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"Coordination, learning and incentives in problem solving: experimental and simulation issues"
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The purpose of the presentation is to discuss some ongoing research topics partly related to a thesis recently defended in November 1999 (Garapin, 1999) and a paper published in the *Journal of Evolutionary Economics* in December 1999 (Garapin and Hollard, 1999). The thesis analyses the behaviours of teams who must solve for the first time a complex problem, and tries to assess the efficiency of these behaviours in different incentive systems. An experimental study was conducted, using the coordination game "Target The Two". This game, created by M. Cohen and P. Bacdayan, and used also by M. Egidi and his research team, was used to explore some features of routinization and learning. Three novelties were introduced in the experimental setting : time constraints, a new incentive system (competition between the pairs of subjects), and a learning model to deepen the results obtained. The thesis concludes that, when facing complex coordination problems of the type of *Target The Two*, individuals tend to adopt routinised behaviours. Besides, it suggests that incentive systems remain important to assess the efficiency of coordination, but do not change the computation capabilities of the agents. The presentation intends to discuss some research matters led by these experimental results. First, the relation between incentive systems and motivation of the agents. Is there any motivation else than profit maximisation ? Then, why do experimental economists use almost exlusively in their experiments an incentive system based on monetary rewards ? Second, the possibility to make experiments dedicated to the study of organisational learning. To this end, a research, first conducted by Llerena and Willinger (1996), is planned in Grenoble. Its objective is to compare the efficiency of different decision structures, inspired by the model of Sah and Stiglitz (1986). A last research topic of the presentation is the possibility to simulate the coordination rules which were experimentally observed. To this end, a research is currently conducted in Grenoble, which tries to use *classifier-systems* to simulate bargaining and coordination rules observed in a variant of a duopoly experiment. The question is how to use genetic algorithms to simulate more complex games such as *Target The Two*.

References

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