

## The Extension of the Game Theory to the Concept of Integrity

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### **Absztrakt:**

Az elmúlt években előbb a szakirodalomban, majd a jogalkotás szintjén is sikerült eljutnunk a korrupció-ellenesség szemléletétől az integritásfejlesztés szükségességének felismeréséig. Az egyéni normasértésekre való utólagos ráfókuszálás helyett felismertük, hogy az egész közösség értékei, szemlélete teremti meg azt a kontextust, melyben a közszolgá esetleg rossz útra térhet, ezért elsősorban e közösségi normákat, attitűdöket kell fejleszteni. Ezen a ponton azonban felvetődik a kérdés, hogy a csoportnorma milyensége és annak követése, a konformizmus, mint rendezőelv elégségesen magyarázza-e az együttműködő stratégia feladását és a versengő stratégiára való áttérést a csoporton belül. E tanulmányban a szerző a „közhazsnú javak tragédiája” elnevezésű sokszereplős játékelméleti helyzet felhasználásával nyújt alternatív magyarázatot a korrupciós események csoporton belüli eloszlásával, dinamikájával kapcsolatban. A tanulmány legfőbb gyakorlati tanulsága, hogy a csoportkohézió és a személyesség növelése fontos védőfaktor jelentenek a korrupció ellenes harcban.

**Kulcsszavak:** játékelmélet, közhazsnú javak tragédiája, korrupció, integritás

### **Abstract:**

In recent years both in specialized literature and legislation the approach of anti-corruption has been replaced with the concept of improving integrity. Instead of focusing on the one who violates the rules we have realized that the attitudes and values of the whole community create the environment in which a civil servant might get into evil ways, so first of all these basic norms need to be improved. The question is whether the quality of the group norms and conformity as an underlying principle can explain properly why certain group members replace their strategies of cooperation with a competitive manner within their groups. In this study the author offers an alternative explanation of the spreading and the dynamics of corruption related events within groups using the classical social dilemma called 'The tragedy of the commons'. The main practical conclusion of this study is that the increase of cohesion and personal relationship within the group can be an important protective factor in regard to the fight against corruption.

**Key words:** game theory, tragedy of the commons, corruption, integrity

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## 1. INTRODUCTION

In recent years the issues of anti-corruption and integrity have attracted a distinguished attention within the sphere of civil service. The efforts of legislation and tenders, projects aiming at the improvement of our civil service system can help Hungary be able to increase the effectiveness of the utilization of public funds and establish the credit of the country at domestic and foreign investors.

The devoted efforts of legislation to fight against corruption in itself is insufficient, public attitudes in connection with applying these laws in practical situations of everyday life are also vital. The legal security and democratic operation declared in the Constitution can be accomplished only if the personnel of the law enforcement agencies work in a committed, conscientious, unbiased and professional way, and always look on the interest of the commons. To ensure an appropriate background for this the entire hierarchy of law and organizational regulations put an emphasis on procedures and control mechanisms to provide the virtue of civil servants. Besides this career men themselves have to meet high moral standards, be committed to basic values and norms of civil service, since it is simply impossible to control their activities constantly. So the development of integrity is important in a personal, a corporate and a social level as well.

The invested efforts will return only if we are not content with changing merely the outward structure of corruption related issues and handling the symptoms appeared, towards the roots of these problems and we make arrangements that lead to the social and psychological sources of corruption.

The aim of this study is to explore the spread of these unwanted, disadvantageous behavioral patterns within the community so as to be able to manage them more effectively.

## 2. ANTI-CORRUPTION VERSUS THE DEVELOPMENT OF INTEGRITY

Over the past years a serious conceptual change has been established in Hungarian public administration and legislation as the approach of anti-corruption has been supplemented with the development of integrity (Pallai, 2015). The most fundamental differences between these two approaches are as follows (Maesschalck, 2009).

The most obvious difference is that anti-corruption is *against* something while the development of integrity is *for* something; therefore it is a positive approach. The rule and law-based concept of anti-corruption assumes exactly definable kinds of critical events that can be categorized in advance, so after the violation of these rules the deed can be sanctioned, the perpetrator can be convicted with a deterrent, corrective and punitive intention. The latter, value-based approach tries to convince participants using ethical arguments so it refers to a much wider spectrum of possible behavioral patterns while it does not give one unambiguous answer to a certain situation. Instead it enlarges the circle of pos-

sible events that might threaten integrity, so it enhances sensitivity, helps to practise moral judgements and forms attitudes. While the former approach concentrates on the steps to be taken after the event, case, deed had already happened so the exploration of future risks can be the only aim, the integrity oriented approach definitely wants to show the way in a preventive manner.

The corruption oriented approach keeps the sin and the culprit in focus while integrity concept aims to reveal the internal logic of corruption itself therefore the emphasis is on the operation of the whole community and on its members. The rule-based approach assumes that humans are rational, and being involved in a corruption case is a question of decision.

On the other hand the value-based approach takes into consideration that humans are not always aware of and be able to deal with emotional effects: situations that can risk integrity are often hardly recognizable and evolve only in a longer term, step by step. In case of decreased awareness one can get involved in these situations then suddenly faces the fact that negative feelings that had been suppressed in the meantime simply could not save him/her from being led astray.

This implies that corruption oriented concept stigmatizes since it shares the basic assumption that the offender is conscious, intentional and purposeful therefore somehow deviates from the 'normal', thus morally immature. In contrast, the latter approach highlights the determining power of the social context and emotional vulnerability, so it makes us realize that anybody may get into a similar situation.

Following the logic of anti-corruption we might think that the advised behavior is probable to appear if an appropriate level of theoretical knowledge about law and legal sciences appears in education, while particular cases are handled in secret, the phenomenon of corruption in practice is considered to be a taboo, or on the contrary, the examples of some scapegoats can act as deterrents. However the development of integrity puts an emphasis on practical training that involves the whole personality of the participants in the form of case studies that create opportunities for applying legal norms in everyday situations and helps to create generally shared knowledge and experience.

The rule-based approach suggests that the phenomenon of corruption is the problem of the offenders, the criminals and entrusts external experts or executors to find the solution and put an end to it; while value-based integrity concept considers that the problem belongs to the whole community and mobilizes the common intelligence. Thus the former attitude acts vertically from the top down and uses a paternalistic communication based on authority, while the integrity concept promotes a horizontal, egalitarian partnership.

Summarizing this train of thoughts we can establish that these two approaches use basically different psychological processes to explain the phenomena in question. The rule based approach treats individuals like children, con-

trols, evokes the sense of guilt and leads to suppress while the value based attitude presumes differentiated self-concept, reckons individuals as adults, involves participants as equal parties, stimulates tolerance towards incompleteness, builds on pride and dignity, believes in development. Because of the criminal responsibility examining corruption we may encounter walls and taboos, reaction is often fear, withhold, reticence and mistrust while integrity concept promotes an open dialogue.

Naturally, focusing on integrity does not mean that anti-corruption is not justified for existence. The abovementioned OECD study, which examines the fundamentals of well-functioning integrity management systems, declares that the balance of rule-based and value-based approaches has to be established or preserved. So we cannot give up the fight against corruption since it can cause serious damages for national economy. The direct damage derives from the misuse of public funds. Resources involved in corruption fail to contribute to the common good, the interests of the nation. Beyond that there is an indirect consequence since unhealthy economical processes and distorted systems of trade relations can lead to a decreased willingness to invest into business in regions infected with corruption. Corrupt behavioral patterns may demoralize the whole community.

This is a complex system where the operation of every single part has an effect on the entire system so none of them can be changed without altering other elements (Senge, 1992). Since individuals manifest themselves in a social context, under the pressure of conformism, corruption and integrity have to be investigated not only from the aspect of the individuals; processes of the community also have to be examined.

The theoretical platform, the basic assumptions of these two concepts are fundamentally different. Paradigm of anti-corruption stands against Klitgaard's 'principal-agent model' (Klitgaard, 1988). In this model the leader of the organization represents the original mission of the organization but some of the superiors (agents) may deviate. The morally immature person cannot resist the temptation of alluring incentives, tries for promoting his own profit selfishly, and thus violates the rules of the system. This schema can be valid in a well operating, ethical environment but the explanation is not that simple in a milieu where corruption is already deeply embedded in social norms as an accepted cultural pattern. In this case it is difficult to act trustworthily, to resist the established customs, to ignore the accepted distorted rules of the community in a non-conformist way from a minority position. In this case the 'collective action problem' model seems to be valid (Persson et al, 2013), where release from the trap of corruption is possible only if the distorted system is altered together. Tolerance against the misuse of the legal power must be decreased, members have to become more aware of the invisible borders between 'good' and 'bad', 'acceptable' and 'unacceptable' and problems have to be revealed and handled.

The concordance between declared and experienced principles, apparent and hidden norms, written and applied rules of operation is one of the main components of integrity, since if they do not harmonize usually the latter ones dominate during the socialization process. Refinement of legislation, optimization of decision making roles, regulating the information pathways, increasing of transparency and accountability and even strengthening the consciousness of rules are not enough in themselves. Contradictions of formal and informal rules must be eliminated, the community has to face its inadequate patterns of operation, has to establish an openness to self-consciousness in an organization-level, basic assumptions, attitudes and expectations have to be altered. Organizational culture has to be changed.

### 3. HOW CORRUPTION AND INTEGRITY WORKS WITHIN A GROUP

As we mentioned before once participation in corruption is generally accepted and accustomed, if it is a group norm that affects the behaviour of the members, it is not easy to remain white within the community. The instinct of conformism in itself leads members to take part in generally shared behavioural patterns, but it is not the only impact that determines our choices. Even fear and the need for existence can also be present. The next moral dilemma based on a novel by Ken Follett illustrates how hard it is to remain honest in a guilty environment.

*You are a soldier of the US Army in Vietnam. In this tropical hell nerves are frazzled, souls run wild. You are in a permanent life-danger, there is adversity and human suffering all around while the entire lack of hygiene sours one's life. The pawn of survival is the platoon. You can count on your fellow-soldiers only. Who deviates, sooner or later dies.*

*Your latest action has just finished. You had to get a little village under control. According to the information that you had got from the intelligence platoon you anticipated a serious military resistance but in the field it turned out to be obvious that only unarmed civilians, farmers and their families live here. More exactly: Lived here. You had warned your fellow-soldiers in time that the field is clear, but hell simply broke loose. They acted out all of their suppressed fear, anger, stress and frustration and slaughtered everybody ruthlessly: Women, children, the young and the old, too. You refused to take part in this war crime, since you have been aware of the situation. They have been aware of it, too, yet they have done it. Now you are standing in front of the platoon, you alone have come face to face with all your fellow-soldiers. There is only one survivor from the inhabitant of the village, a little girl, not older than six. Now they want you to put her to death, right in front of them. They want to be sure that you will not report what they have committed when you return to the headquarters. They have made it all clear: If you do not shoot, they will. They will execute both of you, and then they will write their report on the heavy military resistance and on the hero who was killed in action, you, actually. What would you do, why?*

This dramatic story is analogous with the situation when someone honest gets into a corrupt environment. Fellows keep this person under pressure as they try to provoke him/her to take part in illegal actions, since they know that he/she can be dangerous, until losing personal innocence the probability of the reporting to the authorities remains high. So, beyond spontaneous conformity peer pressure, what is more, definite group coercion can influence members, too. The forcing power of the group depends on the group cohesion. If a group is cohesive, its members communicate to each other a lot while having hardly any contact to members of other groups, therefore their well-being and existence become the question of loyalty, so members are highly interdependent. In this case group norms become homogeneous. If the tools that are to strengthen group identity – such as rites and uniforms – cover personal identifiability violation of the norms of the wider community becomes even more probable.

The abovementioned hypothesis that the spread of corruption within a community is based on the fact that these behavioural patterns work as group norms and this range of norms determines the behaviour of group members as a 'collective action problem' ends in a strange conclusion:

- If a hypothetical group had an endlessly high cohesion finally all of its members would behave in the same way. There would be totally infected and totally intact communities, depending on the certain groups' norms and attitudes in connection with corruption. The fact that in real human communities corruption related behaviour patterns have never scattered this inordinately during our written history can be explained as listed below:
  - The cohesion of real communities is usually more or less restricted.
  - According to Klitgaard's 'principal-agent' model some of the members of totally corruption-free communities still let temptation overcome their dignities, while in highly corruption infected groups there are still strong-backed members who can remain white even in a bad company.
- Generally speaking: The higher the cohesion of the group is, the faster the advantageous or disadvantageous effects spread within the group. So if the norm of corruption is present, we have to decrease the cohesion of the group in order to avoid the infection of all members.

Is this really the case? Does the decrease of cohesion lead to a slower spread of unwanted and harmful norms?

On the contrary, according to our hypothesis the increase of group cohesion leads to an enhanced level of pro-social and cooperation based behavioural patterns, regardless of the positive or negative evaluation of these norms within society. We can use one of the well-known standard situations of the game theory approach to find an appropriate explanation for this.

If the majority serves the commonweal with a cooperative strategy putting restraint on selfish interests in order to let the interest of the community be manifested, those few who takes advantage of the lack of strict control, breaks the group norms underhand and chooses a competitive strategy, puts oneself forward for example in the form of corruption can pile up a huge profit at the expense of the community.

Naturally this behaviour sooner or later will demoralize more and more members of the community, because they see that it is not worth it being trustworthy since one can violate the rules and obtain a high personal profit beside low probability of punishment so under these circumstances deviance seems to be a reasonable and preferable alternative. This all would be true if this process did not spread within the whole group. But unfortunately as more and more members shift to a competitive strategy it is getting more and more difficult to access to the waning common good, finally the whole group faces increasing burdens, competitors themselves included. At the end everybody comes off badly, the system collapses.

This multiplayer game situation called 'the tragedy of the commons' published by Garrett Hardin (1968) shows that at the background of cooperation and competition, applying and violating group norms there are not merely personal moral traits but complex social psychological effects as well. During training sessions this situation can be used effectively as an illustration of the compound social effects in the background of integrity related issues.

At our trainings we divide our groups into ten smaller units with the following instruction:

*'You and nine other families live in a small village among high mountains. There are bald cliffs all around but fortunately the tiny meadow of your village enables you to feed beef cattle.*

*Presently every family has only one cow weighing 1000 pounds each. Since the meadow can provide only a limited amount of grass, every additional cattle leads to a 100 pounds decrease of the weight of each animal. This means that in the case of 11 grazing cattle the weight of each cows goes down to 900 pounds, whereas if there are 12 cows one weighs only 800 pounds, and so on.*

The number of cows	The weight of one cow	The weight of the property if a farmer has 2 cows	The profit of the farmers with 2 cows	Total weight of cattle
10	1000	-	-	10000
11	900	1800	800	9900
12	800	1600	600	9600
13	700	1400	400	9100
14	600	1200	200	8400
15	500	1000	0	7500
16	400	800	-200	6400
17	300	600	-400	5100
18	200	400	-600	3600
19	100	200	-800	1900
20	0	0	-1000	0

*Spring has come. You have to make your decision whether you add a second cow to the herd this year or not. You have to decide as a family, separately. Agreement with other families is possible only if the trainer says so.*

*This game consists of six rounds. The number of cows is set back to 10 in every round regardless of how many cows there were in the previous rounds. You have to decide round by round in the light of the experiences of previous rounds, after the public summary of the results. The aim is to make the best decisions in a six-year term in order to obtain as much beef as possible.*

According to our experiences participants do not apply sophisticated mathematical models, do not make clearly rational decisions, but on the basis of their personalities they simply begin to feel the dynamics of the game, they use their instincts and in virtue of their heuristic decisions they cooperate (only one cow per family since the carrying capacity of the meadow is low) or quit the deal, choose desertion and compete (additional cow for their own interest). The final result of the game usually represents the inequalities of the society faithfully; the significant differences in personal properties can be experienced between those who undertake the sense of guilt and the unpopularity of desertion, and those who do not.

During the game the participants percept the conflict, they often pass moral remarks on each other, they evaluate the acts of deal breakers and they put future vengeance in view funnily. They feel the social relevance of the moral of this game. They experience that the one who serves his/her own interest gains a lot *in comparison* with the others.

However if everybody wants more at the same time avidly, everybody loses. In most cases there are enough sober-minded or self-sacrificing members who can give up their selfish ambitions in order to avoid the entire collapse so competitive gamers almost never face fatal consequences because co-operators 'save their sins'. The range of feelings of co-operators can vary from 'being a loser' to 'being proud of staying white'.

In the table of the possible results above we can see that after five additional cattle there is not a real profit for anyone, competition is only a relatively rewarding solution (compared to non-competitors) since two cows of 500 pounds together is not more than the initially given 1000 pounds. One can be 'better' only compared to the others who got stuck into a disadvantageous position because of the competitors themselves. From the sixth redundant cow the loss becomes absolute for everybody. If a coalition of six cooperative gamers is steadily established within the village, the rest can compete at no risk. Therefore it is worth applying aligned countermeasures against competitors, and to choose competition for one time in return in order to make them feel and learn that desertion does have a price. Immediately after the competitive round the cooperative strategy has to be applied again in the interest of the commonweal. This method is similar to the one that was proposed by Anatol Rapoport called *Tit For Tat* (TFT) which won the first prize at a computer tournament of the political scientist, Robert Axelrod who was looking for the most effective solution to the iterated games of the prisoner's dilemma (Mérő, 1996).

Our experiences show that training groups usually get only 60-75% of the obtainable scores (6 rounds X 10 groups X 1000 pounds) so the utilization of the sources is far not full. The degree of competition depends on the cohesion of the group, the relationship of the members, the topic of the training and the 'good impression effect'. With few exceptions the winner family almost never scores more than it would if everybody kept cooperation all along. This means that even competitors access less personal profit and to top it all they wrong others in the meanwhile.

In the case of an interdependent, small community with strong cohesion and personal relationships the probability of cooperation is higher since no one wants to jeopardize trust and members would like to avoid exclusion, scorn and atrocities. In a big city this protective, regulating factor is missing, one who violates rules and uses a competitive strategy can do it anonymously without experiencing the threat of anger and revenge from others. Facelessness can reduce moral integrity and urbanization is going on all over the world. At our training sessions we model it using tallies for the families (they choose names, eg. 'Milka', 'Edelweiss', etc.), so when we integrate the results at the end of each round it is not clear which voting card belongs to which family, who competed and who cooperated. Anonymity increases competition.

Does this mean that anonymous competitors can leave cooperation with no consequences? The main moral of this game is that personal interest cannot be detached from community interest since they are interdependent. Our behaviour does have an effect on the general atmosphere of the community, on the behaviour of others and it has a retroaction on our own possibilities. Vicious and glorious circles can start. Every member of the group is part of the whole system.

Who competes contributes to a contesting atmosphere, demoralizes the community, therefore sooner or later makes harm for oneself. Sins fall back upon heads.

Seeing this situation of game theory Immanuel Kant's Categorical Imperative (1959:39) seems to be even truer: 'Act only according to that maxim by which you can at the same time will that it should become a universal law.'

Natural resources of the Earth would probably make it possible to provide a satisfactory supply for much more people if global economy did not work as described above. But unfortunately a series of destructive social phenomena follows the logic of the tragedy of the commons.

- For example if someone succeeded in influencing authorities using corrupt methods and obtain the rights to build an exclusive hotel on a protected seashore they would have a lot of paying guests and a huge income. Even the second hotel would be a profitable enterprise. Opening a concurrent third one would probably result in a reduced number of guests and losing its natural beauty the shore itself would be less attractive. After a while the whole coast would become covered with concrete, without natural benthos, and visitors.
- Pollution of the environment is a similar example. Let us imagine that every factory invests in the prescribed filters and technologies to protect our environment but one of them does not. This one prefers sparing the costs of expensive filters, bribes authorities and pollutes. This way it can appear on the market with a lower price, so its products will be more popular, while law-abiding factories get into a disadvantageous position. If the next investor also prefers pollutant solutions the market will be shared between them but they will still flourish. But later as more and more industrial enterprises choose this competitive attitude profit will soon decrease and finally everybody will be the victim of the climate change.
- Our third example is tax evasion. The one who does not contribute to the commonweal can obtain a higher profit so they will be more competitive. But if tax evasion becomes general – because of the missing public incomes – the whole national economy gets into a disadvantageous position, the market and public security becomes worse. Finally even tax frauds come off badly.

It seems to be obvious how anti-corruption measures can decrease competitive behaviour. Harsh and consequent punishment can reduce the profitability of the pollution of environment or tax evasion. But in most cases transgressions are hard to detect or prove so it is possible to avoid penalty, especially if the organizations that were established to keep control and to take sanctions are themselves involved in corruption. The real solution is when participants have the insight to realize that long-term system thinking is the only

sustainable way to survive and begin to act in the interest of the commonweal. But this can be fatal if there are others who compete and violate norms unscrupulously, since lacking public security law-abiding enterprises may go bankrupt. This is why it is important for any state to ensure an efficient protection against violators, to provide justice and to develop integrity.

As we could see if there are only a few corrupt participants within a community these violators can get a significant profit while the natural defensive reactions of the group is not triggered since threat is hardly perceivable and living standards are still high. If competitive behaviour becomes widespread and differences in welfare grow above a certain level the whole society suffer as more and more people get involved in transgressions until finally serious regulating mechanisms (e.g. revolutions) appear in the system.

This process is accordant with the 'anomie theory' of Robert Merton (1938) which assumes that attitudes to cultural goals and to institutionalized means have to be consistent; otherwise a change in norms becomes unavoidable. Society operates stably only if most of its citizens accept cultural goals and institutionalized means in a 'conformist' way.

But usually a certain part of the citizens accept cultural goals while reject the institutionalized means and choose an 'innovative' mode of adaptation. These people usually have a strong need for prestige so they are motivated to find the back doors of law, preferring competitive strategies they misinterpret norms in order to fulfil their own interest. If the community is not watchful and misses to punish this behaviour in time 'innovative' mode of adaptation can lead to a general demoralising effect. A significant part of society may become ambivalent to cultural goals and accepted means. If this 'rebellion' reaches a critical level within society, serious changes, revolutions may sweep away corrupt leaders and their status quo.

#### **4. DISCUSSIONS**

The extension of game theory to the concept of integrity compared to the simple group conformity model proposes a dynamic balance. Considering that the attitude to corruption and integrity is a relatively constant norm of the community to which the majority of the members adapts through conformity in a short term and socialization in a long term does not explain all the phenomena of this issue entirely. The classical game theory model called the 'tragedy of the commons' can give a more throughout explanation why in the course of millennia of our documented history there were not any communities that were totally infected with corruption or totally free from it, as we would expect using the group norm model. In any community the number of those who choose to serve their own interests by applying a competitive strategy increases more and more dynamically at first since they demoralize a lot of co-operators. But as fatal consequences become more and more apparent for everybody this process

triggers a strong self-defense control mechanism within the community, so the effects of cooperation-competition will be balanced by group dynamics.

This approach of integrity based on game theory suggests that if a community is infected by corruption it is not the decrease of group cohesion that can solve the problem, but contrarily, the increase of it. As group cohesion increases group members will depend on each other more, the role of trust and cooperation gets a higher significance, so the group forms a league against its selfish competitors who work against the interest or the fame of the community.

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