Archives Jean Piaget

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1205 Genève │Suisse

18th Advanced Course

Cognitive Development, Mechanisms and Constraints

3 – 5 July 2008

Saturday morning, July 5, 2008

9h00   **Glenda Andrew**, Griffith University Australia
Recent advances in Relational Complexity theory and its
application to cognitive development

Abstract:
In Relational Complexity (RC) Theory (Halford, 1993; Halford, Wilson & Phillips, 1998) higher cognitive processes such as reasoning and some executive functions are conceptualized as involving relational processing. Cognitive development occurs as children acquire the capacity to process relations of higher complexity. Relational complexity corresponds to the number of variables that are required to perform each step in a cognitive task. Thus unary relations involve a single variable and are processed at a median age of 1 year. Binary relations involve two variables and are processed at a median age of 2 years. Ternary relations involve three variables and are processed at a median age of 5 years. Quaternary relations involve four variables and are processed at a median age of 11 years. There is an approximate correspondence between these levels of complexity and Piaget's four major stages of cognitive development. RC theory incorporates principles for quantifying task complexity and the resulting processing load. One principle is that complexity analyses are applied to information that is being processed in the current step of the task rather than to information that is being stored for future processing. Another principle is that tasks cannot be segmented into separate, less complex steps if the variables to be considered interact. These principles will be demonstrated. RC theory will be discussed in relation to (i) new conceptions of working memory which emphasis dynamic mapping to a coordinate system, (ii) recent findings from cognitive neuroscience that demonstrate the involvement of specific sub-regions of the prefrontal cortex in relational processing, and (iii) the proposed distinction between cool and hot executive functions. Relevant empirical data will be presented.