**The Equilibrium in the set of reflexive strategies**

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The ideas of the author concerning the reflectivity problem are based on the works of I.P. Pavlov, J. von Neumann, Y.B. Germeier, N.N. Moiseev, N.S. Kukushkin, V. Lefebvre, G. Soros, and V.E. Lepsky. In the classical papers by I.P. Pavlov (the 1904 Nobel Prize winner) and his followers, the theoretical postulates of the origin of conditioned and unconditioned reflexes were formulated and reflexive mechanisms were studied experimentally. A formal approach to describing the interconnection of the players viewed from the position of a perfect Observer follows [Y.B. Germeier]. The notion of an objective description of a game is used for this purpose.

George Soros's books were a second inspiration for the author. In these books Soros has developed the theory of reflexivity in application to economics as a whole and to stock markets in particular. Soros assumes that “participants’ views form a part of the situation, to which they are related”. They may influence substantially events and, in turn, are impacted by events. Such a mutual influence of participants Soros names “reflexivity”. The present working materials contain the first formalized attempts of the author to study an insufficiently explored problem of reflexivity in the theory of decision – making. In this work descriptions of the reasonings of G. Soros and A.O. Cournot are proposed. The Soros model and a model of sharing a dynamic resource are briefly described. A reflective game model based on hierarchical games theory (Y.B Germeier) is investigated in more detail. In papers [Ereshko F.I., Y.B. Germeier] reflexive control was presented as a x(y), function – a response of the first player x to the probable control of the second player y.

Logical consistency of the task of decision - making demanded the addition of a set of auxiliary conditions concerning the information interaction of the players. A solution to the possible contradictions was found in a way of introducing the notion “first player’s right for the first move” and the condition, that while choosing the concrete values of his controls the first player already knew the concrete choice of the second player, and the first player utilized his advantage in the manner of a dependence strategy of behavior x(y). If the situation differs from the one mentioned above, and the first player has no advantage in obtaining the information, then the use of the strategy x(y) can be considered logically consistent only as a hypothesis of the first player. Our further consideration is based on exactly such a description of the participants in the decision making process: we admit that every participant acts within the framework of some of his conceptions of the intentions, objectives and actions of the other participants and obtains information about his decisions a posteriori, i.e. after the act of decision-making and after the action has been accomplished. In this context his conceptions might be far from the real situation. In further speculations we are on the side of an abstract Observer of the events and describe their possible evolution. Unlike I. Newton we, as Observers, let players make up their hypotheses.

So, let the first player assume a hypothesis about the second player’s payoff function, g(x,y) calculate the optimal response function for the second player yopt(x)= arg max g(x,y), and then calculate his optimal choice xopt=arg max f(x, yopt(x)).

The second player acts quite similarly, then calculates his optimal choice.

Denote the pair of the optimal player’s payoff in this case as Reflex –solution.

If the players’ hypotheses prove correct, then the calculation of the players’ choices is described similarly. As above, this pair of the optimal player’s payoff is called a Real-solution.

Then we discuss the question of how far the Reflex –solution may be from the Real-solution, depending upon how much the players err while hypothesizing about each other’s objective function.