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Emergent Organization in Expert-Novice Relationships

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Abstract

The processes resulting in knowledge acquisition within an expert-novice dyad are intricate, individual, and for the most part, reflectively inaccessible. Examination of expert-novice relationships reveals progressive differential constraining by the expert, enabling the progressive empowerment of the novice. The occurrence of this same organization in a wide variety of settings strongly supports the contention that the organization of the relationship emerges, rather than being controlled by a member of that relationship.

It is the premise of this paper that a relationship is an ongoing exchange between the self and another, as in the process of knowledge acquisition. As such, the processes which result in knowledge acquisition are described as intricate, individual, and for the most part reflectively inaccessible. The framework we employ for conceptualizing social relations emphasizes the similarity in role relationship across a wide variety of interactions: teacher-student, caretaker-child, therapist-client. Each relationship is seen as a dynamic, organized system of roles. The organization which characterizes the expert-novice relationship, here used as an exemplar, is neither expert-directed, nor novice-influenced. Rather, it is an emergent property of a particular interrelationship of individuals within situations with particular demands/goals.

We propose a reconsideration of the expert-novice relationship such that its organization is recognized as a property of the relationship rather than the result of control by the participants. The expert-novice relationship is seen as self-organizing. As such, the coordinated changes which occur in this relationship result from the organization of the relationship rather than originating from the conscious control of participants in the relationship.

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We classify this process in the relationship between expert-novice as an emergent property of a particular configuration of self and subject which is the expert-novice relationship. The use of emergent implies that the organization of this relationship is a transcendent, *a posteriori* property. As such, while it can be influenced by the members of the relationship and may be predictable from the nature of this relationship, it is not controlled within the relationship and it is neither planned nor determined prior to its existence.

This is not to imply that a member of the relationship cannot become aware of the organization and influence it, nor that someone outside the relationship cannot become aware and predict that organization, but that the properties of the relationship are not dependent either on reflection and influence or on classification and prediction. Thus, we employ emergent organization as used elsewhere (Sameroff, 1983; Priogogine, 1976; Kugler, Kelso, & Turvey, 1982) and here extend it to the social domain.

The developmental literature is full of examples of such organization in social environments as varied as: adults use of motherese with newly verbal children (e.g., Bruner, 1978); older children talking to younger children (e.g., Gleason, 1973; Shatz & Gelman, 1973), infant’s learning to return balls to their mother (e.g., Hodapp, Goldfield, & Boyatzis, in press), matched-mismatched pairings of students and teachers (e.g., Brophy & Evertson, 1976; Hunt & Hardt, 1969); teacher-decision making processes in applying knowledge cues about students to instructional practice (e.g., Shavelson & Stern, 1981; Fogarty, Wang, & Creek, 1983); teacher expectancies for student performance (e.g., Rosenthal & Jacobson, 1968; Rosenthal & Rubin, 1971; Brophy & Good, 1974; Raudenbaush, 1984); and mothers encouraging preschoolers’s learning of appropriate social behaviors (e.g., Rogoff & Gardner, in press). The occurrence of the same organization in such a wide variety of expert-novice relationships, with participants of varied developmental capabilities, examined by researchers with a variety of theoretical perspectives, strongly supports the contention that the organization of relationships emerge, rather than being controlled by a member of the relationship.

We see the expert-novice relationship as an open system functioning in a physical and social environment. This relationship’s organization is a function of the requirements of the individuals in the relationship and the constraints imposed upon the relationship. In expert-novice relationships individual requirements of the expert could include desire for independence from the novice, or the fulfillment which comes from shared perception. Individual requirements of the novice could include desire for independence from the expert (Mahler, Pine, & Bergman, 1978), or the satisfaction which comes from mastery of the environment (White, 1959). Shared requirements in this relationship include the comfort and facility which arises from social consensus (Packer, 1983). Requirements of individuals are active at both a role level and an instantiation level and may apply to one or both members of the relationship.
The process of fulfilling individual and shared requirements is a progression which proceeds within constraints imposed by both the physical/social environment and the biological/psychological organism (Winegar & Renninger, in preparation). Psychological constraints have been defined as the formal properties of cognitive structures and processes that are tailored for particular domains and that limit the class of learnable structures in each domain (Kiel, 1981). Rather than limit our discussion to psychological constraints as we understand Kiel’s description of them, we extend this concept to at least include social constraints across domains. Further, we propose that movement in fulfillment of these constraints is accomplished by the process of social constraining.

Social constraining is the aid given by others to help manage the task of acquiring knowledge of the world. This includes directing perceptual experience, orienting action, limiting stimuli and supplying verbal labels. We suggest as examples of such general social constraining: Feurstein’s (1980) discussion of expert directed learning situations in which experts employ a repertoire of techniques to define the relevant dimensions of the environment for the novice, Sigel and Cocking’s (1977) taxonomy of parental distancing strategies which results in discrepancies between the child’s knowledge and the child’s environment, and Freyd’s (1983) theory of a “shareability” constraint which results in simplification of information during the process of communication.

Any changes in either constraints or requirements can result in change in organization of a relationship. This type of “second-order” change (Waltzawick, Weakland, & Fisch, 1974) is exhibited in the expert-novice relationship when, as the novice’s knowledge grows, the expert-novice relationship passes through an awkward stage of transition, and then is either abandoned or reorganized. Such reorganization is often the case in teacher-student relationships which reorganize as peer relationships.

This last point again demonstrates the spontaneous nature of movements in the organization of relationships. While organization can be influenced by members of the relationship system and may be predictable from the nature of the relationship, it need not be controlled within the relationship and need be neither planned nor determined prior to its existence. This does not mean that members of the relationship cannot become aware of the organization and influence it, nor that others outside the relationship cannot become aware of and predict that organization, however we are claiming that the properties of the relationship are not dependent either on reflection and influence or on classification and prediction.

To summarize briefly, similarity in requirements of members and commonality in constraints within environment results in comparable organization across systems. In expert-novice situations specifically, this organization includes the process of constraining which enables the acquisition of knowledge.
The fine tuning necessitated by the intricacy of role requirements has long been noted in language development (e.g., Brown, 1958; Bruner, 1978), and more recently has been pointed out in problem-solving interactions. Rogoff, Gilbride, and Malkin (1983) have explicitly detailed changes in types of interactions between adults and children. They found that adults adjust their interactions on the basis of children's eye contact, smiles and cooperation. With younger children, adults often modeled appropriate affective responses as a means of focusing attention. For example, they report with a child of four months, adults jumped at the appearance of a jack-in-the-box bunny as a means of focusing attention on this event. In contrast, with older children adults modeled affect in order to direct the child's attention to the causal relationship between action and consequences. Specifically, the adult helped a child of six-and-a-half months to turn the crank and then acted excited when a bunny popped out. Thus, while at both ages adults used similar techniques in teaching children, the purpose of each technique was adapted to the adult's perception of the child's performance and ability. Such examples of adult adjustment in accordance with child behavior are becoming more common (e.g., Wertsch, McNamee, McLane, & Budwig, 1980), and are considered important both for parent-child interactions (Thomas & Chess, 1977) and teacher-student interactions (Caldwell & Pullis, 1983). In addition, the phenomenon is not limited to adult-child interactions. Expert adjustment in accordance with novice's capabilities is reported in both teacher-student and therapist-client interactions as well. In the expert-novice interaction the expert's differential constraining of information is the progressive empowerment of the novice. As constraints come to be initiated by the novice they no longer need be controlled by the expert. Thus, as in Vygotsky's (1978) notion of internalization, there is a shift from external social constraining by others to internal cognitive constraints of others by self.

In all cases of expert-novice interaction, as constraining comes to be initiated by the novice, constraints no longer need be exercised by the expert. Movement in constraint control can be viewed as one dimension of social relations. That is, initiation of constraining passes from expert to novice. In any environment there is a variety of co-constructions of potential perceptions, potential representations and potential actions. The expert's differential constraining of available information is the complement to the progressive empowerment of the novice.

Any examination of a system, especially an examination which details a particular aspect of a system, risks oversimplification and a resulting loss of comprehensiveness. It is for this reason that we again state that while in this discussion we focus on the expert-novice aspect of particular interpersonal relationships, and while here we are especially concerned with the processes enabling the efficient acquisition of knowledge within this relationship, we are not suggesting that these foci are the only aspects of interpersonal relationships which are of
importance, nor that these processes occur some how segregated from any other system activities. We are aware (although overwhelmed) that in addition to being considered as an expert-novice relationship, a caretaker-infant relationship can alternatively be understood as a power relationship, a provider relationship or even a peer relationship. Further, processes in this same caretaker-infant relationship also enable affection, sustenance and control. All of these aspects and processes of the caretaker-infant relationship contain, and occur within, other systems which themselves have many aspects and processes. Given the number and extent of those factors that might be considered in a discussion of interpersonal relationships, we have chosen to focus on single expert-novice systems as prototypical of dyads of all types.

This examination of the expert-novice relationship provides support for the role of social constraining in the knowledge acquisition process. This is a characterization of self-other relationships as emerging, complementary, and dynamic processes. The appearance of similar processes in a variety of expert-novice situations suggests that developmental psychology should not only be concerned with specific structural constraints on development but with the general process of constraining in learning as well.

References


