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Commentary on "Social Change and Equilibration of Cognitive Structures: The Role of Schooling and Urbanisation" by A. Lalo

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I am very pleased to have the opportunity to comment on Anne Lalo's article, "Social change and equilibration of cognitive structures: The role of schooling and urbanisation". First, let me consider the research as a 20-year follow-up of my own conservation studies among Wolof children in Senegal (Greenfield, 1966). I welcome the areas in which Lalo has expanded on the original design—notably the addition of unschooled urban children and the addition of various sorts of conservation tasks. However, I regret that she did not keep even one task in common with mine (conservation of liquid quantity), as a reference point, so that direct, rather than speculative, historical comparison would have been possible. Her use of Wolof speakers rather than Wolof group members (my study) and a semi-rural rather than a rural contrast for the urban group also removes points of reference for an historical comparison.

At the level of speculative comparison, the role of schooling appears to have been less dramatic than in my data. Part of the reason probably stems from the inclusion of an urban unschooled group, for, as Lalo states, in the urban milieu, the culture of the school is present outside the school building and diffuses even to those who never attend Western schools themselves. It might also be well to consider whether the Koranic schooling of some of the urban "unschooled" group may have also had an impact, although Wagner's (1982) results in Morocco and Scribner and Cole's (1978) in Liberia make it seem unlikely that Koranic learning would generalise so far).

A second factor may be that Lalo's methods of analysis have under-

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estimated the schooling effect. If she had statistically tested the impact of schooling at different age levels for urban and rural groups separately, the graphs in Fig. 2 indicate that she would probably have found a positive effect of schooling on conservation of quantity of matter: at 9 years in the country, at 11 years in the city, where children start school later. Indeed, I was interested to see that Lalo replicated my conclusion that years of school, rather than chronological age, was more predictive of cognitive performance, a conclusion which goes against the de-emphasis of schooling in Piagetian theory.

Lalo's clear empirical finding of more transitional responses among school children expands our knowledge of a possible cognitive path engendered by formal schooling. Her finding suggests that an effect of schooling is to make children more reflective in the sense of weighing opposing factors against one another: schooling may stimulate the growth-producing process of cognitive conflict. In Piaget's own terms, formal schooling seems to magnify the equilibration process so important in his account of stage transitions.

Unfortunately, however, this was the only finding with a direct bearing on Lalo's main interest, *strategies* of cognitive development. Most neglected was an analysis of the reasons for or against conservation, although children's reasons have been commonly accepted as constituting a more direct reflection of the mechanisms behind the acquisition of conservation than do conservation (or non-conservation) judgements themselves.

An intriguing finding was the reversal of the schooling advantage for conservation of length, the only concept presented in the form of an *inequality* rather than an *equality*. This was an unfortunate quirk in Lalo's design. Much would have been gained by having all the conservations presented in two types of problem, one starting with an equality, as in the classical conservation problems, one starting with an inequality. As it is, we do not know whether unschooled children are more sensitive to *differences*, while formal schooling sensitises people to *similarities* underlying observable differences, or whether there is something special about the concept of length. Given Luria's (1976) findings that unschooled, illiterate Soviet peasants in the 1930s responded to categorical tasks more in terms of differences than similarities, I would bet on the first alternative; it is an interesting hypothesis for future research.

Closely tied to problems in interpreting the results concerning conservation of length is the exaggeration of the strategy difference between schooled and unschooled children *vis-à-vis* horizontal *décalage*. Lalo's conclusion is that schooling produces *décalage* or gaps in the development of different conservations, thus providing evidence for reflective abstraction. However, by not taking into account the advanced development of length relative to the other conservations tested, she underestimates *décalage* in the unschooled children. At the same time, she also overestimates

the greater presence of a *décalage* or lag in the volume concept among the school children. By my reading of the graphs in Figs 2, 3, and 4, *unschooled* urban children may actually show more of a lag than *schooled* urban children in their development of the volume concept.

Lalo also overestimates the significance of volume as conceptually distinct from matter and the other kinds of quantity, relative to the conceptual uniqueness of her length test. While it is true that volume is unique in her study in being formal operational, length, as she tests it, is also conceptually unique in constituting an inequality rather than an equality. Her test of length does not simply involve another domain of content, as she proposes; it also involves another mental operation—inequality. When this is taken into account, I do not see any clear-cut difference in amount or quality of *décalage* or uneven development between schooled and unschooled children.

From a logical point of view, it seems inconsistent to claim *both* that "unschooled children seem to be *more* sensitive to materials and contexts, having a more figurative approach," *and* that they show *less décalage* between different conservations, for gaps between the development of different conservations could straightforwardly be interpreted as a measure of sensitivity to materials and contexts. It would have been useful to find a discussion of the cross-cultural literature evaluating Piaget's notion of a universal sequence of development of the different conservations and showing the influence of different culturally given experiences on order of acquisition (e.g. Dasen, 1972, 1974; Adjei, 1977).

Looking back at Lalo's results across the lens of mine, approximately 20 years before, my impression is that, despite reservations expressed in the foregoing commentary, she has found a smaller impact of schooling, even in the rural milieu, than I did. My guess is that this is not because schooling is less effective in the 1980s than it was in the 1960s, but because the culture of the school, a legacy of French colonialism, has been more diffused into Senegalese culture as a whole, especially in the less isolated semi-rural settings which Lalo chose for sampling. It would be interesting to see if historical change of this sort has also occurred in more isolated rural settings such as Taiba N'Diaye where I conducted my research, in order to find out whether modernisation and post-colonial development has lessened the cognitive contrast between literate school children and those raised in a traditional oral culture.

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