

**SYMPOSIUM: KNOWLEDGE BASED APPROACHES TO THE STUDY OF MEDICAL PROBLEM SOLVING**

Guy J. Groen, McGill University, Chair

Paul J. Feltovich, Southern Illinois University

Allan Lesgold, University of Pittsburgh

Harriet Rubinson, University of Pittsburgh

Dale Klopfer, University of Pittsburgh

Robert Glaser, University of Pittsburgh

William J. Clancey, Stanford University

Vimla Lodhia-Patel, McGill University

## GENERAL SUMMARY OF SYMPOSIUM

This symposium is concerned with the nature of competent performance by expert physicians. While this issue has been studied from the point of view of cognitive science for a number of years, the earlier work tended to concentrate on general problem solving processes. No effort was made to characterize the knowledge base or investigate processes highly dependent on it. In terms of Newell's well known distinction, the focus was on weak rather than strong methods.

More recently, however, a number of approaches have evolved that attempt to take directly into account the relationship between the knowledge base and the processes utilized. They stem from four areas, each of which is represented in this symposium: problem solving (Feltovich), knowledge engineering (Clancey), propositional analysis (Patel et al) and the psychology of perception and memory (Lesgold et al).

These approaches all have in common the fact that they tend to go beyond the standard theory and empirical methodology of problem solving. Comprehension processes play a crucial role. The models are more oriented towards frames and schemas. The empirical techniques make far more extensive use of probes.

Medical problem solving is almost a prototype of a "messy", realistic domain. It deals with extremely complex stimuli and verbally rich protocols. Performance is highly dependent on an elaborate but only partially well defined knowledge base. Because of this, the approaches described by the participants of this symposium may be relevant to other areas where similar issues of complexity must be faced.