nowadays known as the Kharkov school of psychology and extended Vygotsky's research framework in significantly new ways. Leont'ev first examined the psychology of animals, looking at the different degrees to which animals can be said to have mental processes. He concluded that Pavlov's reflexionism was not a sufficient explanation of animal behavior and that animals have an active relation to reality, which he called "activity." In particular, the behavior of higher primates such as chimpanzees could only be explained by the ape's formation of multi-phase plans using tools. Leont'ev then progressed to humans and pointed out that people engage in "actions" that do not in themselves satisfy a need, but contribute towards the eventual satisfaction of a need. Often, these actions only make sense in a social context of a shared work activity. This led him to a distinction between "activities,"

which satisfy a need, and the "actions" that constitute the activities. Leont'ev also argued that the activity in which a person is involved is reflected in their mental activity, that is (as he puts it) material reality is "presented" to consciousness, but only in its vital meaning or significance. AT remained virtually unknown outside the Soviet Union until the mid-1980s, when it was picked up by Scandinavian researchers. The first international conference on activity theory was not held until 1986. The earliest non-Soviet paper cited by Nardi is a 1987 paper by Yrjö Engeström: "Learning by expanding". This resulted in a reformulation of AT. Kuutti notes that the term "activity theory" can be used in two senses: referring to the original Soviet tradition or referring to the international, multi-voiced community applying the original ideas and developing them further. The Scandinavian AT school of thought seeks to integrate and develop concepts from Vygotsky's Cultural-Historical Psychology and Leont'ev's activity theory with Western intellectual developments such as Cognitive Science, American Pragmatism, Constructivism, and Actor-Network Theory. It is known as Scandinavian activity theory. Work in the systems-structural theory of activity is also being carried on by researchers in the US and UK. Some of the changes are a systematization of Leont'ev's work. Although Leont'ev's exposition is clear and well structured, it is not as well-structured as the formulation by Yrjö Engeström. Kaptelinin remarks that Engeström proposed a scheme of activity different from that by Leont'ev; it contains three interacting entities the individual, the object and the community instead of the two components the individual and the object in Leont'ev's original scheme. Some changes were introduced, apparently by importing notions from Human-Computer Interaction theory. For instance, the notion of *rules*, which is not found in Leont'ev, was introduced. Also, the notion of collective subject was introduced in the 1970s and 1980s (Leont'ev refers to "joint labor activity", but only has individuals, not groups, as activity subjects).

9.3. The Goal

The goal of Activity Theory is understanding the mental capabilities of a single individual. However, it rejects the *isolated* individuals as insufficient unit of analysis, analyzing the cultural and technical aspects of human actions.

Activity theory is most often used to describe actions in a socio-technical system through six related elements of a conceptual system expanded by more nuanced theories:

- Object-orientedness - the objective of the activity system. Object refers to the objectiveness of the reality; items are considered objective according to natural sciences but also have social and cultural properties.
- Subject or internalization - actors engaged in the activities; the traditional notion of mental processes
- Community or externalization - social context; all actors involved in the activity system
- Tools or tool mediation - the artifacts (or concepts) used by actors in the system. Tools influence actor-structure interactions, they change with accumulating experience. In addition to physical shape, the knowledge also evolves. Tools are influenced by culture, and their use is a way for the accumulation and transmission of social knowledge. Tools influence both the agents and the structure.
- Division of labor - social strata, hierarchical structure of activity, the division of activities among actors in the system
- Rules - conventions, guidelines and rules regulating activities in the system

Activity theory helps explain how social artifacts and social organization mediate social action.

9.4. The Levels of Activity Theory

Activity theory begins with the notion of activity. An activity is seen as a system of human "doing" whereby a subject works on an object in order to obtain a desired outcome. In order to do this, the subject employs tools, which may be external (e.g. an axe, a computer) or internal (e.g. a plan). As an illustration, an activity might be the operation of an automated call centre. As we shall see later, many subjects may be involved in the activity and each subject may have one or more motives (e.g. improved supply management, career advancement or gaining control over a vital organisational power source). A simple example of an activity within a call centre might be a telephone operator (subject) who is modifying a customer's billing record (object) so that the billing data is correct (outcome) using a graphical front end to a database (tool). Kuutti formulates activity theory in terms of the structure of an activity. An activity is a form of doing directed to an object, and activities are distinguished from each other according to their objects. Transforming the object into an outcome motivates the existence of an activity. An object can be a material thing, but it can also be less tangible. Kuutti then adds a third term, the tool, which 'mediates' between the activity and the object. The tool is at the same time both enabling and limiting: it empowers the subject in the transformation process with

the historically collected experience and skill ‘crystallized’ to it, but it also restricts the interaction to be from the perspective of that particular tool or instrument; other potential features of an object remain invisible to the subject.

As Verenikina remarks, tools are social objects with certain modes of operation developed socially in the course of labor and are only possible because they correspond to the objectives of a practical action. An activity is modelled as a four-level hierarchy. Kuutti schematizes processes in activity theory as a four-level system. Verenikina paraphrases Leont'ev as explaining that the non-coincidence of action and operations. appears in actions with tools, that is, material objects which are crystallized operations, not actions nor goals. If a person is confronted with a specific goal of, say, dismantling a machine, then they must make use of a variety of operations; it makes no difference how the individual operations were learned because the formulation of the operation proceeds differently to the formulation of the goal that initiated the action. The levels of activity are also characterized by their purposes where activities are oriented to motives, that is, the objects that are impelling by themselves. Each motive is an object, material or ideal, that satisfies a need. Actions are the processes functionally subordinated to activities; they are directed at specific conscious goals. Actions are realized through operations that are determined by the actual conditions of activity. Engeström developed an extended model of an activity, which adds another component, community (those who share the same object), and then adds rules to mediate between subject and community, and the division of labor to mediate between object and community. Kuutti asserts that these three classes should be understood broadly. A tool can be anything used in the transformation process, including both material tools and tools for thinking. Rules cover both explicit and implicit norms, conventions, and social relations within a community. Division of labor refers to the explicit and implicit organization of the community as related to the transformation process of the object into the outcome.

Activity theory therefore includes the notion that an activity is carried out within a social context, or specifically in a community. The way in which the activity fits into the context is thus established by two resulting concepts:

- rules: these are both explicit and implicit and define how subjects must fit into the community;
- division of labor: this describes how the object of the activity relates to the community.