



# Naturalistic Decision Making and Macro cognition

Edited by  
Jan Maarten Schraagen, Laura G. Militello,  
Tom Ormerod and Raanan Lipshitz

# Foreword

Naturalistic decision making (NDM) is all about how experts make decisions in the real world. It is about how people *actually* make decisions—not about how they *should* make decisions. It is also about *real-life* tasks as opposed to *laboratory* tasks. Real-life tasks are frequently characterized by uncertainty, time pressure, risk, and multiple and changing goals. They involve multiple individuals and experienced decision makers often working in high-stakes organizational settings rather than the single inexperienced college student that so often serves as participant in laboratory experiments. In the NDM approach, it is the analysis of knowledge and skills underlying novice and expert performance that provides the basis for identifying leverage points for improving performance and specifying requirements for training and decision aids.

More recently, NDM has expanded to include the analysis of macrocognition. Similarly focused on the behavior of experts, it concentrates on developing a description of a wide range of cognitive functions. This focus is somewhat broader than historical NDM research and includes processes such as attention management, mental simulation, common ground maintenance, mental model development, uncertainty management, and course of action generation. These processes support the primary macrocognitive functions: decision making, sensemaking, planning, adaptation/replanning, problem detection, and coordination. Some of these, such as problem detection, emerge in field settings, are rarely considered in controlled laboratory-based experiments, and would be unlikely to emerge in typical laboratory studies of cognition. Macrocognition is what NDM is really about, after all.

It should come as no surprise, then, that the present volume links the concepts of naturalistic decision making and macrocognition in its title. The linkage also reflects the broadening in scope that was clearly apparent at the Seventh International Conference on Naturalistic Decision Making, on which this volume is largely based. The history of NDM goes back to 1989 when the first conference was held in Dayton, Ohio. Subsequent conferences were held in 1994 (Dayton, OH), 1996 (Aberdeen, Scotland), 1998 (Warrenton, VA), 2000 (Stockholm, Sweden), and 2003 (Pensacola Beach, FL). The seventh in this series of conferences was held in 2005 in Amsterdam, The Netherlands. Five themes were emphasized in this conference: decision making and training, adaptive decision support, cognitive ethnography, crime and investigation, and medical decision making. In sessions, the NDM framework was applied to new and diverse domains, such as landmine detection, judgments in crime situations, and space exploration. A panel session on macrocognition proved essential to the genesis of this book.

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*Jan Maarten Schraagen,  
Laura G. Militello,  
Tom Ormerod,  
and Raanan Lipshitz*