Editor's Introduction

Problem solving is one of the fundamental aspects of human cognition. The scientific study of human problem solving was initiated by the Gestalt psychologists almost 100 years ago. However, most of the important questions about the mental mechanisms underlying this cognitive ability remain unanswered. One reason for the lack of substantial progress is that a relatively small number of researchers have been working on this topic. As a result, until now no conference or journal has been devoted to human problem solving. If one considers other areas of human cognition, such as perception, the contrast is obvious. About a dozen major journals are devoted to human perception, and several major conferences on the topic are held every year. Furthermore, unlike perception, which is taught in separate undergraduate and graduate courses, problem solving is only one among many topics within a single course on cognition. The main reason behind the small interest and slow progress in studying human problem solving has been the lack of experimental methodology. Again, unlike problem solving, perception has been studied by using reliable, objective psychophysical methods, such as signal detection.

This situation has been changing during the last 10 years as a number of researchers have started studying how human beings solve combinatorial problems, such as the Traveling Salesman Problem (a.k.a., the Traveling Salesperson Problem). Combinatorial problems are difficult in the sense that the number of states in the problem space is very large. Surprisingly, human subjects tend to solve such problems quickly, and the solutions are very close to optimal. These two facts, namely that (a) combinatorial problems have large search spaces and (b) human subjects solve these problems well, allow testing subjects with a large number of randomly generated trials and measuring performance by objective-dependent variables such as response time, proportion of optimal solutions, and the magnitude of errors. This in turn allows testing models of human problem solving by comparing the performance of the models to that of the subjects, just as models of perception have been tested for decades.

In response to this growing interest in new ways of studying human problem solving, a workshop was organized in June 2005 (psych.purdue.edu/tsp/workshop/). The process of organizing the workshop made it clear that a journal on human problem solving was needed. The workshop itself, the endless discussions among participants, and encouragement from the sponsors (Air Force Office of Scientific Research [AFOSR] and the National Science Foundation [NSF]), as well as from Purdue University Press, provided a direct stimulation; the new journal is now in place. Its success will depend on the interest of researchers who actively work on problem solving, as well as of those who teach and who want to learn about the subject. I am optimistic—actually I am convinced—about the success of this journal because it fills a very important niche in cognitive psychology. Furthermore, this new journal should help restore interdisciplinary interaction between psychologists studying natural intelligence and computer scientists and engineers who want to build an artificial one.

Zygmunt Pizlo, Editor

http://dx.doi.org/10.7771/1932-6246.1008