Foreword

Plan generation by computers has gained increasing importance in the past few years. It has being used, e.g., in robotics applications, industrial process control, space mission planning, database systems, and CAD/CAM applications. To date, generated plans are thereby nearly always carried out by machines. Research on generating plans that are to be carried out by people is still in a relatively early stage. This book by Detlef Küpper lays important foundations for this new line of research.

Küpper specifically focuses on catering plans to the knowledge and abilities of each individual user. So far, plans have been generated for "average" users only. The fact that people have different abilities that may or may not enable them to carry out such plans has been generally disregarded. Moreover, generated plans are currently communicated to users by simply listing their lowest-level steps. Hardly any attention has been paid to the fact that users may be unfamiliar with some plan steps, or may on the other hand be very acquainted with all low-level steps and therefore be better served with a higher-level description. Initial experiments by Young (1999) indeed demonstrated that people make fewer errors executing plans and achieve higher success rates if plan descriptions are tailored to their levels of expertise.

This dissertation constitutes the first scientific treatment of the first problem and, together with Young's work, also of the second problem. The author takes an exceptionally broad approach, reviewing current research in planning, plan recognition, interactive planning, text and dialog planning, help systems, and planning for information gathering. He proposes models of each user's knowledge and capabilities as central knowledge sources for generating personalized plans that users are able to carry out, and for communicating these plans to users in such a way that they will be easily understood. The former is achieved by a partial order planner that obtains its working set of plan operators from the user model (these operators correspond to users' abilities and are obtained, e.g., through stereotypes). The latter is accomplished by a presentation algorithm that aims at presenting generated plans at a high level of abstraction, while ascertaining that users are still able to decompose them into plan steps that they are able to carry out.

The proposed framework for user-tailored plan generation and presentation was implemented as a research prototype, to verify its consistency and completeness. This framework is however also based on several assumptions about human comprehension and plan execution. While these assumptions are surely plausible, future research will have to verify them empirically to determine the ecological relevance of Küpper's interesting work.

Alfred Kobsa
University of California, Irvine

[Young, 1999] R. M. Young. Using Grice's maxim of quantity to select the content of plan descriptions. *Artificial Intelligence*, 115(2):215–256, 1999.