Redistribution Systems, Cross-Coalitions among them and Complexes of Memes Securing their Robustness

Redistribuční systémy, křížové koalice mezi nimi a komplexy memů zabezpečující jejich odolnost

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If a certain piece of knowledge opens the path to further discoveries, it is usually an unmistakable sign of the fact that the theory, of which it is a part, is proceeding in the right direction. This is also true in the opposite case – a theory that is not distinguished by certain internal dynamics, in which an existing piece of knowledge is not a bridge to a new discovery, a theory which is only treading water, should re-evaluate some of its assumptions.

As far as the theory of redistribution systems is concerned, the initial theses of which were formulated approximately two and a half years ago, it is rather the first case. During a brief period of time, several dozen expert articles and papers have been published, as well as one scientific monography[1].

Anybody can get a clear idea about how dynamically this theory is evolving by comparing the level of knowledge presented in the contribution of the authors of this paper published in the first and second issue of the ACTA VŠFS magazine last year[2], which were published only six months apart. In our opinion, also this contribution confirms that the potential of the theory of redistribution systems has still not been exhausted by a long shot. We also believe that the most significant discoveries are still ahead of us and that we are still only seeing the proverbial tip of the iceberg.

1 Elaboration and specification of the mathematical model of the negotiation process

Let's keep in mind that redistribution systems (as objects analyzed via the apparatus of game theory) are characterized by two basic characteristics:

- The more that payouts to players deviate from their performance, the more the performance of the entire system declines.
- The systematic deviation of the payouts of the players from their performance is given by the formation of coalitions inside of them, when one set of players (form-

1 *Valenčík 2008.*

2 *Budinský – Valenčík 2008a; Budinský – Valenčík 2008b.*

ing the coalition that controls the distribution in the system) is treated preferentially, whereas the others (outside of this coalition) are discriminated.

The theory of redistribution systems can be applied in various areas, such as a company, part of a company, any institution, interest or political organizations, and potentially family relations as well.

For the analysis of the general inherent laws of the behavior of redistribution systems, a model of an elementary redistribution system is used, which has three players (A, B, C,), whose performance varies (for illustration, e.g., in a ratio of 6 : 4 : 2) and that have the same voting power, respectively the same influence (which means nothing else other than that the coalition of any two players will control the distribution of payouts in the system). We can also add some other assumptions to this, such as that the payout of every player can be equal at a minimum to one.

In the already mentioned articles published in ACTA magazine, it was shown that a process of negotiation in which a player that is not a part of a coalition panders to one of the players that created the coalition, leads to the formation of three discriminatory balances, the values of which can be calculated, and that on the basis of the discriminatory balances, it is also possible to calculate the Nash balance. Concurrently, models of various external influences that could have an impact on the redistribution system were presented. The graphical depiction of the individual types of balances and their movements makes it possible for everyone to get an idea about what is happening as a result of various influences that are affecting any redistribution system. It is especially important to alert to the following: As soon as we meet with the fact that something is developing differently than it should, this signalizes that the game has been entered by some influence or factor that we had not counted upon, such as a network relation of one of the game participants, respectively the fact that the player is a member of a certain hidden cross coalition, i.e., of a coalition between redistribution systems.

In order to calculate the individual types of balances, which we presented in the first of the mentioned articles, we worked with an intuitive notion of the negotiations process. We will now show how it is possible to specify this notion. And it is this specification that will serve as a certain bridge that opens up more, enormously attractive, research space.
We will introduce the following designations:

- D A (y_E; z_E); D B (x_E; z_E); D C (x_E; y_E) are values of discriminatory balances in which player A, B, C is being discriminated.
- D A (y_i; z_i); D B (x_i; z_i); D C (x_i; y_i) are values of various discriminating situations, i.e., values in a case where two players (i.e., those that are not stated, for example in the case of D A (yi; zi) it is players B and C) agreed to some payout and to the third player (player A) are giving the lowest possible payout.

If all of the players know these values, the values are the same for everybody and the players know that they are the same for everybody, then we can describe, for example, the negotiation process in the following way:

1. Let some discriminating situation, such as D A (y_i; z_i), which is the result of negotiations in round zero, be the initial relationship. At the same time, the following holds true, for example.

$y_0 > y_E$ and concurrently $z_E > z_1$,
i.e., player B has negotiated a larger payout than corresponds to the discriminatory balance, and thus player C has a smaller payout than corresponds to the discriminatory balance.

2. **In the first round,** the player that is discriminated turns to the player that has a larger payout than corresponds to the corresponding balance (in our case player C), and offers him a larger payout. In this case, the following holds true:

$z_1 > z_0$ and concurrently $x_1 > 1$,
i.e., both players improve their situation. At the same time, player A can pander to player C (attempt to offer him more than corresponds to the discriminatory balance in order to insure the creation of a coalition with him).

3. **In the second round,** the player that is discriminated (B) turns to the player that has a lower payout than corresponds to the corresponding discriminatory balance (which, let's say, in the given case is once again player A, who pandered to player C due to the reasons stated above), and offers him a larger payout than he had after the conclusion of the coalition with player C. In this case, the following holds true:

$x_2 > x_1$ and concurrently $y_2 > 1$,
i.e., both players improve their situation. Without restricting the generality of the approach, let's now assume that player B does not attempt to pander to player A and offers him less than corresponds to the discriminatory balance.

4. **In the third round,** the player that is now discriminated turns to the player that has the lower payout than corresponds to the corresponding discriminatory balance (which in the given case is once again player A), and offers him a larger payout than he had after the conclusion of a coalition with player B. In this case, the following holds true:

$x_3 > x_2$ and concurrently $z_1 > z_3 > 1$,
i.e., both players improve their situation. Without restricting the generality of the approach, let's now assume that player B does not attempt to pander to player A and offers him less than corresponds to the discriminatory balance.

Here an important and new moment is the fact that with the repeated conclusion of the coalition, the situation has already come closer to the discriminatory balance, due to the efforts of the previous negotiations of player B with player A. Let's assume that player C now becomes aware of the fact that the coalition that will lead to his discrimination can win, so he now attempts to pander to player A. He thus accepts a payout that is lower than the discriminatory balance.

5. **In the fourth round**, the player that is now discriminated (B) turns to the player that has a smaller payout than corresponds to the corresponding discriminatory balance (which in the given case is now player C), and offers him a larger payout than he had after the conclusion of a coalition with player A. In this case, the following holds true:

$z_1 > z_4 > z_E > z_3$ and concurrently $y_2 > y_4$
i.e., both players improve their situation. Now, however, player B is pandering to player C. In the opposite case, the system would evolve similarly. The situation will come closer and closer to the attainment of the discriminatory balances.

What are the negotiation rules, on which we based the presentation of one of the possible scenarios?

1. The result of negotiations will always be some discriminatory situation.
2. The number of negotiation rounds is unlimited.
3. Negotiations will always be begun by the player that is discriminated (his payout equals 1).
4. The discriminated player makes an offer to that player out of those who are in the winning coalition, who has a lower payout than corresponds to the discriminatory balance. (This is a very important assumption.)
5. If the winning coalition already achieved the distribution according to the discriminatory balance, then the discriminated player could offer the creation of a coalition with any of either of the players.
6. When formulating the offer to the player that has less than corresponds to the discriminatory balance, the discriminated player has the following possibilities and restrictions:

- He can offer more as well as less than corresponds to the discriminatory balance. (If he offers more to the second player, it is because he is pandering to make sure that his participation in the winning coalition is secure).
- To give a repeated offer that deviates from the discriminatory balance in a certain, but at the same time the same, direction as was the offer that he had made in one of the previous rounds; in this case, the offer must be closer to the discriminatory balance. (This is quite logical, because it does not make sense for him, with his offer, to trigger the formation of a coalition acting against him, as has already occurred once; and it is this restriction that guarantees the convergence of the system to discriminatory balances.)

The logic of the negotiations of the above mentioned type is as follows: Each of the players is attempting to attain one of two possibilities that are advantageous for him – to secure participation in the winning coalition by pandering to one of the players, or conversely to secure a higher payout within the winning coalition.

If, however, all players proceed in the same way and they are equally thorough, and if the negotiations process is not restricted in any way, then the individually negotiated discriminatory situations come closer and closer to the discriminatory balance. One can say that perfectly rational and informed players could know the result already right at

the beginning and they wouldn't have to "try" whether by chance they are successful in attaining some better result.

Several important conclusions, however, follow from the developed form of negotiation that we presented:

1. Within the scope of a "clean" model, it makes sense to consider only discriminatory balances and possibly the Nash balance as possible situations. (If, however, the players are to arrive at the Nash balance, it is necessary to supplement the negotiation rules.)
2. The developed notion of negotiations shows that the result of negotiations is very sensitive to various influences that can impact that negotiations process. It offers the offer to identify, systematize and analyzes these influences in a certain way.
3. It is the basis of the formulating of various popular models of the negotiation process. At any rate, we see that as soon as we begin formalizing the negotiations process and analyzing it with the use of mathematical means, we begin revealing complex relations even in an elementary redistribution system. But at first glance, it is not apparent what could be an elementary form of negotiations in an elementary redistribution system.

How do negotiations take place under the assumption that the players do not know the value of the discriminatory balance, but are informed about the results of mutual negotiations? In the given case, it is logical to further assume that each player has an idea about how much he should receive and how much his partner in the winning coalition should receive. If he were to be discriminated, and find himself outside of the winning coalition, then how much should each of the players in the winning coalition get? From this perspective, let's designate:

D A (y_A; z_A) is a discriminatory balance in which player A is discriminated, the values yA and zA are values that player A considers as corresponding to the payouts of players B and C, if a discriminatory balance forms without his participation.

D B (x_A; z_A) is a discriminatory balance in which player B is discriminated. The value zA is the same as in the previous case, i.e., player A assumes that what player B would get in a coalition with player C, player B should also get if player A was in a coalition with him. The value x_A is then the value that player A requires for himself.

D C (x_A; y_A) is a discriminatory balance in which player B is discriminated, the value of corresponding payouts is the same as in the previous case.

We can designate and interpret D A (y_B; z_B); D B (x_B; z_B); D C (x_B; y_B) a D A(y_C; z_C); D B (x_C; z_C); D C(x_C; y_C) similarly.

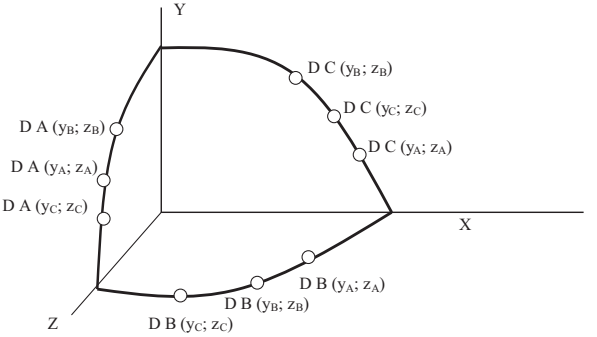
2 Graphical depiction of the negotiations process

Let's now use the same negotiations process as in the previous case, but with the difference that in the next negotiations round, each of the discriminated players will focus on

that player that according to him receives less in the winning coalition than he should get according to the thinking of the discriminated player.

By using step-by-step reasoning, we come to the answer that even in this case the system will converge. And it will converge to values corresponding to the discriminated player's idea of a fair distribution. In order to better show why, we will use a visual representation.

Illustration 1: Graphical depiction of the negotiations process – values of ideas about fair distribution:

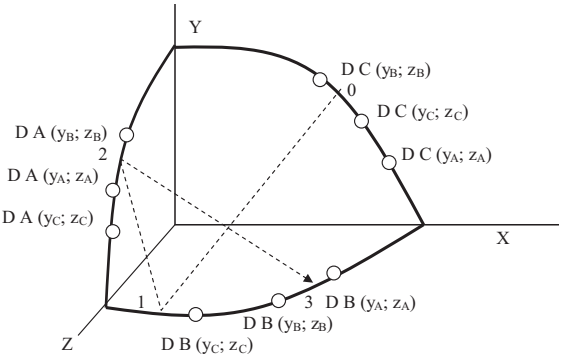


X, Y, Z are the payouts of players A, B, C (the axes have been moved with regard for the fact that the smallest payout of each player can equal 1).

Also marked here are the corresponding points under the assumption that each of the players is over-valuing himself, and is more objective in the evaluation of the others. The placement of the corresponding points can also be different; players can also under-value themselves or they may not be objective in the evaluation of other players, if they are not members of the coalition. This does not change anything in the result of our considerations.

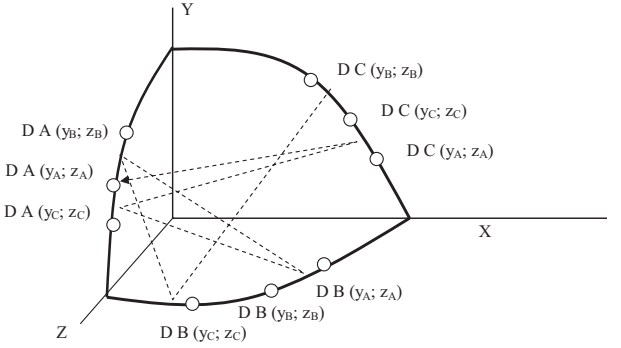
It is worthwhile to give special consideration to how the game will evolve if every player will require the same payout for himself if he is in a winning coalition with another player, or not. We can then show the negotiations process graphically.

Illustration 2: Graphical depiction of the negotiations process:



Other negotiation steps lead to individual discriminatory balances.

Illustration 3: Graphical depiction of next steps in the negotiations process:



On the basis of this visual representation, it is possible to specify the conditions under which negotiations converge to individual types of discriminatory balance.[3]

3 Conclusions that follow from the negotiations process analysis

It follows from the analysis of the negotiations process with pandering in an elementary redistribution system that under quite general assumptions, this process converges to three discriminatory balances that have equal probability of occurring. This conclusion can also be generalized for systems with larger numbers of players. Here the negotiations process converges towards discriminatory balances, the number of which is given by all minimum winning coalitions that can form. (If the number of players is 2n, i.e., an even number, then it is a number of combinations designated by the number n+1, if the number of players is 2n+1, i.e., an odd number, then it is a number of combinations designated by the number n.)

The fact that the formation of all minimum discriminating coalitions, and discriminatory balances corresponding to them, has the same probability can also be read differently. And that is that all that is needed is a very small external influence acting towards the formation of a certain discriminatory balance, for exactly this balance to form. The size of this influence can be of an arbitrary size, if, however, this influence is not compensated by another influence that would act against the formation of the stated discriminatory balance, or if another stronger influence acts on the system, moving the system to a different discriminatory balance.

From the perspective of the utilization of the theoretical apparatus that the theory of redistribution systems has available, the problem then moves into an area of the analysis of those influences that can predetermine the formation of a certain discriminatory balance by influencing the negotiations process in a decisive way. This concerns both the description of these influences, as well as the resolution of the question when and under what conditions can they be compensated by other influences.

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3 Some other findings are formulated in the contribution by H. Vysloužilová (2008) that was presented at the 12th annual Human Capital and Investments in Education conference.

It would appear that comparing the abstract model with reality, which always surprises us with something, will lead to that fact that a huge number of the most varied external influences, which we will not be able organize in some reasonable manner, will emerge in front of us. Even in this case, however, it is turning out that the problem is only in the discovering of a suitable key to the deciphering of the seemingly inexhaustible volume of what we would like to express theoretically. The fact that the process of negotiations with pandering as described for us is exceptionally sensitive to external influences can also be formulated in the way that it is also sensitive to anything that restricts the perfection of the negotiation process. In other words, that which is capable of predetermining the formation of a certain discriminatory balance has the form of the raising of certain imperfections, certain restrictions, into the negotiations process.

A typical example of such a restriction can be the imperfect informedness of one of the players about what has been negotiated between other players. The relevant player then does not know what offer to make, and to whom, so that it is accepted. Another example can be the restricting of one of the players, as far as the willingness of other players to negotiate and conclude coalitions with him is concerned.

The corresponding restrictions also apply to all possibilities of the expanding of the model, for example by taking into consideration that:

- The system develops in time.
- The system finds itself in a relation to other systems, and the various systems can influence one another.
- The performance, decision-making power and other parameters of the players can change in time.

Etc. If we are to summarize what we have said so far about the theoretical (but practical as well) consequences of the analysis of the negotiations process model, then we can say the following:

1 It follows from the theoretical model that all discriminatory balances have the same probability of occurring.
2 From this it follows that in reality, those discriminatory balances that are formed under some external influence will push through; this influence can be very small, but it cannot be compensated by another influence acting against it.
3 External influences have the form of the restricting of the perfection of the negotiation process in a redistribution system, i.e., what decides is what restricts or blocks the negotiations process in a redistribution system with something (and out of which then follows the unequal positioning of the individual players).
4 The sources of imperfections in the negotiations process can be identified by expanding the model in various directions, i.e., each direction of the expansion of the elementary model of a redistribution system points to different sources of imperfections.

(However, we still do not have a more specific idea about what it is that is restricting, blocking, that which brings imperfections into the negotiations process. We can still be-

lieve that revealing everything that influences the process of the formation of coalitions inside redistribution systems is a task that is practically impossible.)

Now we get close to the decisive step. One can assume that individual redistribution systems can mutually influence one another in some way. For example, in the sense that those hard-to-identify external influences that predetermine which discriminating balances will form in individual systems can be transferred from one redistribution system to another. Let's assume, for example, that coalitions are being formed not only inside redistribution systems, but also among players from various redistribution systems. Let's call these coalitions "cross-coalitions".

Whereas the size of coalitions inside individual redistribution systems is restricted by the number of players, and a minimum absolute majority of the number of players is sufficient for a minimum discriminating coalition to be created, cross-coalitions can have a very large, practically any, number of members. It is also relatively easy to imagine what specific form the larger cross-coalitions have. They are social networks that connect players from various redistribution systems. Via these networks, the process of negotiations in redistribution systems can be influenced, among other things, by the following:

- The transfer of information about the course of the process of negotiations to which those that are outside of the network do not have access.
- Influencing of preferences (who, with whom, with whom not, or against whom), if it concerns a negotiations process inside individual redistribution systems.

(The above stated serves only for the formation of an initial illustrative idea; a cross-coalition can still influence the negotiations process in a number of different ways.)

Social networks that are formed on the basis of cross-coalitions mutually compete against one another in the social space. Some can disappear and thus become material for the formation of other cross-coalitions. Some of the networks can subordinate other networks and incorporate them into their structure. The merging, inter-connecting or, conversely, dividing of these networks can occur. A question arises of what plays the most important role for the preservation of the identity of social networks of this type, what is the condition of their successful survival in a competitive environment, respectively in an environment in which the natural selection of that which is the most resistant to various external influences occurs. We will present the answer to this question in the next part.

4 Use of the theory of redistribution systems for the analysis of a certain type of memplexes (those that make the formation of cross-coalitions among redistribution systems dependant on them)

We consider the revealing of the connections between the theory of redistribution systems and the theory of memes (memetics) as the most significant and most interesting result achieved in the previous period. In order to understand what this connection consists of, it is beneficial to remind (or to put it in more exact terms, to "re-construct") how it was discovered.

We can imagine quite well how much of a significant role cross-coalitions among individual redistribution systems and the network structures (social networks) formed on the basis of these coalitions have. We gave a certain model of the influence of this type of coalition in the third example stated in an article published earlier.4 Each one of us undoubtedly has a number of experiences of how these influences are transferred and how they influence events at various worksites, institutions or organizations. And in spite of, or possibly exactly because of the fact that these social links tend to be more or less hidden, they frequently take effect quite unexpectedly and thus very effectively.

We can also imagine that these cross-coalitions compete against one another; stated more precisely, they literally battle for survival. These cross-coalitions, and social networks interlinked with them, which are not sufficiently stable, which are not able to preserve their identity, defend their existence, survive under conditions of natural selection, fall apart and become materials for the creation of more robust network structures, or they are modified in various ways and incorporated into these structures.

The architecture of effectively functioning (viable, winning, surviving) social networks created on the basis of cross-coalitions can be invented or designed by a human. In reality, however, the architecture is further molded by the spontaneous behavior of people, improves itself ("hardens" itself), and those elements that nobody would even be capable of inventing are formed in it.

What is the basis of the robustness of network structures of this type? What is their success in mutual competition, in the battle for survival, based on? With this question, we get to the key moment. Let's remember it well.

For example, we can reason in the following way:

1. A tendency for the inter-connection of players that represent that same type of winning coalitions in individual redistribution systems will exist. I.E., if, for example, in some redistribution systems coalitions that are based on the connection of average and the least performing players win, the cross-coalitions among these players will also form between other redistribution systems, so that:

- Where coalitions based on the connection of mediocrity and low performance won, they remain.
- Where they did not yet win, they come through as the winners.

2. Another possible direction of reasoning is the fact that we will look for the origin of the robustness of network structures founded on the basis of the formation of cross-coalitions among redistribution system in phenomena such as:

- A shared ideology to which the players from various redistribution systems subordinate themselves.
- A common origin (tribal, ethnical or regional), which is consciously taken as such and taken as a value that unites players from various redistribution systems and leads to the fact that they support it.

4 *Budinský – Valenčík 2008b.*

- A shared faith to which the players from various redistribution systems subordinate themselves.
- Etc. (It is possible to take into account also additional elements of this type and their various inter-connections.)

For a certain period of time, the team that deals with this topic searched for which of the above stated possibilities could be considered and how to model the influence of the factors stated above. Only after some time it was discovered that everything is a bit different. More exactly – the current period of time leads to the fact that we have to look at the entire matter from a different point of view.

Earlier, structures formed on ideological, religions, ethnical, etc. bases played a significant role. Today, something else is coming to the forefront, and – as we will see – something much more robust, aggressive and able to survive better.

It turns out that cross-coalitions are formed also between redistribution systems that vary by what according to the above stated should divide them or even on the basis of which they have become enemies. I.E., cross-coalitions and network structures are being formed among systems having different faiths, different ideologies, different territorial, national or ethnical identities, etc. The more that players forming different redistribution systems are inter-connected in cross-coalitions, the more effective is the corresponding cross-structure and the network structure that closely follows – more robust and concurrently also able to better penetrate its environment and overtake other network structures. An important role is played by the players that are capable of portfolio investments into positions in various social networks.

At a time, when the amount of contacts among people has radically grown, such a multi-dimensional inter-connecting on a local as well as global scale is a typical and dominant phenomenon. This magnifies even more the competition to which individual network structures are exposed, this tests even more the cohesion of the various cross-coalitions among redistribution systems, this increases even more the effect of the natural selection factor on their improvement, and this increases even more the role played by that which is no longer completely on record in the form of reflection via human thinking.

It could appear that the formation of cross-coalitions on the basis of portfolio investments into positions in the most various network structures, even into those that are complementary (from the point of view of faith, ideology, type, origin) is connected with something that could be called "idea, value, or another type of 'emptiness'". In reality, that which enables the inter-connection of players from various redistribution systems is not something that is not filled with content, and is not something that is easy to map. It has a very complicated structure that we are able to uncover only partially. But what is it?

In order to become aware of what we are dealing with, we have to take one more step forward in our reasoning. Let's remind ourselves to what lead the detailed analysis of the negotiations process:

- The result of a negotiations process can be several types of balances and coalitions corresponding to these balances, which differ quite a lot by who is at an advantage in them and who is discriminated.
- Into what type of balance the system "falls" is determined by something external (against a clean model), respectively can be influenced by even very small influences acting from the external environment (in the model example by something that we could call an "infinitely small external influence").
- If some of the external influences offset one another, then the system "falls" into that balance which corresponds to the external influence, which was not offset by other influences.
- The negotiations process is thus not sensitive only to external influences, but also to whether some of the influences are excluded from the negotiations process or whether their role in the negotiations process is limited.
- The acting of external influences in the negotiations process always has the form of the use of supplementary argumentation, i.e., the use of some arguments, by which the recipient is notified of some circumstance that he was not aware of, and the goal of which is to influence his decision (in the economic model executed on the basis of the principle of the costs of a foregone opportunity).[5]
- A very effective way of influencing the negotiations process, and thus also the formation of coalitions, is therefore the preclusion of a certain type of supplementary argumentation (block it, limit is weight, make it impossible for the person for whom it is meant to accept it).
- The effectiveness of the preclusion can be made even greater if not only the supplementary arguments are made taboo, but if also those people that are using these arguments are expelled from the negotiations.
- This is possible if use of a certain type of argumentation becomes that by which – on one hand – are recognized those who are predetermined for the formation of a certain type of coalition or cross-coalitions, and – on the other hand – are identified those, who are excluded from this process because they could disturb that which is the basis of discriminating coalitions, cross-coalitions and the social networks based on them.
- That which determines the stability of the corresponding structures and networks, as well as their ability to spread and take control of its surrounding, as well as the thinking and behavior of people, is replicated and spread via the communications process (the content of which is, in a significant manner, the spontaneous and permanently present negotiations).

So what is it? What is the factor that decided about the formation of the most robust, and at the same time also the most expanding and penetrating cross-coalitions and closely linked social networks that serve for the formation of winning discriminating coalitions inside various (different in a different way, similar in different ways, or, conversely, complementary in different ways) redistribution systems?

When at one of its regular discussions the team that is dealing with this issue came to the stating of the above stated order of questions (formulated, however, not in such a clear

5 *The principle of the costs of foregone opportunities states that a cost of that alternative, for which the person decides, is each of the alternatives that are sacrificed.*

way as is possible when reconstructing after the passage of time), one of the participants[6] said – "why, it's memes….".

With this, the process of the gradual revealing of how redistribution systems and their mutual interconnections work moved to a completely new phase. We gradually began discovering and mapping a certain type of replicating entities that have the form of meme complexes, the structure of memes (or, how it is sometimes said, "memplexes")[7], which are characterized by the following:

- The have the ability to block (make taboo, restrict) a certain type of argumentation, or the wider angle of view of reality, natural development of knowledge that the individual has at his disposal, etc.
- They lead to the fact that the viewing of the world, a rational reflection of reality, etc., by those that are under the influence of a corresponding structure of memes, is increasingly restricted more and more, and gradually the "encapsulation" of a person's consciousness occurs so that everything that would enable any transcendence, any critical reflection or distance from what the affected person has succumbed to is liquidated.
- They take control of the formation of cross-coalitions and the social networks that follow from them.
- In the process of the very intense battle for survival (and for which of these meme structures wins, or which, conversely, vacates the space, breaks down) given by the significant (from a historical perspective manifold) expansion of contacts among people and the possibilities of communication (both in the form of technical means, as well as a result of the fall of various barriers), the very fast improving of these memplexes occurs; the motor of the dynamic process of the evolution of memplexes capable of taking over the behavior of a person is their natural selection, similar to the one we come across with organisms of a biological type.
- They are a phenomenon "from another world", they have a relatively complicated structure, which we are able to view only from the outside and only to a certain extent, respectively which we will be discovering gradually and always only partially.
- They are not a product of the rational thinking of people, they are subject to the logic of natural selection in the environment in which they were formed; their impact on our civilization is manifested in the various forms of that which appears to us as irrationalities in human behavior.

In contrast to the theory of memes (memetics), the following is new in our approach:

1. The replication of the units of information (memes) and the replication of structures that form in society (as the carrier of memes), i.e., replicating information and substrate structures, differs.

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6 It was Petr Krejčí in June 2008. Among other things, this episode shows how crucial teamwork is. Each one of us has the tendency to reason by means of inertia. However, as soon as several persons communicate together about a scientific topic (and these people comply with the rules of correct, critical professional discussion), ideas are formed that break through the barriers of stereotypes.

7 Blackmoreová, S. 2001. Teorie memů. Praha : Portál.

2. The causes of the recency of the problem are being found (a significant higher degree of the battle for survival of the replicating structures as a result of the expansion of the possibilities of contact among people, and therefore a significantly fast development as a result of natural selection).
3. Identifies the most important type of structures:

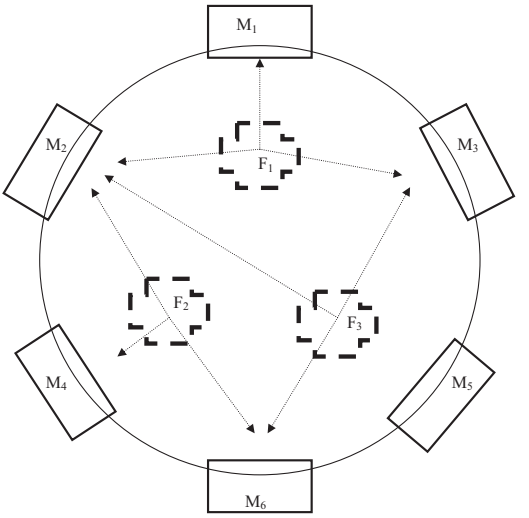
- In the case of substrate structures, this concerns the cross-coalitions among redistribution systems and the social networks that follow from them.
- In the case of information structures, this concerns the complexes of memes (memplexes) that block the ability of the transcendence of existing knowledge, lead to making certain opinions, views of reality, arguments, etc., taboo.

4. The theory of redistribution systems is used as the key of the analysis of the problem of the replication and reproduction of information and substrate structures – it shows from where these structures get their "energy" (i.e., an analogy of energy sources) and "building material" for their replication and reproduction.
5. The phenomenon of the blocking of the transcendence of the knowledge of new things, as a basic element of replicating information structures, is revealed, described and substantiated.
6. The role of cross-coalitions among redistribution systems as a certain skeleton of replicating substrate structures is revealed, described and substantiated.

5 Demonstration and description of memes and their complexes

Let us now attempt to demonstrate what structures of memes, which block the transcendence of the given state of the knowledge of reality that a certain individual has at his disposal, thereby reforming it into the building material (substrate) of certain social networks, look like.

Illustration 4: Graphical depiction of a limiting complex of memes (memplex):



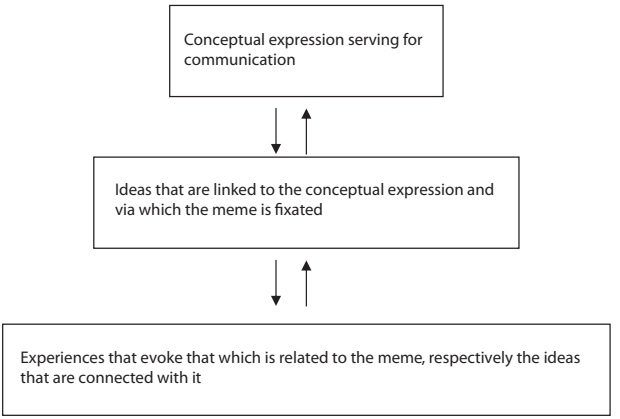
A complex of memes (memplex) that is capable of replicating (transmitted "from head to head", spread like a disease) via communication consists of:

1. That, which is able to block the transcendence of knowledge that a given individual has at his disposal – in the given example of individual blocks (memes) M_1, M_2,… M_6. These mutually supplement one another and create something like a "circle defense" of that, which is, as a stereotype, blocked in the mind of the individual.
2. That, which makes it possible for each block (meme) to function as that, which limits the system of acquiring knowledge, prevents the transcendence of existing knowledge, and concurrently intermediates (represents externally) as that, which can be communicated and thus spread the corresponding meme via this. This is depicted as F_1, F_2, F_3 on the illustration. This can concern, for example:

- an experiential fixation of the meme,
- an idea that we connect with the corresponding meme,
- a conceptual expression of the meme, via which we are communicating its contents so that for the person to whom it is being communicated, it evokes the same fundamental idea and original experiences (when the idea and experiences then gradually mutually supplement one another).

3. The arrows show how our ability to create and maintain experiences, ideas and conceptual expressions stabilizes individual memes in our mind. (Only some relations between that, which is capable of evoking and storing experiences, ideas or to conceptually express the known, and the corresponding memes are depicted.)

Illustration 5: Three layers of meme fixation:



The above described representation of the structure of a complex of memes capable of spreading via communication (as is always the case when we are coming into contact with something that is relatively complicated and that we are getting to know gradually) is only very approximate. For example, the following are among the simplifications:

- There are significantly more individual memes and they form a structure that has more layers, i.e., some are more general and block, from a certain perspective, the

whole system of knowledge, the carrier of which is the corresponding individual; it's as if they were on the surface, while the others are related to the blocking of partial knowledge.

- Similarly, there is also more of that by which each meme is stabilized in the psyche of an individual as a relatively permanent phenomenon that is capable of transmission. It is not only the connection with ideas, the fixation via experiences and conceptual expressions. It is also a way via which that, which is transmitted as a meme, becomes involved in negotiations as a factor that can influence the outcome of the negotiations, etc.
- It does not contain a depiction of the dynamic aspect, i.e., of the possibility to break through the block (finds ways of evoking ideas or experience in the form of communication via terms that would destroy the corresponding limiting structure of the memes), or conversely, of the process of the gradual encapsulation of replicating meme structures.The mechanism of the evoking of a blocking aversion is based on:
- The evoking of an idea during communication via verbal as well as non-verbal expressions.
- The evoking of experiences connected with this idea, once again via verbal or non-verbal expression.

This is actually the hitting upon the deeper layers of the psyche by that, which is transmitted in direct communications contact.

Despite a number of simplifications, the conceptual elementary idea about the structure of meme complexes is useful. Its confrontation with how it really works will make it possible to gradually attain a better expression of what is hiding from us and what must be discovered, so that we are better able to face the risks connected with the spreading of the limiting structures of memplexes.

On the basis of the findings that have been formulated above, the team that deals with these issues[8] proceeded with the compilation of a meme map, i.e., the identification and description of the blocks the eliminate various arguments from the negotiations process, or eliminates those players that use a certain type of arguments. The first results are proving to be very promising.[9]

The typical signs of memes active during the formation of cross-coalitions are: the formation of a picture of the enemy, non-critical adoration of some authority, tendency towards solutions based on strength, the consideration of some statements as all-explaining or indisputable, the granting of a right to something for only a few chosen ones, a catastrophic vision of the world, expectation of brighter tomorrows, relativization of morality as well as rationality, use of double standards, creation of a feeling of being threatened by something, etc.

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8 This concerns the team that is handling the GA ČR Investments into social capital and effectiveness (ref. no. 402/06/1357) project and the Internal grant project of VŠFS Theory of redistribution systems.

9 The first expert forum where results in this area were presented took place on December 19, 2008, within the regular EPS-SI Theoretical seminar organized by KEMV VŠFS.

When compiling the meme map, it is necessary to show how the individual memes (resp. submemplexes) mutually supplement one another (are complementary towards one another), or, conversely, mutually exclude one another.

6 What can be expected from further research

Memes and meme complexes have their roots deep in our psyche. The discovering of their structure is a long-term and difficult task. One of the research paths is the careful monitoring of that, which is taking place in the communications space, the identifying of various manifestations of memes, their suitable classification, analysis and objectivization of the acquired knowledge. Therefore an approach based on the use of empirical methods. But these are not all of the possibilities of the theory. The second – and in a certain way more interesting – path is continuing in the analysis of the negotiations process via the expansion of the mathematical model. Here it is possible to very precisely and very specifically formulate the tasks that have an unambiguous solution (and thus offer opportunities to all people that have analytical thinking, are well versed in the technique of the use of the mathematical apparatus and are interested in achieving original results in the area of mathematical theory). This concerns especially the two following types of tasks:

- Prove under what conditions (other than those that we have stated in this article) the negotiations process with pandering converges to discriminatory balances, and under what conditions it does not. There are lots of alternatives that can be tested from the perspective of convergence.
- Formulate and prove theorems related to the convergence of the negotiations process with pandering in redistribution systems that are an expansion of the elementary model.

Research in both directions has both a theoretical as well as practical significance, as the mathematical model makes it possible to reveal the most sensitive moments of the negotiations process on which external influences can act. Much as the process of the development of memes and their complexes under conditions of natural selection of that, which is best able to preserve its identity and replicate in the communications space, takes place in a concealed manner and spontaneously, and nothing that is characterized by intelligence acts upon it, the process causes memes and their complexes that are able to impact those most sensitive moments of the negotiations process. In this area of research, an opportunity thus presents itself of how to demonstrate the possibilities of mathematics in the revealing of that, which in a significant manner influences social events.

Theoretical research focused in this direction can bring a number of valuable findings about the mutual effects of the elements of rationality and irrationality, respectively about the causes of that, why, by what and how the rational decision-making of humans is modified and influenced by elements of irrationality. Research in the given direction must be preceded by the further elaboration of the theory of negotiations in redistribution systems with the use of the mathematical apparatus, as well as by the establishing of interdisciplinary cooperation (including such disciplines as evolutionary biology, psychology, etc.).

Abstract
Analysis of the process of negotiations in redistribution systems shows two things: a) The negotiations process converges towards discriminatory balances, which are unstable. b) Which discriminating coalition will form can be decided by even a slight external influence, if it is not offset by another influence of this type. This opens the door to the discovery of the connections between the following phenomena – via the specific form of that, which decides about the performance of the players, the complementarity and rivalry of the players in the system, tendencies towards spontaneous advocacy of average and low-performance alliances, the "chaining" of redistribution systems, i.e., the creation of social networks of the cross-coalition type, the sensitivity of the negotiations process to imperfections of the negotiations process and the effects of exogenity, natural selection in the area of the survival of network structures formed on the basis of cross-coalitions among redistribution systems. The theory of redistribution systems can also be used in the analysis of memes and meme complexes that replicate in the communications (and thus also the negotiations) space, and restrict the rationality of the choice of some entities that are active in this space.

Keywords
game theory, theory of redistribution systems, coalition, negotiations, discrimination, meme, complex of memes, rationality and irrationality

Abstrakt
Analýza procesu vyjednávání v redistribučních systémech ukazuje dvojí: a) Proces vyjednávání konverguje k diskriminačním rovnováhám, které jsou nestabilní. b) O tom, která diskriminující koalice vznikne, může rozhodnout i velmi nepatrný vnější vliv, pokud není kompenzován jiným vlivem tohoto typu. Tím se otevírá cesta k odhalení souvislostí mezi následujícím jevy – konkrétní podobou toho, co rozhoduje o výkonnosti hráčů, komplementaritou a rivalitou hráčů v systému, tendencí ke spontánnímu prosazování spojenectví průměrné a nízké výkonnosti, „řetězením" redistribučních systémů, tj. vytvářením sociálních sítí typu křížových koalic, citlivostí procesu vyjednávání na nedokonalosti procesu vyjednávání a působení exogenity, přirozeným výběrem v oblasti přežívání síťových struktur vzniklých na bázi křížových koalic mezi redistribučními systémy. Teorie redistribučních systémů může být využita i při analýze memů a komplexů memů, které se v komunikačním (a tudíž i vyjednávacím) prostoru replikují a omezují racionalitu volby některých subjektů působících v tomto prostoru.

Klíčová slova
teorie her, teorie redistribučních systémů, koalice, vyjednávání, diskriminace, mem, komplex memů, racionalita a iracionalita

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