EDITOR'S NOTE

Over the years the *Newsletter* has been fortunate to receive contributions from researchers in many countries interested in the relationship between social environments and the development of thinking. The article in this issue by Grossen and Perret-Clermont, which critically examines the role of social context within Piagetian theory, is the first contribution from a French-speaking psychological group to appear in the *Newsletter*. Veteran readers will note the similarity between ideas presented by these researchers and ideas stemming from the work of Soviet psychologists who have dealt with these topics.

Also in this issue, John-Steiner reports on a study of the learning styles of Pueblo children from a number of Native American communities, Zukow summarizes research on mother-infant interactions in United States and Mexico, and Koivukari comments on the cognitive quality of classroom interactions.

The final article, by Anderson, Díaz and Moll on community-based research, continues a section of the *Newsletter* initiated in our last issue. The intent is to provide a forum for brief reports of work still in the planning stages or in progress. This section will become a regular feature of the *Newsletter*. We hereby encourage submissions particularly marked "Work-in-Progress."

Luis C. Moll

Some Elements of a Social Psychology of Operational Development of the Child

Michele Grossen
Anne-Nelly Perret-Clermont

University of Neuchatel, Switzerland

A Look at the Child Who Creates Otherness

The concept of a child as not simply a miniaturized copy of the adult but as a qualitatively different being having its own way of functioning and its own mechanisms of thought (if not an absolute otherness) has not always seemed evident. On the contrary, those studies aiming to show the otherness of childhood in comparison with the adult state only developed gradually, successively transforming the different educational and pedagogical conceptions arising from them.

At the turn of the century, doctors like Montessori, Decroly, and Gesell insisted on the importance of organic maturation in development. According to them, the child's capacities to discover and understand the physical and social world in which she interpolates herself arose from the organic maturation of her physical, perceptual and motoric possibilities. From this perspective, the cognitive and affective development of the child is a purely internal process, with the implication that a "positive milieu" could benefit this slow development which, stage by stage, led to the adult state. In this view, the role of the educator in the development of the child remained, for the

most part, a passive one: not being able to "force" the physical, affective or cognitive maturation process, the educator assumed the role of "nurturer" in responding to the cognitive and affective needs which gradually appeared in the child.

Following these authors, Piaget proved original in no longer describing the child's development as a direct product of biological maturation but, as the result of the constant interaction between the child and the surroundings. According to Piaget, the child is not only the product of a development that takes place almost "in spite of himself", to the contrary, the child is the *cause* of this development. In fact the child *is not* adapted to the environment but adapts himself to it actively by a process of equilibration between his need for understanding and the resistance which he opposes to reality. These equilibration processes take form through a subtle play between accommodation (to reality) on the one hand, and assimilation (to the subject's structures) on the other, which permit him to develop the cognitive instruments which are the structures of thought. Piaget thus developed the notion of *stage*, not in order to describe the cognitive development of the child linearly but rather to show that at each step of this development there is a corresponding complex logical structure having its own internal coherence, separate from what could otherwise be the intelligence of the adult. One of the tasks of developmental psychology thus became the description of these stages and an understanding of the processes which allow the individual to move from one stage to another, that is, to construct more powerful instruments of thought. For Piaget, the causes of development are to be sought primarily in the processes of a subject's self-regulation.

On the Limits of the Piagetian Approach

As fruitful as Piaget's theory was for understanding cognitive development, it was at the same time the object of much criticism, principally in that area which concerns Piaget's reference to biology. The processes of self-regulation in biological functioning would be homologous to those observed in the functioning of intelligence: the development of intelligence in which successive stages encompass one another, clearly has a biological and internal origin in the subject. By this conception, both the subject and the object have very peculiar epistemic status (Carbonnel, 1982),

the former because it is considered as a general being, without a real body, independent of the social milieu in which it evolved its position in this social reference group; the latter because it is conceived as a physical object that offers resistance to the subject, but which at the same time exists independently of the subject and the unique significations which it can assume in his eyes.

According to Light (1983), this conception led to a great neglect by Piagetian psychology of the social object on three levels:

1) On the level of *the social object in contrast with the physical object* which gave rise to research (following the early works of Piaget) on the development of social notions, like friendship, altruism, etc. (that of Kohlberg, for example). This research rested on the postulate that a structural homology exists between cognitive notions and social notions, the latter not supplanting the former.

2) On the level of *social factors* liable to influence cognitive development, which gave a place to research on the role of social interaction between children.

3) On the level of *cultural aspects* of the transmission of knowledge (the word "culture" being taken here in the sense of a tacit understanding of that which is implicit in our different forms of social exchange, particularly in the language, in the given cultural group).

In our view, these different points leave unresolved the many ambiguities that arise as soon as Piagetian theory is applied to the pedagogical field. If the role of social factors is minimized, if the processes of equilibration which precede the passage from one developmental stage to another are really biological in origin, the educator may feel reduced to patient waiting while his pupil develops himself actively to the next cognitive stage. There is no prescription for what to do in case some cognitive notion proves itself assimilable by the child only with difficulty. The educator thus would risk concluding that he need not implicate himself personally in the education of the child but, at most would organise a reality "resistant" to the predictions of the child. As if the child would not perceive the teacher except as the organizer of this reality! This view could also lead to neglecting the importance of interaction between children in the acquisition of knowledge.

It would show a preference for learning in individual situations, the pupil being perhaps in the hearing of the teacher or maybe more active and independent, but isolated from different points of view of his comrades and the incidental discussions that would result. Elsewhere, this direction seems to point to the forms of logic discussed by Piaget as the only possible forms (quasi-ineluctable because they are biologically inscribed in the organism) of the evolution of thought. The standard of reference (from "less developed" to "more developed") is, in this system, formal logic. It seems to us that an explication of intelligence in terms of *maturation*, always has as an implicit hypothesis that intelligence is the quality of *one* isolated subject or a characteristic of a *stage*.

As complex as the process of accounting for the structures of intelligence and of the driving mechanism of this development may be, it seems to us, that the evolution of intelligence is not reducible to *one* central determinant, even if organic maturation is indeed a factor of development. Intelligence is not only a cognitive fact practiced for the pleasure of functioning (and "for the beauty of the proof") or because of vital necessity to adapt itself to the physical environment. It is also always a social construction, the fruit of the interaction between many individuals, belonging to a group which has its own objectives. Thus, adaptation is not only vital for an individual but it is so for the social group in its collectivity. That which sets up the development of cognitive instruments, is doubtless, not as much the isolated plan of understanding a physical object as that of understanding the individuals with whom one lives and from whom one expects a reciprocal understanding. The conjoint elaboration of systems of action and of significations thus give a sense (which is not entirely internal and individual) to the development of new competencies which, without this base of intersubjectivity, would prove themselves completely useless and futile.

Let us note, too, that it is not only individuals, but groups and socio-cultural traditions which establish the scale of values that affirm for the psychologist that one behavior is "more adaptive" or "more developed" than another. The criteria of cognancy for logical reasoning did not, themselves, exist *a priori* but are in fact the result of a long elaboration process. Similarly, recourse to these criteria by authors like Piaget is the fruit of a

consensus at the core of a certain philosophical and scientific trends. In short, many factors interact with one another: somatic, psychological, and cultural factors, which in reality are hard to distinguish from each other and which demand rejection of an explanation that, in a reductionist way, considers only one of the terms.

The Conditions of Intellectual Evolution

Some Empirical Illustrations which Demonstrate the Importance of the Social Context

The attention of some researchers, when it was applied to studies of interactions between the mother and the infant, made apparent the contingent aspect of responses with reference to the social context. We cite here, for example, the works of Schaffer (1981) which showed that, from the beginning of life, the newborn is active (and not passive) in the interaction with his mother to such an extent that, even in the earliest social interactions, certain characteristics of organized (not absent) behavior of the baby will have an influence on the behavior of the surrounding people. Schaffer describes the existence of a sort of pre-dialogue between the mother and baby at the time of sucking: mothers interact with their babies in perfect synchrony with the rhythms of the child's sucking. When the baby sucks, the mother remains silent and tranquil in general, then at the moment that the baby pauses, mother begins to talk and to caress the baby. This form of dialogue prefigures, by promoting it, the social interactions which will regulate subsequent dialogues.

The role of social interaction in the development of intelligence has been studied in a series of experiments (Doise & Mugny, 1981; Perret-Clermont, 1979; Perret-Clermont, Brun, Saada & Schubauer-Leoni, 1982) conducted in different operational developmental domains (logical, spatial, numerical, graphical) in particular among children of 4-9 years of different western social backgrounds.

The research that one of us conducted (Perret-Clermont, 1979) studied the conditions of social interaction that precede the elaboration of operational concepts, specifically that of conservation of liquids. This study showed that children of 6-7 years (the age at which the notion of conservation of liquids is constructed), having the chance

to interact around the task with other children of the same age, progress further in the acquisition of this concept than children who have not had this chance.

More exhaustive investigations have supported evidence of facts of three classes:

1) It is interaction between two children of different operational levels which gives rise to the most significant progress. Consequently, it was proven that it was not the distance between the operational levels which permitted operational progress so much as the simple divergence of points of view between the children. From this situation, in effect, results a conflict called *social-cognitive* because it rests on cognitive notions, all the while arising and resolving itself in the confrontation between individuals. Social-cognitive conflict incites each partner to keep track of the point of view of the other in order to resolve the social conflict which, more or less explicitly, arises from this confrontation, and to restructure his thought to arrive at a more global comprehension of the problem posed.

2) Social interaction doesn't always have a structuring effect on the responses of the child. It seems that the very fact of perceiving the existence of a divergence of viewpoint (at the time of such a conflict) presupposes a certain level of cognitive development. The child must thus have a *prerequisite* level to be able to engage in the occasion of social interaction, a prerequisite level which is itself the result of development on organic, psychological and social planes. Recent research seems to show for example, that a child of less than four years rarely profits from a social interactive experience around the notion of number conservation.

3) A closer analysis of the results obtained sometimes reveals differences in the operational level of the subjects as a function of variables of a social nature such as their sex and their social class. From the time when, in the first phase of the experiment (Phase 1), the children individually go through the conservation of liquids task, one sees differences of this type. Often, at the same time, after a phase of interaction between the children, a new individual assessment of each child (Phase 3) makes clear that the differences observed at Phase 1 are reduced or eliminated (Perret-Clermont, 1979; Perret-Clermont & Schubauer-Leoni, 1981).

4) These latter results, perhaps because they demonstrate the impossiblity of constructing a "culture free" test even with reference to a genetic theory of development, have led us little by little to focus more fruitfully on the test situation itself. insofar as it constitutes part of the cognitive processes which the child will be able to elaborate. In research conducted in Tessin (Perret-Clermont & Schubauer-Leoni. 1981), the task consisted again of asking children to pour colored liquid into two glasses of identical dimensions and then to transfer the contents of one glass into a glass of different dimensions (higher and narrower, for instance). After Phase 1 (the phase of individual assessment of conservation of liquids), the subjects (6-7 years old) were assigned to one of two different experimental conditions: in the first, one of the glasses was said to belong to the experimenter and the other to the child. In the second experimental condition, the glasses were assigned to two twin dolls. In each condition, the experimenter asked the child if there was the same amount of liquid in each glass, or more in one glass. The results showed an advantage in operational level gained in the first condition (sharing between experimenter and child) over that shown by children in the second condition (sharing between the dolls), the difference between the conditions seeming particularly significant for the girls in the sample at that age.

It appears, then, that the child reaches a higher level of reasoning if he is personally involved in the task. A task which demands a transposition from a more abstract situation seems harder, even if the situation of sharing between dolls otherwise avoids the problem of the respective status of the child and the experimenter, which could also be an obstacle for the child in resolving the task.

From the question of the precocity of conserving behavior to those of the conditions of elaboration of the correct response. Much research has revived Piagetian tasks while proposing variations on the classic Piagetian situation. Donaldson and McGarrigle, for example, got more correct responses on a conservation of number task in a so-called "accidental" situation (in which a clumsy bear transformed one row of counters) than in the "classic" Piagetian situation where the experimenter ostensibly performs the transformation (Donaldson, 1978). The interpretation of these results given by the investigators

was that the accidental situation conferred a significance to the task which is not apparent to the child in the classical situation. According to Donaldson and McGarrigle, only the early conserving responses obtained in the accidental situation (as well as in other modified situations) show the *real competence* of the child while the responses obtained in the classical situation thus merely constitute "false negative responses." This study has since been replicated widely, but only, it seems, with the purpose of verifying the results which pertain to the early advent of conserving responses obtained by the authors.

Parrat-Dayan and Bovet (1982) also entered into the debate by pointing to three sorts of artifacts which, according to them, explained Donaldson and McGarrigle's results:

1) An *effect of distraction*, present in many studies of the same type. The intervention of the "clumsy bear" who destroys the arrangement of the counters diverts the child from the true problem posed, that of transformation. In fact, the circumstances under which the transformation of the row (the game) takes place, cause the child to treat the accompanying modification as unimportant and to neglect this aspect of the problem.

2) The situation of "accidental" conservation does not involve a *demand for justification* of the response supplied by the child, which constitutes neglect on the part of the researchers, of the logical operations and of the functioning that underlies the responses of the child.

3) The *number of counters* used in the "accidental" situation is less than that used in the classical situation, which is a facilitating factor for the child.

In fact, examining this debate closer, it seems to us that the resulting impass rests upon the fact that it is the *precocity* of the appearance of conserving behaviors that is considered to constitute the heart of the problem. Even if at the outset, Donaldson and McGarrigle strongly insisted on the notion of *context* in which a cognitive problem is posed to the child, the definition that they give to the word "context" remains very limited. In effect, for them, the classical conservation situation obscures the resolution of the task because the experimenter unwittingly leads them to believe that the level of the liquid in the glasses is important. Donaldson (1978) seems to imply that

it suffices to present a cognitive task to the child in "favorable conditions" for the child to solve it without difficulty. At the risk of being a bit polemical, we would say that the interpretation made of classical Piagetian experiments claims: "the context is only important and only plays a role (of screener or facilitator) for the next experimenter!"

Now, it seems to us that if one considers that each situation is *always contextualized,* the question of early conserving responses appears entirely secondary. One would no longer ask if the child *has* or *does not have* the notion of conservation for example (the question asked by both Donaldson and McGarrigle and by Parrat-Dayan and Bovet) but rather, *under which particular conditions* does a child come to elaborate a correct cognitive response or a system of adequate responses. In other words, more precisely: *when does one succeed in proving which understandings and competencies, in which situations and as a result of what kinds of experiences?* One sees directly that the notion of stage does not permit us to answer the question in an explanatory manner since one would have to therefore explain how the individual comes to such a stage, which takes us . . . back to the original question.

Thus, the more interesting issue is to explain the complexity of the complete situation giving rise to learning, because:

1) the situation always means the presence of two social agents. In experiments on cognitive development, these most often include an adult faced with a child, that is to say, two social agents of different social status, not sharing the same cognitive, affective and social acquisitions. This basic fact which has been often neglected, seems to us very important since all apprenticeships entail a cognitive and affective interplay which interacts not only with the task itself but also with the relation which establishes itself between the experimenter and the child.

2) the situation *always* unfolds in a specific scene, that is to say, that each situation always includes a "distractor" or a "screen," the only difference being that in certain cases the experimenter (again as social agent) is aware of it and in others not. In effect, the whole logical problem always occurs as a *specific* content (Haroche & Pecheux, 1971, call it "setting") which refers it to affective and social representations. These, in the

eyes of a child, have a certain importance of which the adult is unaware. For example. in the interactive phases resulting in the greatest gains (Perret-Clermont, 1979) the children often accorded a lot of significance to the color of the candies they were supposed to share, while for the experimenter, the point of the game is plainly quite different.

To go beyond global analysis in terms of stages in order to capture the dynamic of development of behavior in the specificity of contexts which create it. This change in point of view introduces a series of new questions which are legitimate lines of research as well:

1) Can one really assume that the cognitive sphere "functions" independently of the affective and social spheres? Is it not more pertinent to ask ourselves rather *in which situation and under which conditions does the human being reason "logically"?*

2) How to establish *intersubjectivity* between the experimenter and the child in Rommetviet's sense (1976, 1978) and in particular, what are the expectations of the child in the situation with which he is confronted? Several of our studies showed, for example, the considerable importance of the *consignment* which, often inducing the idea that the task is a "game," creates an expectation of another order for a child. Finn (1982), for example, investigated the behavior of a child in a situation where the tasks presented were insoluable, and where the usual rules concerning the manner of posing a cognitive problem to a child are violated. In effect, in Finn's experiment, the first task proposed is insoluable because of a lack of necessary information for resolving the task. The results show that all the subjects except one responded that they *did not know how to solve* the problem, and not that they *could not solve* it. In the second task, the experimenter asked the child the following question related to the notion of class inclusion: "Are there more Compahs or Wombles?" The first term of the question (Compahs) is a word invented by the experimenter whereas the second (Wombles) is known to the child. Almost all the children responded that there were more Wombles than Compahs because they "knew" the Wombles.

This research is interesting to us because it shows that a cognitive task does not occur in a social void and that it is never "purely" cognitive.

On the contrary, the child confronted with a problem (as "cognitive" as it may be) always grasps it out of his own experiences and understandings, social and cognitive. These determine the precise expectations of the child, for example the expectation that the adult asks serious questions which have an answer.

3) How do the subject's *social representations* of the task and of the situation he is confronted with interact with the solution of the task itself? In this regard, Doise and Mugny (1981) proposed the hypothesis that situations for the child are easier where the homology between the domains evoked (through the bias of the social representations) and the immediate field are such that the subject can get support from the first for structuring the second. This hypothesis leads us to grant more importance to all that which, in the task, precisely calls upon the "evoked domains" of the child, that is to say, to all that is usually considered as non-pertinent because it is not in the direct service of the logical solution of the task. Elsewhere (Perret-Clermont, Brun, Saada & Schubauer-Leoni, 1982), we have called this the effect of the "scene." We studied it in connection with the work on the notion of conservation of liquids in different conditions of sharing, as well as on the notion of conservation of number.

4) Under which cognitive and social conditions could a subject arrive at a kind of *generalization* of cognitive behavior developed in a specific context? In our opinion, this question was avoided in the many research projects of Donaldson (1978) and others in that tradition, which emphasized the precocity of operational responses. These projects, in their particulars and peculiarities, do not explain why the child attains a solution to a conservation problem at one time versus another in the classic Piagetian situation. They do not allow a means to examine more general psychological processes which underlie the responses of the child.

To answer these questions, it seems to us, would be to facilitate advances in our understanding of the development of intelligence in the child and at the same time to invite us to reexamine in detail the cognitive dynamic of our school settings which are not always as "pedagogic" as we would wish them to be.

Notes

References

Carbonnel, S. (1982, June-August). Influence de la signification des objets dans les activités de classification. *Enfance, 3.*

Doise, W., Mugny, G. (1981). *The social development of intelligence.* Paris: Intereditions.

Donaldson, M. (1978). *Children's minds.* Fontana/Collins.

Finn, G. P. T. (1982, February). *Children's experimental episodes, or ask a silly question: But get a serious answer.* Jordanhill College of Education, Psychology Department.

Haroche, C., & Pecheux, M. (1971). Etude expérimentale de l'effet des représentations sociales sur la résolution d'une épreuve logique à présentation variable. *Bulletin du C.E.R.P., 292,* 115-129.

Light, P. (1983). Social cognition and Piaget: A case of negative transfer. In S. Modgil, C. Modgil & G. Brown (Eds.), *Jean Piaget, an interdisciplinary critique.* London: Routledge & Kegan Paul.

Parrat-Dayan, S., & Bovet, M. (1982). Peut-on parler de précocité et de régression dans la conservation? Vol. II. *Archives de Psychologie, 50,* 237-249.

Perret-Clermont, A. N. (1979). *The social construction of intelligence.* Berne, P. Lang, Collection Exploration.

Perret-Clermont, A. N., Brun, J., Saada, E. H., & Schubauer-Leoni, M. L. (1982, April). Processus psychosociologiques, niveau opératoire et appropriation de connaissances. *Interactions didactiques* (No. 2). Universités de Genève et Neuchâtel. A longer version to appear in H. Tajfel (Ed.), *The social dimension.* Cambridge, MA: Cambridge University Press, 1983.

Perret-Clermont, A. N., & Schubauer-Leoni, M. L. (1981). Conflict and cooperation as opportunities for learning. In P. Robinson (Ed.), *Communication in development* (pp. 203-233). New York: Academic Press.

Rommetveit, R. (1976). On the architecture of intersubjectivity. In L. Strickland (Ed.), *Social psychology in transition.* New York: Plenum Press.

Rommetviet, R. (1978). On Piagetian cognitive operations, semantic competence, and message structure in adult-child communications. In J. Markova (Ed.), *The social context of language* (pp. 113-150). London: Wiley.

Schaffer, H. R. (1981). *Le comportement maternel.* Mardaga, Bruxelles.

Learning Styles Among Pueblo Children

Vera John-Steiner

University of New Mexico

Are there differences in the patterns of thought and in the strategies of learning among individuals raised in different environments? This question, which has interested cross-cultural researchers for a long time, became our focus of research as a result of our educational work in Pueblo communities in Arizona and New Mexico. One aspect of Pueblo life appeared particularly significant in its implications for cognitive development, namely, the opportunity these children have to observe their elders at work over long stretches of time while they farm or produce crafts. The role of observational learning is examined in this study in relation to other styles of learning such as learning through exploration as well as through social dialogue.

Observational Learning

In rural and tribal communities the developing child finds him/herself in the company of elders who are engaged in social productive work; such opportunities for being part of the world of adults are less available for urban children. As many bilingual children or their parents have come from such settings, a closer examination of the implications of this interpersonal mode of learning is warranted. In the case of Native American children raised in the Rio Grande Pueblo communities, we found that they are able to observe adults involved in sequences of activities integrated over time (farming, crafts, pottery, tanning). A child has some freedom in wandering around in these village communities, and he/she is likely to spend time with a favored relative or neighbor. In contrast with formal learning in classrooms where a child's teacher is not part of the child's home life, the young learner in a Pueblo community is free to choose a person of emotional significance as a teacher. Children are allowed and expected to take a larger and larger part in the performance of some of these activities as they grow older, but they are not rebuked for making mistakes; their participation is up to them as learning by observation is not tied to a specific reward system. Some