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Just a Thought

Practice Theory, Pedagogy, and the Design of Learning Environments
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Practice Theory appears to parallel Flow Theory or Theory of Optimal Experience (see Dyck CAE NET Vol. 1, Spring 2002). Both theories are based on belief in a natural intrinsic human tendency to learn, an inner drive that has to do with human development and survival. Peter provides a basis for some design principals in learning theory. The reader is left to expand on this and apply it to a particular design.

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Introduction
The history of school design in the United States has been an unfolding process in which the social and physical environments have been planned in response to the needs of each. Due to the advancements in pedagogical and child developmental theories, the social environment influenced the organization of the physical environment. The concepts that influenced the organization of the physical environment in turn became the guiding principles that have shaped and structured the social environment. In the modern era, the learning and building structures that evolved limited people's transactions and became places "which have been controlled by others and influenced by the assumptions underlying the facilities' existence, what Goffman (1961) has called the overall rational plan." (Rivlin & Wolfe, 1985, 109) While school settings are envisioned as places that promote the development of knowledge, the structures in which learning occurs reflect places in which "the goal is spatial control for the purposes of disciplinary time..." (Kennedy & Moore, 1996, pp. 4) and constrain children's opportunity for learning (Gallimore & Tharp, 1998; Wicker, 1987). Although these remain issues in the design of learning environments, the intention of this article is not to focus on what persists, but rather to examine what might be achieved for school design in the 21st century. To achieve this objective, Practice Theory and pedagogy in learning environments will be examined, described, and evaluated in the process of developing a hypothesis for designing learning environments. Practice Theory will be examined for an understanding of the how individuals become engaged within their environments. Pedagogy will be explored in relation to Practice Theory as a means for understanding how activities are organized to facilitate learning. From these perspectives on how learning occurs within these activity settings, an approach for design will be produced.

Practice Theory
Practice Theory examines individuals' social engagements within their settings. This view builds on (1) a Transactional Perspective and (2) Lev Vygotsky's theory regarding the Zone of Proximal Development (1978). A Transactional Perspective incorporates the notions that "People and psychological processes are embedded in and inseparable from their physical and social contexts.... Time, continuity, and change are intrinsic aspects of psychological phenomena" (Altman, 1992, pp. 268-269). This perspective

understands that human beings acquire knowledge through their transactions with their social and physical environments. Furthermore, human beings cannot be understood as apart from their social and physical settings, but rather as embedded within them. Development is an inherent quality of environments, which afford individuals the opportunity to advance their understandings about people and places. As individuals develop understandings about their environments, they also influence the evolution of them. Not only do individuals influence their settings, but also environments will influence the knowledge that people acquire.

Vygotsky's (1978) Zone of Proximal Development examines an individual's development within settings. The zone represents the developmental distance for learning in isolation and in relationship with others. This view measures the distance between problem-solving activities when working alone and a person's problem-solving activity when assisted by another or others. For Vygotsky (1978), the advancement of learning occurs more gradually for someone who is responsible for resolving predicaments by themselves. If learning leads development (Vygotsky, 1978), the direct advancement and the appropriation of knowledge occurs in social transactions with other people and through tool use when involved in specific tasks.

Practice Theory investigates the development of knowledge in social transactions as they occur. This view explores the situated character of knowledge acquisition within the social and physical environments. Furthermore, this view examines thinking, remembering, and understanding that develop in social situations through tool use that fosters, extends, and reorganizes individuals' ways of thinking (Cole 1995; Cole and Engestrom, 1993; Greeno, 1998; Lave and Wenger, 1996; Werstch, 1995; Werstch, del Rio and Alvarez, 1995; and Zinchenko, 1995). For these authors, the notion of situatedness involves change in knowledge and action that is central to how learning should be understood. Furthermore, changes in knowledge and action are time and place specific and occur as individuals move from a vantage point of peripheral participation (limited engagement) to full participation (direct engagement) in a community of practice (Lave and Wenger, 1991). When individuals are introduced into an activity system, their engagement in the task with another or others is limited. As knowledge is shared with others, over time the engagement within the task may increase. In becoming more engaged they begin to appropriate knowledge for themselves (Newman, Griffin, & Cole, 1995). By appropriating knowledge, they develop their own understanding of the task. Not only are they able to share these understandings with others in order to advance their knowledge, but they are also able to take these understandings with them as they move across and between activity systems. "Hence, since human beings are embedded within their social and physcial settings, as they advance their understandings...." (Lave, 1996).

Pedagogy
Pedagogy is concerned with how the learner is educated so that they are able to transfer their everyday concepts into scientific concepts. Everyday concepts may be understood as the knowledge that the learners bring with them from their primary environments, home, and community, to the activity system. Scientific concepts are knowledge acquired in secondary environments such as school settings. The intent of the school setting for the learner is to facilitate bringing together this disjunction between the individual's everyday concepts and their scientific concepts (Cole, 1992; Tharp & Gallimore, 1988). This congruence for learning or knowledge acquisition, where everyday concepts are translated into scientific concepts and scientific concepts are translated into everyday concepts, occurs through social transactions "where the learner engages in an activity [or activities] deemed meaningful and relevant by the learner" (Dyck, 2002).

In addition, this congruence for learning accepts the concept that knowledge and action in an activity system are themselves constituted by individual, social, and material phenomena. Furthermore, knowledge is simultaneously a prerequisite and a consequence; learning is not linear but rather is cyclic, and each new set of constraints leads toward new affordances to be exploited in the socio-physical environment (Greeno, 1998). The social phenomena of activity systems include the distribution of knowledge within the setting and the social incentives for the acquisition of knowledge through actions. Actions are the strategic activities that refer to individual phenomena oriented to a particular goal.

From my research on how architecture is used as a tool for learning in school settings in a New York City Public Elementary School, activities for knowledge acquisition were organized as part of an integrated curriculum. This curriculum afforded individual and group transactions that were organized to encourage the children to build on their previous learnings in math, science, and social studies (Lippman, 1993 & 1997). By building on their learnings, these activities allowed children to become engaged in the projects at their own pace. While the advanced students began the projects fully participating in the activities, the others began the projects with limited engagement. As the projects and their roles evolved so did their engagement from being limited to full participation.

The activities required the children to distribute their understandings that had been developed from their individual research, their experiences working with others, and in the creation of objects. While groups worked collaboratively planning their projects, they also worked individually on constructing features of it. However, when issues emerged, they would collaborate on ideas to resolve aspects of the project with which one person was having difficulty. These resolutions were produced through negotiations and re-negotiations, in which understandings were developed and defined from the situations (Hatano, 1993). In addition, these negotiations and re-negotiations occurred throughout the construction of the project. Since there was no particular resolution to an issue, they were encouraged to find new strategies for completing their specific tasks. The strategies usually involved the individual approaching another person in the group who would be able to guide them through this situation by either working directly with them or encouraging them to re-think their approach to the task at hand (Lippman, 1997). Hence, knowledge acquisition can be understood as socially constructed through tool-use and in cooperative efforts with others, teachers and peers, toward shared objectives and by dialogue brought about by differences in perspectives. Furthermore, the learner due to full engagement in the development of the projects is able to incorporate this learning for generating, elaborating and revising their knowledge for later experiences.

School Design
From this review of Practice Theory and Pedagogy, an approach for thinking about the design of school settings will be developed. These perspectives will ground an approach for the ideas proposed. This approach will build on research, which reveals that the acquisition of knowledge may be understood as involving a flow of activity that is cyclic in nature. Activity involves tool-use and transactions with others within the physical environments. The physical environment provides both affordances and constraints for learning as individual activities, one-to-one activities, small group activities, and large group activities. Based on this understanding, school environments need to be designed as places that support the manner in which learning occurs. While this approach will develop from current ideas about the design of learning environments, strategies for thinking differently about their planning will be considered.

Tharp and Gallimore (1988) believe that educational settings should be designed to afford access for peers of greater, equal, or lesser skill and support their transactions, verbal and otherwise, in their daily activities. In addition, the design of learning environments should afford individuals' opportunities to actively explore the allowable range of activities encouraged and individuals' opportunities to create and redesign their activities and respond to self-generated changes. The design of these places should not separate and alienate learners from activities and one another. The design should provide variable spaces that support the ways in which people transact as they move from peripheral participation and guided participation with others to full participation in activities where they are appropriating knowledge for themselves.

Current design practice organizes school environments as closed systems. These systems are organized around the administration area, classrooms, and specialized program rooms that are connected by the horizontal and the vertical circulation routes. Based on how people participate in and with their social and physical environments to appropriate knowledge, the school setting should be thought of as an integrated system. Instead of thinking of school settings as places for moving through to get from one activity setting to another, these environments need to be understood as places where the entire system supports knowledge and action so that learning extends across and between settings.

If school settings are designed as places that are congruent with knowledge acquisition and the social situations in which they occur, the administration area, the graded classrooms and the specialized program rooms might be understood as open systems where groups of people assemble. Furthermore, the classroom setting should be planned to support individual, one-to-one, snap group and large group activities (Dyck, 1994). While classrooms and specialized program rooms might be equal in size and include distinct activity settings to support the range of individual and social transactions, its main function would be to bring large groups together so that their understandings about their individual and group activities could be shared. These rooms would be understood as areas where individuals are encouraged to move from a position of peripheral participation to full participation. Furthermore, these rooms would be organized as clusters around a common area where the various groups of people that comprise the social environment of the school would be able to come together to participate in community activities (Fielding, 2002; Hertzberger, 1991; Moore & Lackney, 1995).

Since the primary function of the classrooms and the specialized program rooms would be for large group activities, the corridor, the stairs, and other smaller places would become the areas where individual, one-to-one, and small group activities take place. Corridors and stairs should not be viewed as linear routes to the various activity settings, but rather, should be understood as learning paths where knowledge acquisition is facilitated by the design of these settings. These vertical and horizontal circulation routes would be designed with variable activity settings that would facilitate guided participation with others in the development of full participation in the appropriation of knowledge for individuals. The design of these paths would incorporate areas of individual workstations, niches, alcoves, and access to technology to name a few to facilitate the types of activities anticipated to occur within them. These learning paths would function as extensions of the activities that occur within the administration area, classrooms and specialized program rooms. In addition, they would function as places for knowledge and action to advance the learner's understandings about a specific activity. Ultimately, they would serve as places where individuals due to their full participation in activities with others could generate new hypotheses that would have an impact on the social structure and physical design of their environments.

Conclusion

Learning environments during the twentieth century of the United Sates have been viewed as systems in which the form of discourse and what goes on there are for short term information mastery goals concerned largely with solitary intelligence (Pea, 1996). The individual's experience within these settings involves the reproduction of knowledge. Schooling involves a single adult interacting with many in relatively impersonal social relations in which the social rules, principles, and guidelines govern the activity settings. Success is based on the individuals' own ability to the adapt to this limiting social structure in the classroom. Furthermore, as learning has been structured around individual activity, the school setting has been organized to control behavior. Schools, like prisons, have been designed with classrooms adjacent to one another along either single or double loaded corridors. This arrangement limits the types of activities that can occur and symbolically reinforces for children that they have little power to make changes in their daily lives, affect their environment, or opportunities to examine alternative ways of living.

Even though these notions persist, Practice Theory and an understanding of pedagogy can be used to inform and ground designers about the activities that occur within these settings. With this knowledge, concepts about learning environments can be advanced. Instead of designing learning environments that separate activity settings, school environments would be designed as integrated systems. While these integrated systems would also have distinct activity systems to afford individual, one-to-one, small group, and large group activities, they would not be understood as separating the learning from what occurs between and across settings, but rather as places for extending, reinforcing, and developing knowledge. Each activity setting would have places in which individuals would be able to appropriate knowledge for themselves as well as share their understandings about what they have learned with others. Since knowledge and action are distributed through distinct yet connected activities, then learning environments should provide activity settings that afford opportunities for human beings to advance their understandings about them, in doing so they may also influence the evolution of how their social and physical environments are organized. While these ideas are neither revolutionary nor mainstream, this article presents a framework for understanding how learning occurs and knowledge acquisition that is grounded theory and practice. However, not until learning environments are built and evaluated around these concepts will new theoretical perspectives be generated that alter our understandings about the relationship between the individual and their socio-physical environments.

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