

Visuo-spatial cognition in sport: An approach based on the study of expertise

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The domain of sport is a privileged context to study behaviours and cognitive processes of experts. Physical and sport activities imply high levels of constraints for which experts are very well adapted. As investigations in other domains of expertise (for example chess, Chase & Simon, 1973), many studies in sport have demonstrated the superiority of experts to recall or recognise specific material organised according to the logic of their domain of expertise [(e.g., Allard, Graham, & Paarsalu, 1980; Garland & Barry, 1991)]. In recent studies we [(Baratgin, Ripoll, Ripoll, Courrieu, & Laurent, submitted; Courrieu, Ripoll, Ripoll, Baratgin, & Laurent, submitted; Laurent, Ripoll, Baratgin, & Kehlhoffner, 2000)] have investigated experts' cognitive processes in a more strictly perceptual task (a similarity judgement task of basket ball play configurations) in which we reproduced the classical effect of expertise, demonstrating better performance for coherent (structured) configurations. Beyond this classical result, we have questioned the problem of the format of the knowledge basis and the cognitive processes activated in the performance of such tasks. Do experts use semantic rules, or do they analyse only the perceptual features of the stimuli? What is the level of control of these processes? Results suggest that the two processes (perceptual and semantic) could be involved in the similarity judgement task. A second aspect of the data (namely, the faster response making for experts even when material is not structured) was considered. We carried out an experiment (Poplu, Laurent, Baratgin, & Ripoll, 2000) in which we showed that experts probably encode information in an automatic way. Finally, we will show that one of our perspectives of research stands in an interdisciplinary approach to cognitive sciences that connects cognitive psychology, artificial intelligence, and robotics.

References:

- Chase, W.G., & Simon, H.A. (1973). Perception in chess. *Cognitive Psychology*, 4, 55-81.
- Poplu, G., Laurent, E., Baratgin, J., & Ripoll, H. (2000, July). Modalit/es d'encodage perceptif de configurations de jeux. *Paper presented at the International Congress of the French Society of Sport Psychology*, Paris, France.