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THE LOGIC OF THE GAME

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An event report on the lecture given by *László Mérő*[1] titled "*The game theory and the psychology*"[2]

László Mérő in his lecture titled "The game theory and the psychology" analysed the relationship among the game, the game theory and the psychology. The professor applied different games from the game theory to illustrate his findings. The audience was acquainted with the experiment of the shipbuilding to analyse the question of making up of an effective organisation. After that, he used the ultimate game as an excellent example to study the phenomena of "compromise". Next, the dollar auction game helped to introduce the topics of stable equilibrium and the theory of mixed strategies. Finally, the games based on bluffing turned the audience's attention to – next to game theoretical lessons – the everyday "vitamin" roles of the bluffs.

Keywords: game theory, the ultimate game, phenomena of "compromise", stable equilibrium and the theory of mixed strategies.

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The game as a model

First of all, Professor Mérő outlined the main characteristics of the phenomena of games. The most important characteristic of the games is that they are rewarding for us in its own right. We are playing a game because it is good for us. The second characteristic of the games is that the activity of playing can not be motivated outwardly. Psychological experiences proved that the experimental animals were very susceptible to playing; for example, after finishing their duty of getting through with a labyrinth, they went back to explore the other part of it just for fun. Nonetheless, the experimental animals lost their interest in playing when the researchers tried to motivate them with some reward for more playing activity. Finally, the third characteristic of the games is that playing is not of vital importance for survival. But according to the findings of the neurophysiologist Endre Grastyán, it is absolutely vital for us and for our brains to perform a full function that we do things that are otherwise not vital to survive. For example, we play games.

The experiment of the shipbuilding

The first game we got acquainted with during the lecture was the experiment of the shipbuilding. The main point of this game is that eight randomly chosen people have to piece together a ship model. Assembling the ship model is not a difficult task; nonetheless, perfectly harmonized work of the available

[1] László Mérő is a mathematician, psychologist, publicist, professor at the Faculty of Education and Psychology of the Eötvös Loránd University, in the Institutional Centre of Economic and Decision Psychology. He is the author a number of books ("Észjárások" (1989), "Mindenki másképp egyforma" (1996), "Az élő pénz" (2004), "Maga itt a tánctanár" (2005), "A pénz evolúciója" (2007) or "Az elvek csapodár természete" (2008)), among them, the books titled "Észjárások" and "Mindenki másképp egyforma" was published in several editions and translated into a number of languages. In 1987, he set up a software enterprise specialised in developing computer games. Besides his teaching carrier, he takes part actively in business life as an expert for companies working in marketing and decision-making consultancy.

[2] This open lecture was held on 28th September 2010, at the Corvinus University of Budapest, in the organisation of the Department of Finance under the course titled "Introduction into the game theory".

sixteen hands is essential. This experiment was conducted in twelve countries, and the Americans proved to be the most successful in the shipbuilding. Following the Americans, the Germans and the Japanese were in a dead heat.

To perform the task well, the intelligence or the general dexterity is not of importance. The success depended only on the fact whether the eight members of the groups is able to find a boss among them or not. Among the Germans, having the highest level of qualification counted the most decisive factor for becoming the boss. Among the Japanese, the age mattered; the oldest was always chosen to become their leader. The Americans appointed their boss in the shortest time, but the motives behind their decisions were not clear at all for the researchers. In the American groups everybody introduced themselves briefly, and after that, the members of the groups looked at somebody uniformly. He/she became the boss. The lesson of this experiment is that it is not important what the boss is like: intelligent, adept, or an old hand. The crucial element is nothing but having a boss, and that the boss has to be accepted by all the members of the group.

The lesson we can learn from the experiment of the shipbuilding is the "big secret" of the success of the Americans. Professor Mérő evoked the experience of Charles Hardy, who was an English business adviser and a professor at the London Business School. He travelled to the United States to study all the Americans know in the management studies. After that, he went home with the experience that his journey was absolutely unnecessary because he had not find any interesting there. The Americans did not conceal any secret knowledge or some kind of oracle that Hardy originally would have liked to smuggle home. However, if he had not gone there, said Hardy, he would never have discovered this. The "big secret" is that there is not any secret. An average American does not envy somebody who is clever and talented. Instead of this, he/she noses out the ways as a talented person performs the tasks. It is not important for them to understand exactly and perfectly this talented method of performing something; however, it is important for them to observe and master the best practices. Then, the most talented have a role of inventing the new best practices.

The ultimate game

In the ultimate game, the "boss" is given in advance; he/she "brings the business". In this game, there is 100 thousand forint to win. To win the money, the "boss" who "brings the business" and his/her partner who is selected by a draw have to be able to reach a consensus about the division of the sum of this money. This game is very simple. The player who "brings the business" makes an offer how they split up the money between him/her and his/her partner. After that, the partner can decide whether he/she accepts or refuses the offer. If the partner accepts the offer, both of them get the money according to the division. But if the partner declines the offer, none of them get any money.

During the game, two questions arise. Firstly, how much is the proportion of the money that will be offered by the player who "brings the business". Secondly, how much is the proportion of the money that will be accepted as a correct deal by his/her partner. According to the same kind of experiments in the United States, players who work in the non-profit sector usually offer a fifty-fifty division of the money. (And their partners accept this deal delightfully.) The players from the non-profit sector in the role of the "partner" usually accept the 50-60 % of the money rightful for "bringing the business". The players from the business sector usually keep 60-70 % of the money for "bringing the business", and they also accept this division as a "partner". In Hungary, the findings are different. The Hungarian players who offer a fifty-fifty division of the money in the role of "bringing the business" accept in the role of the "partner" even the 70-30 % division. The players "bringing the business" and retaining 60-70 % of the money accept in the role of the "partner" even the 90-10 % division. In similar situation, the American players in the role of "partner" do not accept these offers, because these offers do not represent them acceptable compromises.

To find a compromise between two different points of views, interested parties can appoint an arbitrator. The heart of the arbitration procedure is that the interested parties have to reach an agreement about the person of the arbitrator, but after that, they have to accept his/her judgement. They have no right of appeal against it. For the game theory, it is an interesting situation when the arbitrator excludes the compromise at a given moment of the arbitration procedure. He/she asks the interested parties to make their last offers, because one of them will be accepted, and then he/she will close the arbitration procedure. It is observable that in this situation the last offers of the interested parties converge. In short, when the arbitrator closes the compromise, the interested parties very quickly reach the compromise.

In fact, the word of "compromise" has a different meaning in English and in Hungarian. In Hungarian, compromise means an instable equilibrium that might be upset and nullified very easily by any kind of events or happenings. In English, it refers to a stable equilibrium that, once was reached, is whole-heartedly suitable and acceptable for the interested parties. Theoretically we can approach the question of compromise with the help of the Brouwer's fixed point theorem (1910) or with their "real world" illustration, with the 'coffee cup theorem'. In terms of mathematics, the theorem states that every continuous function that maps an n-dimension closed ball to itself has a fix point. In terms of coffee cups, it means that if we have a cup of coffee, and we stir it well with a spoon, then we fix the content at any optional moment, there will be a molecule in the coffee that will be at the same place as it was before stirring. Consequently, after stirring, our cup of coffee has also a fix point. János Neumann has realised later the opportunities of applications of this theorem in the domain of the game theory. It is sure that there is always something "fix".

The dollar auction game

The next game we were familiarised was the dollar auction game. The essence of the game is that there is one dollar to put up for auction. Everybody may bid for it. The starting-price for the one dollar is one cent. The winner for one dollar will be who makes the highest offer for it; nonetheless, there is a special rule at the auction. Not only does the winner will have to pay in his/her bid, but also the next to last. However, the next to last will not get anything in return for his/her bid.

The observations of the dollar auction game show that the final price of the one dollar usually is considerably high. It is approximately 340 cents. (And of course, the question-master, who puts up his/her one dollar for auction, comes off best… With collecting the bid of the winner and the next to last together, he/she might get for his/her one dollar almost seven dollar in return.) The question is why the players engage and get stuck in this kind of bidding process, which is visible not profitable for them. And another question is what type of strategy is advisable to pursue for the players, with the help of the game theory, in the dollar auction game situation.

At first sight, the rules of the dollar auction game seem very artificial. Nonetheless, we can see very similar situations either in business life or in nature. In business life, the one of the best examples is the so called Concorde Fallacy. In this case, despite the fact that the investors had yet invested highly in the development of the Concorde airplane, and it was also clear that the whole project was loss-making business – as a matter of fact – from the beginning, the investors were not able to stop funding the project. Since they had had "too much invested to quit". Otherwise, we can find the situation of the dollar auction game also in nature, for example, in the phenomenon of the posturing. The posturing in the animal kingdom means a special kind of fight between two animals, such as between two tiddlers for something of high value (for example some nutriment or a female tiddler) without fighting directly with each other. Instead, they pick up some threatening pose and then start staring each other out. The winner tiddler is that is able to pose longer, and the loser tiddler is that gives up earlier. In this example, there are also striking similarities to the dollar auction game. The loser tiddler loses not only the obtainable reward, but also his valuable time devoting to posing. In this case, the payment is his time.

For the question that what kind of strategy is advisable to pursue in this situation, for example for the tiddlers, the game theory gives us the answer. The answer is the so-called mixed strategies. When we use mixed strategies in a game or in a decision-making situation, we entrust ourselves to randomness. Our decisions are guided by assigning the probability to every possible option, so we make decision on the basis of probability and not of some kind of consideration (that are also calculable for others). For example, we throw a dice. The tiddlers will come off well in the long run, if they choose the period of time they intend to pose randomly. And then, they pose with poker face until the last minute of the period of the chosen time, and after that, they suddenly quit. They win, or they lose. But if the average of their randomly chosen periods of posing time equals the value of the obtainable reward for them in terms of time in the long run, they chose an optimal strategy. In the case of the dollar auction game, it means that we will bid one dollar for one dollar in the long run. However, in individual cases, we might bid five cents but also five dollars for one dollar depending on the randomness. The main point is that our adversary never will be able to calculate our behaviour.

In the game theory, it was János Neumann and John Forbes Nash, who proved theorem that states there is a stable equilibrium all the time in this kind of games. The stable equilibrium means that every player is able to choose a so-called mixed-strategy, from which it is not worth to depart unilaterally, because they can only lower and not raise their probable rewards with it. (Neumann proved this theorem for two-player and Nash for multi-player games.)

The games based on bluffing

The mixed-strategies can be used successfully also in lots of other games, such as in the rock-paper-scissors game or in the games based on bluffing, for example, the poker or the 1/9 game invented by Professor Mérő.[3] What is a bluff, and what is a difference between a bluff and a lie? What is the relationship between the bluff in real life and the game theory, in which especially the before mentioned theorem of the optimal mixed-strategies? At the end of the lecture Professor Mérő analysed these questions.

Was it a lie when Churchill said during the Second World War that "we will fight until our last drop of blood";[4] however, he knew perfectly that their reserves had been absolutely exhausted? Or it is a lie if a student being not prepared enough has a "well-prepared student look" perhaps to avoid the examination? Or is it a lie if a poker-player drops a hint about having a good hand, but in fact he/she has a bad one? Or is that tiddler that is posing also at the last minute of his posing period of time (yet randomly and scientifically underpinned, of course) with the purpose of following it still for long hours a liar? These examples do not really mean lies. Instead, they are bluffs.

The motives behind a bluff or behind a lie are different. If somebody only bluffs, there are not any real lies. The student just "looks like" preparing for the class, but he/she do not tell the teacher that he/she has also done it. A liar wants to achieve considerable gains in the short run, he/she in not interested in the long run. However with bluffing, somebody wants to hold the others in the state of uncertainty and to encourage them to take a risk in the long run. A liar, for example in poker, wants the others to believe he/she is having a bad hand in the here and now. If somebody bluffs, he/she wants the others, later when he/she will have a good hand, to believe in that he/she will just have a bad hand. That will bring him/her the real winnings. With the actual bluff, he/she wants to achieve only that he/she will become inscrutable for the others in the long run.

The role of bluffing in real life is the same as the role of randomness in the games playing with optimal mixed strategies. Applying not too many, but not too few bluffs in real life situations - such as setting up an enterprise or times of falling in love - could result in the evolution of the optimal stable equilibrium, which is appropriate for everybody, and its alteration is not worth to anybody.

References

Forgó F. (2009): Mivel foglalkozik a játékelmélet. *Magyar Tudomány*, 2009. 05. pp. 515-527.
Kóczy Á. L. (2006): A Neumann-féle játékelmélet. *Közgazdasági Szemle*, LIII. évf., 2006. január pp. 31-45.
Mérő L. (2007): *Mindenki másképp egyforma (A játékelmélet és a racionalitás pszichológiája*); Tericum Könyvkiadó, Budapest
Mérő L. (2008): *Az elvek csapodár természete*. Tericum Könyvkiadó, Budapest

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Thank you for your kind collaboration. *Editor-in-Chief*

[3] The 1/9 game was presented during the lecture, but in this event report we set aside its delineation.
[4] The exact quotation is: „we shall defend our island, whatever the cost may be. We shall fight on the beaches, we shall fight on the landing grounds, we shall fight in the fields and in the streets, we shall fight in the hills; we shall never surrender".