The field of problem-solving has been an area of special interest since the publications of Duncker (1945), Maier (1930, 1931), and Wertheimer (1959) expressed a broadly Gestalt view on thinking. Duncker's work, in particular, opened up lines of inquiry which owed much to his innovative technique of asking subjects to speak aloud their thoughts during their attempts at providing solutions to the problems set. While this technique was only part of a more extensive program of research into thinking, it offered a way of gaining a purchase on the qualitative shifts in thought which Gestalt theorists were concerned to describe. Applied to individuals, however, the request to "speak aloud one's thoughts" has an artificial quality wholly absent in the group setting, where members must discuss the problem if they are to solve it. In this context, the organization of the group about a common purpose has a bearing upon the successful completion of the task, just as progress in solving the problem is there as a basis upon which members can act together as a group in the future (Bales, 1950). The essence of Duncker's thesis is that:

the final form of an individual solution is, in general, not reached by a single step from the original setting of the problem; on the contrary, the principle, the functional value of the solution, typically arises first, and the final form of the solution . . . develops only as this principle becomes successively more and more concrete. In other words, the general or "essential" properties of a solution genetically precede the specific properties; the latter are developed out of the former. (1945, pp. 7–8)

Duncker's studies were descriptive in form, and it was the attention to the protocols he obtained from his subjects which enabled him to see the transformation in the solution-suggestions they offered. These suggestions
he saw as mediating processes, each one possessing, in retrospect, the character of a solution and, in prospect, that of a problem. While Duncker's work is recognized as seminal (Mayer, 1983), the appropriation of problem-solving within the framework of experimental cognitive psychology has led away from the descriptive approach which made his formulations possible. This has had the effect of reifying the phenomenon as a function of "cognitive processes" deemed to go on "in the heads" of separate individuals, without reference to the social context in which it takes place.

It was Wertheimer (1959) who demonstrated that the coordination of thinking in problem-solving has social implications. He used the example of how two boys resolve the problem of one-sided victories in a badminton game. The transformation of how the boys thought of the game involved a recentering of their relationship to each other and to the situation, which could then be realized in their play. Problem-solving, therefore, involves not only the apprehension by an individual of what is possible, but also the translation of that possibility into action through encouraging and enabling others to recenter their view of the situation accordingly; in this way the functional relatedness of thought and social life becomes an inescapable feature of joint problem-solving (Doise et al., 1975; Mugny and Doise, 1978). This being the case, it is inadvisable to address this question from the perspective of a cognitive psychology which relies upon methods for the study of individuals taken separately. Indeed, the question of the limited access individuals may have to their own ways of thinking has been raised as a methodological problem for researchers in that field (Nisbet and Wilson, 1977; Ericsson and Simon, 1980). This derives from their implicit aim of describing the general principles of thought as they are held to be embodied within the cognitive processes of all individuals.

There are two reasons why this study departs from the above perspective. First, people do not merely learn how to provide solutions to given problems but also learn how to approach different problem situations and problem-setters (Cole and Scribner, 1974). Types of problems, ways of jointly tackling them, and available solutions are products of considerable cultural experience (D'Andrade, 1981). Second, when solving problems together, or meeting a joint difficulty, people organize their contributions through discourse, through the communication of referential ideas and the expression of feelings. The form of the process by which a solution is obtained is therefore reflected within this discourse, through which the coordination of ideas must be achieved.

These comments make clear that finding solutions involves people in