From the study of psychological stages to the understanding of the processes involved in the cognitive development of child and pupil

Anne-Nelly Perret-Clermont

University of Neuch\^atel, Switzerland and Facult\^e de Psychologie et des Sciences de l'\'Educati\on, University of Geneva, 1211 Geneva 4, Switzerland

Piaget's theory and procedures: An approach derived from biology. Piaget and his collaborators study the development of intelligence by considering it to consist of the construction of a set of mental operations allowing the individual to adapt to his environment.

This approach - as Piaget himself has often suggested - is profoundly inspired by the biological perspective from which it was born. It has adopted some of that perspective's features, particularly the interest in the forms that the organism takes during its development. We suggest that this kind of interest is revealed in the attention that Piaget has devoted to describing the different stages of elaboration of cognitive structures. In Piaget's perspective the stages of development must be characterized by forms (that is, structured) of thought.

Let us state this immediately, since Brairard (1973a, 1973b) adds to the critique of the notion of stages a reflection on its possible consequences, in particular on the implications that Piaget originally had in mind. The problem of knowledge as a biologist and epistemologist and not as an educator. It seems that from the beginning Piaget considered himself an observer and not someone committed in the way an educator is. Consequently he was not inclined to take into consideration - nor, hence, to evaluate - the eventual consequences of an educational commitment.

From the study of forms to the study of that of processes. We can note, however, just that as science of biology, in exploring experimental possibilities went beyond its initial interest in simple observation of forms to attempts to unravel the processes at work, so have Piaget and his collaborators, who during the last decade seem to have abandoned the description of stages and their characteristics in order to study the processes at work in development. They have described these processes in terms of autoregulation and equalization (Inhelder, Sinclair & Bovet 1974, Piaget 1975).

We agree with these authors that the study of the processes as they unfold in the individual is crucial to understanding its forms and its eventual stages. This is why, in this communication, we will not be concerned with Piaget's approach to the description of stages but with what seems to us a more fundamental problem: Piaget's view of the mechanisms that produce the stages. Let us recall that Piaget presents the stages he describes as "universal," as something like a cognitive developmental characteristic of the human species; he does not seem puzzled by the possible ethnocentric biases in the fact that the intercultural studies conducted by his school always show a development of urban middle-class occidental children compared to their peers of other social backgrounds. This is attributable, we believe, to Piaget's conception of the impact of social factors on cognitive growth: In Piaget's theory social factors may facilitate or slow down development, but they cannot determine it. The experimental study of this question, we believe, could open the way to a better understanding of the nature of operational thought.

A process presently neglected by Piaget: From the experimental world to social interaction as a causal factor of development. In their recent work, Piaget and his collaborators present the cognitive development of the child as arising essentially from the processes of autoregulation built into the subject as well as from the dynamics of the structures themselves. But in various experiments we have conducted during these last years we have observed data revealing a reductionistic aspect to this conception: Indeed we have shown that it is primarily when a cognitive conflict is socially experienced that important cognitive restructurings can be observed (Deise, Muyzer & Perret-Clermont 1975; Perret-Clermont, Muyzer & Deise 1976; Perret-Clermont 1980, Muyzer, Perret-Clermont & Deise, in press). Precise comparisons of different experimental conditions have shown that it is when two individuals with two different points of view are brought to interact on the same task (or to solve the same problem) that the necessity to coordinate actions (or points of view) emerges and provokes a sociocognitive conflict between the partners. This sociocognitive conflict gives rise to new cognitive elaborations, the consequences of which are noted on two levels: that of a collective performance superior to individual performance and that of a subsequent progress at the level of the operational structure of the individual's thought.

The cognitive conditions of this conflict seem to have been relatively widely studied too, for instance, Inhelder, Sinclair & Bovet 1974; Koch 1972; Leclerc & Pierrat 1973; Perret-Clermont 1980. But little is known of the social conditions of this conflict: these should be important to study, for, in our opinion, it is not at all evident that all sociocognitive conflicts (or conflicts in general) are always necessarily resolved by operational restructuring: other solutions are possible, such as nonperception of the other's point of view, submission, and so on. Under what social conditions is a sociocognitive conflict at the basis of an intellectual elaboration of the operational type? The answer to this question could help us understand how "universal" the cognitive structures described by Piaget are.

What are the social necessities that induce subjects to elaborate an operational solution to their sociocognitive conflicts? Research presently carried out with some colleagues (Dionnet, Jacc, Lavy) suggests that the social relevance of a situation for the child can facilitate his cognitive structuring of the task and of the notions involved. We mentioned previously that an understanding of the processes responsible for cognitive growth could lead to better comprehension of the forms into which they develop. If such is the case, it should be possible to formulate this last question within the framework of a debate on "stages." And this we will try to do here.

The examination of the question of stages: The operative structures described by Piaget would be the product of specific social interactions relative to the tasks whose characteristics would seem to be perceived differently according to the level of development of the individual concerned. Brairard suggests that the operational structures to which Piaget refers are in fact merely "task descriptions." But then how can one explain that we arrive at a particular description of the task? Is this description trivial and evident for all individuals? Brairard does not propose any other description of the tasks concerned. Is this type of operational description task self-evident to the adult? But then how are we to explain that what is evident to the psychologist does not seem to be evident in the same way to the socializing child? Yet, as he becomes an adult, until a certain age, which varies according to cultural contexts? Our question then becomes: What are the inter-individual relationships that lead the child to elaborate the behavior that Piaget calls "operational?" The answer to this question is important for optimizing pedagogical strategies.

Educational relevance of the issues. By definition, the educator is always in a situation of social interaction with his students. Therefore it is one of his duties to examine to what extent the modalities of social interaction that he imposes upon them (and he induces them to experience among themselves) are sufficient to induce - or to inhibit - cognitive elaborations. Can we observe that the students progress in their understanding of the task he proposes? If the educator wanted to make that observation by referring to Piaget's stages it is evident that he would be using an observation that is inadequate because it is too global. But his observations he could make as Piaget did. It seems to us that Piaget's constructive and interactionist approach, if it takes into consideration the role of the social context in which the child develops, could help us understand not only how to change the moment for an educational intervention but also how to define the type of intervention and how to modify it according to its results.

ACKNOWLEDGMENT

Most of the research cited here has been conducted with the financial support of the Fonds National de la Recherche Scientifique (projects 1-345-0.76 and 1-708-078).

NOTE

Are all the behaviors of this type elaborated simultaneously or is it a question of parallel - or independent - development? This is the main question of the present debate on "development" which would certainly be clarified by an identification of the causes of development.