Archives Jean Piaget

40, boulevard du Pont d'Arve
1205 Genève │Suisse

18th Advanced Course

Cognitive Development, Mechanisms and Constraints

3 – 5 July 2008

Thursday morning, July 3, 2008

9h45 **Juan Pascual Leone**, York University Toronto
A developmental theory of mental attention : Its application to measurement and task analysis

Abstract:
I argue that a main maturational-growth component of working memory is *mental* (endogenous) *attention*. Mental attention must be contrasted with *perceptual* (focal, selective, scanning) *attention*. Perceptual attention is influenced mostly by learning, but mental attention expresses maturational growth, i.e., "development proper" (or learning potential) as Piaget and other constructivists have understood it. In facilitating situations both sorts of attention work together. In misleading situations, however, schemes are in conflict and compete, and situational-perceptual cues often are misleading: Mental-attention strategies must be mobilized to control or override task-irrelevant perceptual strategies that initially dominate. *Developmental intelligence*, the growth with age of fluid intelligence, is a result of maturational growth in mental attention. Mental attention often is not clearly recognized because it results from the dynamic/dialectical synthesis of four "hidden" organismic variables. In my theory these are called *hidden* ("hardware") *operators*: M-capacity, I-interruption (i.e., attentional inhibition), a neo-Gestaltist Field (F-) factor that causes cognitive closure, and attentional executive functions (when they are properly defined as organismic processes). This model of mental attention is a central part of the neoPiagetian theory of constructive operators (TCO), which also contains other organismic factors such as learning operators (i.e., logical-structural or L operator, and content-associative or C operator), etc. The TCO examines how maturational growth of mental attention interacts with the various other organismic factors to produce cognitive development. I will summarize this theory focusing on mental attention and the M-operator, and will show with the help of various tasks across content domains, how this theoretical approach permits (using a theory-based task analysis) a new kind of *fundamental measurement* of mental-processing complexity (i.e., working memory, mental attention). This fundamental measurement method exhibits parameter (i.e., measurement) invariance across content domains as diverse as visuospatial, verbal, linguistic etc., within misleading situations. The heuristic importance of these methods of task analysis and fundamental measurement is emphasized.