

## What Is It That Develops?

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In seeking to understand the processes that are at the origin of the dynamics of cognitive development, during the first stage of our research (Doise, Mugny, & Perret-Clermont, 1975; Perret-Clermont, 1978/1980; Perret-Clermont & Schubauer-Leoni, 1981), we followed the genetic Piagetian model of children from 5 to 8 years of age. Focusing our attention on the role of social factors, we did not anticipate calling into question the very precise and repeatedly corroborated description of the acquisition of logical operations that characterizes passage to the operative stage in standard conservation tests. Likewise, we also considered as well established the Piagetian distinction between *learning process* in the strict sense of the term (i.e., the acquisition of local competences that do not modify the basic reasoning structure) and the broader use of the term to refer to the development of general cognitive tools.

The purpose of this article is to show that, although this point of departure has effectively allowed us to identify the role of certain social processes—in particular, the interaction between subjects having different points of view—we have, nevertheless, found that this approach has not left unscathed our Piagetian understanding of those cognitive processes just mentioned. It transformed our epistemological understanding of the subject under study: Even when we confronted children with so-called “cognitive tasks,” the children always displayed behaviors that had concurrent cognitive and social meanings.

We have become accustomed to referring to certain behavioral modifications as “cognitive development” or “conceptual acquisitions” or the learning of “specific cognitive skills.” But different observations have drawn our attention to the fact that it is not relevant, from a psychological point of view, to totally disassociate the supposedly “cognitive” elements from those elements that reveal the rules of social interaction or from the social marking of the contexts in which subjects’ conduct is embedded. Effectively, as soon as we seek to evaluate the performance of a subject to assess its advancement level, we are confronted with a subject response that derives its meaning not from the “absolute” criteria of a

level or stage of development but from its relation to the context in which it has been elicited. We have to consider, therefore, that cognitive performances are socially contextualized responses—that is, socially situated responses. The study of the development of these response capacities requires a systematic consideration of the relational and social contexts in which specific behaviors and responses appear.

*Development*, then, refers to the construction of capacities to give adequately contextualized and socially acceptable responses. These, of course, result not only from individual biopsychological maturation but also from series of social interactions in which frameworks and contents have been more or less explicitly negotiated within given institutional and social settings. This understanding opens the way for new interpretations of the rapport between culture and cognitive development (Hundeide, 1989).

#### THE AGE-OLD QUESTION: IS THERE A DIFFERENCE BETWEEN LEARNING AND DEVELOPMENT?

What is that which is learned? Also, what is that which cannot be learned but which, nevertheless, structures (in an internal or external way) the organization of subjects' responses differently at different ages? Let us recall the classic terms of this debate: Can intellectual development be considered as essentially the result of the sum of acquired knowledge, or is it, on the contrary, partially (or even totally) independent of that acquired knowledge?

These questions are not new, but they are renewed if one considers the network of interpersonal relations in which subjects nest their actions and thoughts: Children think, not in a vacuum, but in social and interpersonal contexts in which there are problems to solve, messages to transmit, goals to be attained, emotive challenges to overcome, and past experiences that need to be remembered. Social milieu is one of the factors that profoundly affects a child's mode and form of social and cognitive investment.

Psychologists have often used the term development to refer to endogenous transformations that reveal biological maturation or a supposed comparable psychological maturation. For example, development has been understood to mean qualitative changes in thinking that would not result directly from the accumulation of information but would signal the emergence of new stages or new structures—that is, more powerful equilibration and self-regulation processes. In contrast, *learning* in a strict sense or *acquisition of knowledge*, usually means those processes that pertain to the reception of information. This information can be of many sorts, including factual knowledge, know-how, procedures, problem solving, information strategies, learning of "concepts" (i.e., some sorts of "ready-made concepts" handed down as they stand to the child via scholastic or cultural transmission), and learning of the connections between

facts. These standard studies of learning, however, do not presuppose that the child is the author (or even the co-author) of these systems of connection in either a conscious or an unconscious manner because of endogenous development. On the contrary, they are considered as things that must be taught to children. The accepted use of the two terms, learning and development, marks a difference in attributing the cause of growth of these cognitive resources. But are the causes themselves observable? Therein lies a problem that I propose to show is both epistemological and methodological. We are also confronted here with another distinction in the classical studies, where learning is always precisely defined as the learning of something. In contrast, development is used to define the emergence of something new (e.g., new insights, more powerful logical structures, scientific innovations, new understandings) and, thus, is not taught.

The main goal in this article is to try to make clear that, for learning as well as for development, we are concerned with processes having an omnipresent interindividual dimension. In the case of learning, knowledge exists prior to the situation and is referred to by transmitting agents of the cultural system (e.g., teachers, parents, elders); and cognitive development results either directly or indirectly from collective activities and interpersonal debates (Resnick, Levine, & Teasley, 1991).

But, then, are we justified in identifying learning and development as two distinct processes, the former based on a sort of transmission of cultural knowledge and the latter on creative management of discrepancies bringing about the emergence of new thoughts and ideas? At this point, we believe that this question is biased by insufficient methodological precision, as the following is intended to demonstrate.

#### A REEXAMINATION OF METHODOLOGICAL PRACTICES IN THE STUDY OF LEARNING AND DEVELOPMENT

Since Orne's pioneering work in 1962, many studies have shown that the assessment of subject competencies is apt to be affected by social factors such as the linguistic, motivational, and identity characteristics of the subjects; the individual or the public dimensions of the situation; and the climate of cooperation or competition. This calls for an integrated theoretical framework that would take into account the ways in which these factors interact. To elaborate such a theory, we need precise descriptions of the networks of sociocognitive processes within which subjects think and behave (e.g., at home, at school, in the street) and observations of the impact that these experiences have on individual modes of cognitive integration on the part of the individuals concerned (Beauvois, Joule, & Monteil, 1987-1989; Hinde, Perret-Clermont, & Stevenson-Hinde, 1985; Resnick et al., 1991). The difference between learning and development mentioned earlier might then appear to belong not so much to the subject but to the

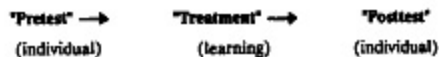
relative position of the observer and the observed in the methodological steps taken to study cognitive learning or cognitive development.

In effect, when a researcher wishes to study learning, his or her subject is an individual who is placed in a situation that induces learning. Conversely, when he or she wishes to observe supposed endogenous development, the investigator usually adopts a less interventionist position, where the subject can be considered without being explicitly provided with particular cognitive objectives to be achieved. The subject, therefore, does not feel induced to learn but feels observed without having the observer's intention clearly defined for him or her. In effect, even if the observer often has a hierarchy of stages and evaluation criteria in mind, he or she does not explicitly assign them to the subject as objectives to be achieved. On the contrary, the observer often even hides them from the subject. The subject can only seek out, in a more or less conscious manner, the nature of the responses that he or she presumes are expected by the observer (Grossen, 1988; Perret-Clermont, Schubauer-Leoni, & Trognon, 1992; Schubauer-Leoni, Bell, Grossen, & Perret-Clermont, 1989).

This means then that the differences in the paradigms used to collect the data (standard experimental design treatments vs. observations techniques focused on certain aspects of the behavior) create the differences between data collected as learning and data pertaining to development. But, in fact, from a sociocognitive point of view, in both cases the phenomena under study are the same: How does a subject behave when facing tasks and expectations? Of course, the tasks and the social agents differ, depending on the context (e.g., school, laboratory, family, street, playing field), but in each case the subject has to solve problems, maintain relationships, save face, send messages, understand questions, try to provide answers, achieve goals, and manage emotive reactions and desires.

## Standard Paradigms

*Paradigm for research on learning.* In standard studies of learning, the usual paradigm consists of an individual pretest followed by a so-called "treatment" (learning) session, which is followed by an individual posttest, to measure progress as a function of the nature of the treatment.



Standard paradigm for research on learning.

The pretest and the posttest are measurements made of the individual. The treatment measures the influence on the individual of external factors that are manipulated within the experiment for the purposes of being studied. It is by

means of an intentional and deliberate action of the adult (treatment) that the child is expected to move from one cognitive level to another.

*Paradigm for research into development.* Research into development generally has been concerned with providing a means of observing the effect of different variables (e.g., living conditions, parental attitudes) and, especially, the effect of age on the evolution of children's competences. The latter are measured through subject performances in instigated situations (e.g., tests, experiments, questionnaires).



Standard paradigm for research into development.

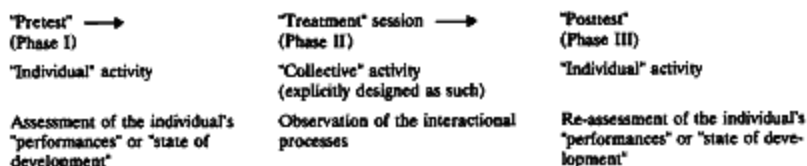
The paradigm often consists of an individual test, followed (after a time lapse of varying length) by a retest phase (identical or modified version of the former test), which in turn is followed by taking one or several similar measurements.

Although in this case, the experimenter (who is generally confined to the more passive role of an observer) does not deliberately try to provoke a modification of the subject's conduct, the fact remains that he or she still has expectations (as a function of developmental hypotheses) concerning the behavior of the subject.

Furthermore, the subject, confronted during the retest phase by repetitions of or analog versions of the trial, takes into account his or her previous experiences. From this point of view, a retest is never identical to a test. The retest might also be interpreted as negative feedback from the subject's earlier performance on the test for various reasons—in particular, because the subject can easily imagine that it would be of little interest and thus unreasonable to be required to retake a test on which he (or she) had already performed well. From this point of view the "retest" development research paradigm can be considered as a "treatment" comparable to that of the learning research paradigm.

*Experimental paradigms for research into the effects of social interaction on cognitive performances.* What do these treatment phases have in common? In our own research, we have concentrated on studying the socio-cognitive processes at work when two interlocutors do not have the same point of view. This occurs when an adult interviews a child or when two children with different perspectives have to collaborate (Perret-Clermont, 1978/1980; Perret-Clermont & Nicolet, 1988; Schubauer-Leoni, Perret-Clermont, & Grossen, 1992). In a first generation of work, we set up experiments to observe under which conditions such confrontations with other points of view induce learning and/or

development. The paradigm was standard: A pretest measured the individual's performances, and a posttest assessed to what extent various experimental treatments had affected performance level. Results have repeatedly demonstrated the effects of sociocognitive conflicts on the growth of individual performances.



Classical paradigm for research on the effect of social interaction on cognitive development.

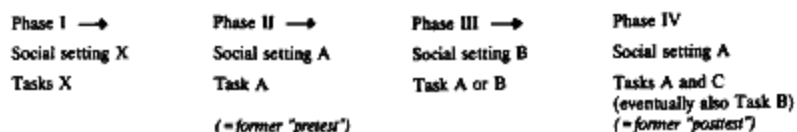
Yet we rapidly had to regard this paradigm as insufficient: It erroneously leads the psychologist to consider the pretest falsely as an "individual" activity, and, as in the case of the retest mentioned earlier, it excludes clear consideration of the meaning that the subject attributes to the social situation of testing. Indeed, during the pretest, the subject is confronted with a task that is always presented by an experimenter. Sometimes he or she even has to solve it in a face-to-face relationship. In all cases, the subject looks for information in order to identify what kind of answer is expected. This is also true during the posttest. As for the retest, in this paradigm, the subject can recognize a similarity between the posttest and the pretest and is, therefore, likely to reconsider his or her behavior and to adjust it because of this repetitive situation. In this endeavor, the subject can be observed trying to make use of all the information that can be grasped, including the experimental treatment. Not only the treatment session but also the pretest and posttest are collective settings in which the individual subject has to situate himself or herself in relation to demands coming from other persons and has to coordinate with others.

The classical paradigm that we have just exposed also underestimates the fact that not only is Phase II a "treatment session" but the pretest and posttest are also to some extent treatment sessions. The test-retest effect transforms a "test" into a treatment; indeed, during the testing situation, the child becomes familiar not only with the task but also with the experimenter's demands. In trying to cope with them, he or she is induced to draw connections between previous experience and the present situation. This may lead the child to elaborate new cognitive and social answers and, minimally, to learn his or her role in the present "staging" of the knowledge.

A series of empirical investigations illustrates this. Grossen (1988) observed interactions between adult and child in a classical Piagetian test. She can point to a series of processes by which the adult gears the child's attention in order to bring the child around to giving the answer in which she, as a trained psychologist, is interested. At the same time, the child tries to make sense of the adult's behavior in this preplanned encounter called a psychological test (see

also Grossen & Perret-Clermont, in press). In a similar situation, Schubauer-Leoni et al. (1992) varied experimentally the status of the adult. During the pretest, in one experimental situation, preschool children were told that a lady addressing them was coming to "play a little game." In another experimental situation, preschool pupils were told that the lady was a teacher. The same was done with primary-school children. The results show that primary-school children perform better when they think that the other adult is a teacher, whereas preschool children perform better when they think she is a lady who plays games. Obviously, the pupils' understanding of the experimental situation depends on their previous socialization to the adults' role within the institution in which the test takes place. (For other examples of the interdependence between the experimenter's activities and the testee's activities, see also Iannaccone & Perret-Clermont, 1993; Light & Perret-Clermont, 1989; Schubauer-Leoni et al., 1989.)

These results and considerations led us to reconsider our experimental paradigm and to extend it in the following way:



Restatement of the paradigm for research on the effect of previous social interaction on cognitive performances (socially situated responses).

In this paradigm, we now consider that the experiment consists of different phases with different tasks, and we try to understand the microhistory of the subject's cognitive and social behavior. Phase I can be created experimentally in the laboratory or can refer to the natural setting and the natural tasks that the subject faces before entering into the experiment. In Nicolet and Iannaccone's (1988) experiment, subjects were asked to participate in a common social experience before undergoing the classical test of dividing juice among themselves in equal quantities. The results showed that the subjects' cognitive performances were affected by their having previously played a cooperative rather than a competitive game, because this caused them to give a different kind of attention to the normative social marking of the task.

Perret-Clermont and Schubauer-Leoni (1981) presented subjects with different "stagings" or versions of the task. In one experimental condition, the scenario required the subject to share the juice between himself or herself and an adult. In another condition, the subject had to divide it between twin dolls. It made a difference: The experimenter-child condition led to higher cognitive gains in the posttests than the dolls condition. But taking other variables into account, it appears that children of socially privileged origin were unaffected by this manipulation of social context and that the observed effect was entirely due to

the behavior of the underprivileged children. We are confronted here with an interaction effect between Phase I (natural experience) and Phase II ("pretest"). In the same experiment, Perret-Clermont and Schubauer-Leoni had two experimental conditions for Phase III: interaction with a more advanced peer or interaction with a modeling adult. Subjects made greater progress in Phase IV after having interacted with a conserving peer than with a modeling adult; and the previously mentioned dolls-versus-experimenter effect had disappeared for the subjects of the peer-interaction condition but was found again in the modeling condition.

Grossen (1988) explored the role of previous experience by inviting subjects to role-play the experimenter. She found that children of different cognitive levels understand the adult's behavior differently and this leads them to different strategies to establish an intersubjectivity with the experimenter. This, in turn, has different impacts on their cognitive performances.

## FUTURE RESEARCH

If what we have commonly considered as individual states of development or as individual performances are, in fact, the result of socially situated interactional processes, we have to reconsider our models of development and learning (Perret-Clermont & Nicolet, 1988). This might open the way to new understandings of the teaching activity not as a one-way process but as a double-sided cognitive and social adventure concerned both with the transmission of previous experience and the emergence of new ideas—two equally socially mediated processes.

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