A Management Simulator to Support Group Decision Making in a Corporate Gaming Environment

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CORPORATE PLANNING GAMES IN MANAGEMENT EDUCATION

Successful corporate management requires specialization, i.e. the separation of tasks. In a historic perspective this lead to the manufacturing philosophy of "Taylorism" and the delegation of decision making — concepts that have proved highly successful in the past. But the same developments bear the risk of failure through uncoordinated activities. Management becomes futile without coherent action. Especially in a dynamic environment, as it is found e.g. in innovation management, this (potential) gap between isolated operations and coherent strategy has to be closed. Team or Cooperative Learning is necessary to define and to achieve the overall corporate objectives (Senge 1990; Argyris 1990).

Management games work as catalysts in such a process of group decision making. They counteract narrow specialization, lead to improved communication between different corporate functions, and encourage the identification and the pursuit of shared values and overall objectives.

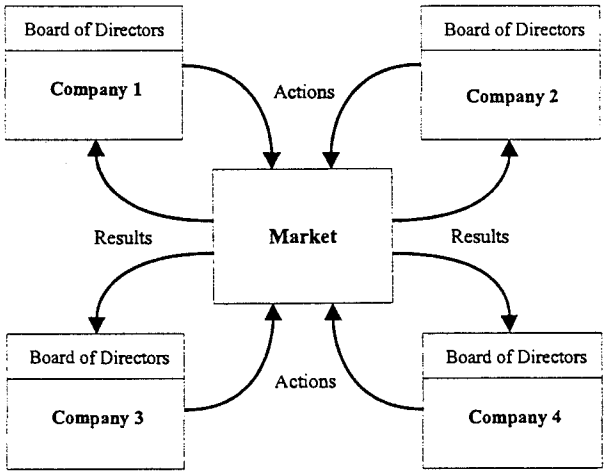

Figure 1: Modules of the Corporate Planning Game

Management games play an important role as training and teaching tools. Most of them belong either to the class of Management Flight Simulators or to the class of multi-person Corporate Planning Games. In the first case a single person plays against a computer model. In the second case, groups of players emulate the board of directors of a company and compete against other groups and a computer model clears the market by adjusting supply and

demand. Both types of games have their specific advantages. Planning Games catch many of the behavioral aspects of real world decision making. Flight Simulators help to achieve a better understanding of the system under investigation by providing the opportunity to go rapidly through repeated learning cycles.

Since more than a decade we use a Corporate Planning Game, now called *LOBSTER* (an acronym from *L*earning *O*rganization *B*y *S*imulating *T*he *E*conomic *R*eality), in academic education and corporate management training (Figure 1).

At the beginning of the game, all corporations have a product with the same level of technological sophistication and with the same market share. The simulator deals with the processes of Research and Development, the time-to-market, and the time-to-volume for new products. It focuses on the substitution between different generations of innovative products. It requires decision inputs for all classical fields of corporate management, i.e. budgeting and resource allocation for R&D and advertisement, investment in production capacity and the way to finance it, personnel recruitment, etc. The timing of market introduction, investment and production planning, cost management and pricing policies, product quality and delivery delays are key control variables in these processes.

Figure 2 provides an overview over the coarse structure of the market module. Its behavior is dominated by the diffusion processes of the innovators and imitators purchasing decisions (Milling 1994).

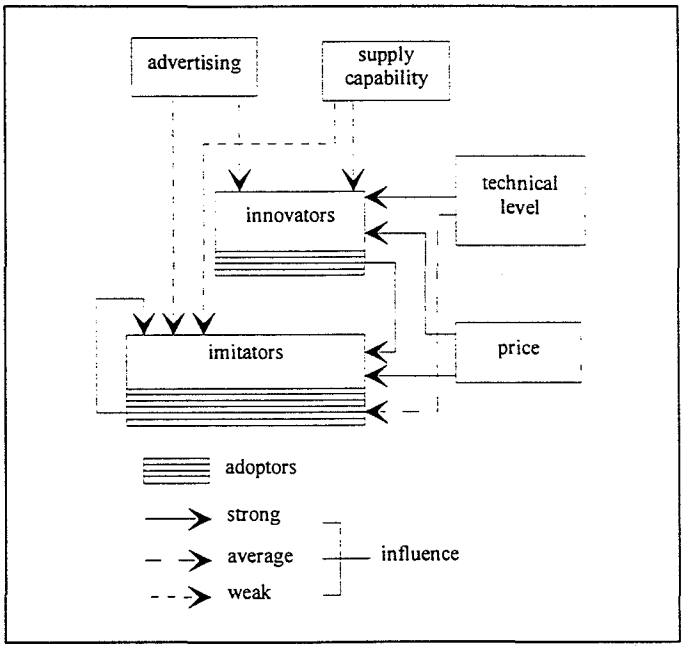

Figure 2: Coarse Structure of the Market Module

During the game, each group of players is confronted with interrelated decision making requirements. It is difficult to understand intuitively, how the decisions interact with each other, how the competitors and the whole system will react. To improve their market performance, the group must identify and collect relevant information. The team members must derive alternative courses of action and evaluate their expected consequences. A feeling for complex

system behavior should be gained (Vennix 1990) and our experience supports this expectation.

A MANAGEMENT SIMULATOR IN A GAMING ENVIRONMENT

In the context of a management game, the typical chain between observed state of the system, decision and action is intersected. The players interfere with the model. They receive and analyze the model output, discuss different courses of action, decide on one and implement it. Then the model takes over again and continues the circle. Figure 3 shows this relationship. Since the players are not restricted to a particular and predefined set of actions — as it is the case in Figure 3a — they can adopt a new theory-in-use and change „the rules of the game" (Figure 3b).

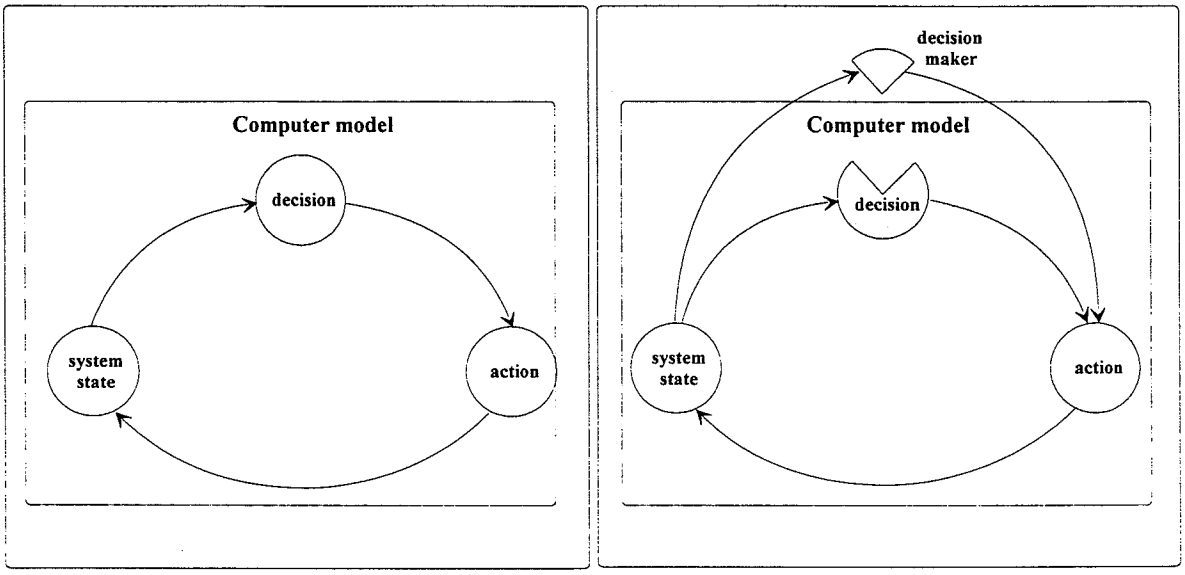

Fig. 3: The feedback process of decision making in
a) a Standard Simulation Model b) the Management Simulator

Over the last years several hundred master students played the game. Although most of them were familiar with System Dynamics concepts, hardly anybody tried to use tools like causal loop diagrams or even simulation to support their decision making. In spite of this experience, it has become kind of a System Dynamics paradigm, that the effectiveness of decision making can be substantially improved by the use of management flight simulators. To test this hypothesis, we made a microworld, that contains a replicate of the computer model used in our Corporate Planning Game available to the players.

The simulator *LEARN!* (for *L*earning *E*nvironment in an *A*rtificial *R*eality *N*etwork) is used to investigate the particular market dynamics. We apply it to support decision making in the artificial reality of our corporate gaming environment. It allows in a man-machine dialog to test the market response of different courses of actions. Figure 4 illustrates a typical decision situation. The difference to the *LOBSTER*-Game — which in the context of the flight simulator is interpreted as the „reality" — are the missing direct actions and reactions of the competitors. They are included as endogenous model variables.

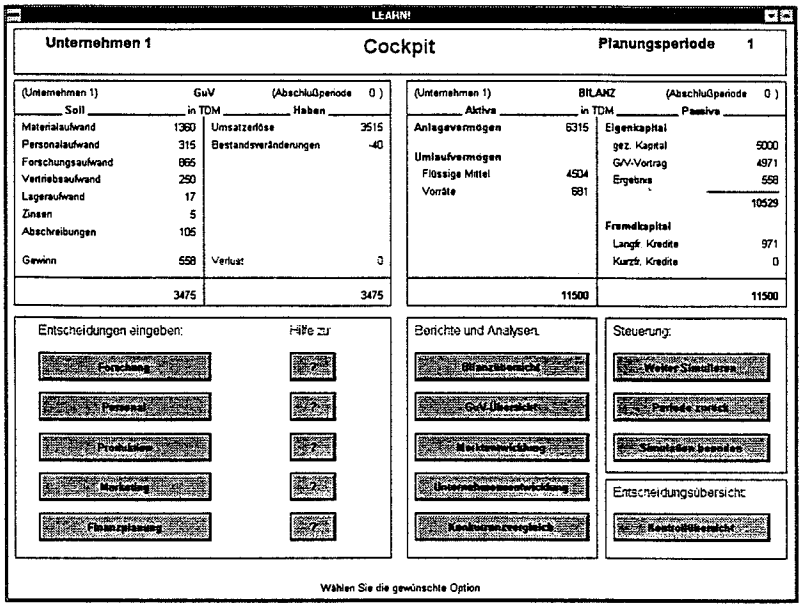

Figure 4: View of the *LEARN!* Simulator

In the Corporate Planning Game, as a test design, two groups (out of four) can use the simulator to investigate the expected consequences of their actions. The other two rely for their analyses only on conventional tools like spread sheets. Different behavior modes and different performance of the groups with and without simulator should be expected. Up to now, our research provides no clear and definite answer, whether the use of *LEARN!* really causes significantly different modes of behavior or profit performance.

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