BRATISLAVSKÁ MEDZINÁRODNÁ ŠKOLA LIBERÁLNYCH ŠTÚDIÍ

COLLECTIVE INTELLIGENCE IN SOCIAL CAPITAL

BACHELOR THESIS

Bratislava, april 2011 **Zuzana Laslopová**

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Študijný program: Liberálne štúdiá
Študijný odbor: 3.1.6 Politológia
Vedúci bakalárskej práce: Ing. František Gyárfáš PhD.
Stupeň kvalifikácie: bakalár (v skratke „Bc.“)
Dátum odovzdania práce: 30. 04. 2011
Dátum obhajoby: 15. 06. 2011

Bratislava, apríl 2011 **Zuzana Laslopová**

ČESTNÉ VYHLÁSENIE O PÔVODE AUTORSTVA

Čestne vyhlasujem, že som túto prácu vypracovala sama s použitím uvedenej literatúry pod odborným vedením môjho školiteľa Ing. Františka Gyárfáša PhD.

Zuzana Laslopová

V Bratislave, 30. 4. 2011

Podpis:

POĎAKOVANIE

Rada by som vyjadrila svoju vďaku Samuelovi Abrahámovi, rektorovi Bratislavskej medzinárodnej školy liberálnych štúdií za jeho podporu počas celého trvania môjho štúdia.

Rovnako by som sa rada poďakovala Dagmar Kusej, za jej podporu pri snahe o ukončenie štúdia a hľadaní perspektív pre ďalšie štúdium nielen mňa, ale i mnohých študentov Bratislavskej medzinárodnej školy liberálnych štúdií.

V neposlednom rade by som sa chcela poďakovať školiteľovi mojej bakalárskej práce, Františkovi Gyárfášovi za jeho inšpiráciu, prínos, a výnimočnú trpezlivosť.

ABSTRACT

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Pages: 32, Words: 9169

The main concerns of the thesis would be the concepts of Collective Intelligence – the theory of wisdom of crowds that suggests that when the conditions for Collective Intelligence are fulfilled, a crowd of mediocre people is very likely to outperform any expert in solving a specific problem, and Social Capital, the concept of social structures within a society.

The main subject of study would be the interconnectedness of the two – this Bachelor Thesis is supposed to show how the Collective Intelligence creates Social Capital in several ways and examine this theory on practical and abstract examples.

Furthermore, it is supposed to present the major implications of the study of the interconnectedness of these concepts.

ABSTRAKT

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Rozsah práce: 32 strán (9169 slov)

Táto bakalárska práca pracuje s dvoma kľúčovými konceptmi. Jedným z nich je Kolektívna Inteligencia, teória múdrosti davov, ktorá tvrdí, že pokiaľ sú splnené základné podmienky pre jej fungovanie, dav priemerných ľudí s veľkou pravdepodobnosťou prekoná expertov v riešení špecifického problému. Druhým je Sociálny Kapitál, koncept sociálnych štruktúr v spoločnosti.

Predmetom štúdie tejto práce je vzájomné prepojenie týchto dvoch konceptov. Pokúsi sa ukázať akým spôsobom Kolektívna Inteligencia utvára Sociálny Kapitál niekoľkými rôznymi spôsobmi a ilustrovať túto teóriu na praktických a abstraktných príkladoch.

Napokon predstaví možné implikácie štúdie vzájomného prepojenia týchto dvoch konceptov.

PREFACE

Regardless of whether we realize it or not, we do rely on experts in our everyday life. We do believe that they are the ones who are able to come up with the best solutions for economical, informatical or architectonical problems. This is why it is unthinkable for most of us, what is well known for sociologists for decades.

In the early twenties a number of sociological studies has proved that a crowd of mediocre people is much more efficient in solving problems than few experts may be. And this is not only true in an isolated world of experiments. Proofs of validity of this phenomenon – the phenomenon of Collective Intelligence is all around us. From a TV show, where a group of randomly chosen people regularly outperform with their collective knowledge the wisest person a competitor chooses when answering to a question; to people betting on horse race, who are able to predict the winner with an impressive probability. But this does not only mean that a group of people are only able to solve this kind of problems. The crowd is able to solve remarkably well also a vaste range of other kinds of problems.

What is then becoming interesting is the question of how would be this concept applicable to political and social issues. This is when its interconnectedness with the Social Capital, a concept of organization of social networks in a society, becomes interesting.

The inspiration for writing Bachelor Thesis on this topic has arose at the course by Ing. František Gyárfáš PhD., more particularly at the lecture dedicated to Collective Intelligence.

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INTRODUCTION

Even though we tend to take for granted that the crowds are very likely to get confused, to act like herds of sheep, sociological studies do prove that it is not entirely true. What may be surprising, all the more in the environment of Central Europe, where even the politicians got used to be populist in order to get the favor of electorate, is that under certain circumstances the masses are in majority of cases better in solving problems than few experts may be. And this does not concern only simple cognitive problems. This phenomenon, the phenomenon of Collective Intelligence is applicable also in solving problems of cooperation. The problem of cooperation occurs when several individuals with similar self-interests meet and have to deal with issues where a mutual advantage is required. This is how a society is able to find reasonable solution for walking on the streets (Surowiecki, 2004).

What may be even more interesting in social sciences is the very close connection between this kind of Collective Intelligence and social structures that evolved in the society. When one recognizes the intelligence of crowds when dealing with cooperation problems it appears to be very likely that it is responsible for creating efficient social structures. These social structures are what is to be called the Social Capital. It has been already studied that a high level of Social Capital (i.e. where the social structures are well developed and the citizens are well participating in them) is beneficial for a society economically and politically (Putnam, 1993). This may mean, that when the Collective Intelligence works well it creates solid social structures from which the whole society benefits.

On the other hand, as it has been stated, the Collective Intelligence has to have the appropriate circumstances under which it could work. Among these circumstances belong the diversity of participants, their relative independence, some amount of information on the problem, motivation of participants and a decentralization of knowledge (Surowiecki, 2004).

This work is supposed to study in depth the connection between these two concepts – the concept of Collective Intelligence and Social Capital. It will not strive for historical determination of how Collective Intelligence created Social Capital, but it would use abstract examples to illustrate their interconnectedness.

It will also consider further implications of its hypothesis, which will include impact on the view of multiculturalism, dispute between conservatism and liberalism, and the ideal of liberal democracy (Atlee, 2003). What is more, the idea of interconnectedness of Collective Intelligence and Social Capital fits within the framework of understanding the creation of formal institutions as being a product of mixing the self-interests of the members of a society (Rawls, 2001).

Since this thesis operates with concepts that need further explanation and precision which of several understandings of them it takes into consideration, the first two chapters will be dedicated to the explication of the terms of Collective Intelligence and Social Capital. Both will be presented while neglecting their critiques for the sake of the volume of the text presented.

This is why the thesis statement will not be presented until the second chapter. This is where the reader will understand the symbiosis of the two key concepts.

The third chapter will elaborate on the interconnectedness of the key concepts by explaining not only how is the Collective Intelligence enhancing and fostering Social Capital, but even on how is it related with the conditions necessary for Social Capital to exist.

Furthermore the work will focus on implications of the hypothesis on understanding of several social issues. Since the beginning the thesis tends to be more or less abstract, this chapter is supposed to help the reader realize how is the interconnectedness of Social Capital and Collective Intelligence demonstrated in

other fields, or even in the real life. It is here where the importance of this research will be revealed.

CHAPTER 1: COLLECTIVE INTELLIGENCE

When it comes to decision-making, man is not a perfect creature. Abilities of men to be, and act in a rational way are not perfect neither. The difference between humanity and any other specie is indeed its capacity to think and use its reason. What is then surprising is the fact, that the human mind does not work that reliably on every occasions. What is even more astonishing is that the human decision-making is on many occasions not only wrong, but even irrational.

> "Although a feeling of awe at the capability of human is clearly justified, there is a large difference between a deep sense of admiration and the assumption that our reasoning abilities are perfect." (Ariely, 2008, p.XIX)

This means that a man, no matter how he may be convinced that his solution of any given problem is right, might have come to that decision irrationally and may not be right.

Let us take into consideration an experiment executed by Roger N. Shepard. In this experiment, there is given a figure of two tables as illustrated:

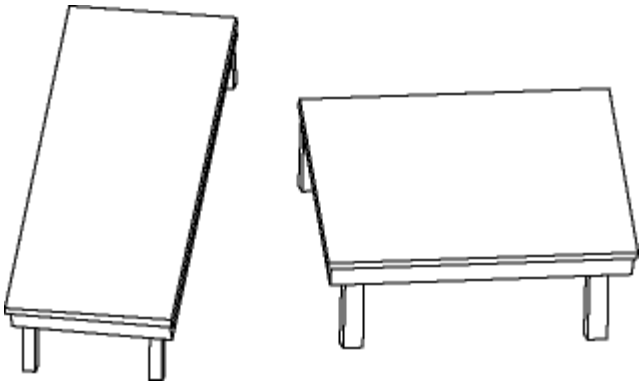

Figure 1 - Two tables (Thaler, Sunstein; 2008, p. 17)

As Thaler and Sunstein put it – „If you are like most people, you think that the table on the left is much longer and narrower than the one on the right." (Thaler, Sunstein; 2008, p. 17). It is then for majority of people astonishing revelation when they

measure the dimensions of both tables and empirically prove that these tables are of the same length and thickness.

„If you see the left table as longer and thinner than the right one, you are certifiably human[…] however even Einstein would probably be fooled by those tables.“ (Thaler, Sunstein; 2008, p. 18-19).

This experiment was to prove that not only an intellectually mediocre individual would be wrong, but even those who are being praised for their high intelligence would make the wrong judgment.

This may be explained by variety of fallacies and biases human beings are being exposed to when making decisions. Several of them have been described by Thaler and Sunstein as follows:

Anchoring – means making mistakes by anchoring and adjustment that is influenced by factors of information that are irrelevant for the question itself. It may be shown on the example of people being asked the approximate population of a given city. The larger a population of the city they live in is, the larger will be the estimated population.

Availability – means that people would get influenced in a guess or estimation by the availability of relevant information. An example of the availability heuristics would be the fact that people do estimate bigger the amount of homicides than that of suicides, and that is due to the fact that they are confronted much more often with the cases of homicide than with those of suicide in the media.

Representativeness – comes into play where people are creating hypothesis of probability of certain phenomenon out of data that is available. For example when one is flipping a coin, where the heads and tails fall randomly and obtains the same result several times in a row, his outcome would be that the coin in question is manipulated and the results are not random, even though they are in reality.

Optimism and Overconfidence – means that people do sometimes overestimate their abilities. This is how lotteries function – the statistics show that it

is highly improbable that one would win a lottery, while a man that is taking chance is systematically overestimating his chances to win. (Thaler, Sunstein; 2008)

These were some of the many fallacies and biases one may be influenced by in any decision-making process. What is interesting though on these is the fact, that the respective results and effects of many of these do differ from one individual to another. It would be then interesting to collect respective estimations or solutions from different people and see how would their collective judgment do.

The empirical evidence seems to prove that if one aggregates the judgments or decisions of a sufficient number of people that are diverse enough, this aggregate tends to outperform almost any singular guess, no matter how intelligent or informed a person taking this guess might be. In other words, a crowd, when well selected, is able to outperform experts (Surowiecki, 2004). This is possible only when considering the above mentioned factors influencing people when taking decisions or making judgments. Every individual guess contains a piece of information, or in other words, a piece of the correct result, and some error, or deviation. The collectively intelligent guess – that which would in majority of cases outperform the best guess from this group of people – would then correspond to the sum of respective pieces of information present in respective guesses minus their errors, which can be translated into a self-made equation:

$$CI>0 <=> \Sigma i-\Sigma e>0$$

, where „CI“ stands for collectively intelligent guess (approximately the right one), „i“ stands for proper information in each individual guess and the „e“ is the error, or deviation present in respective individual guesses. This is supposed to mean that after subtracting from the sum of individual guesses the sum of individual errors, there must be some information left for the aggregate to be collectively intelligent (where CI=0 means that the collective guess is not intelligent, or is false).

This raises the question of how to secure the CI not to be equal to zero – to secure that the collective guess would be intelligent.

1.1. How is the Collective Intelligence possible?

> "The more connections there are, the greater the value. You've certainly heard the old saw of network theory: One fax machine is worth nothing as it can talk to nothing, two are worth twice as much, and connecting the millions of fax machines makes each one worth exponentially more." (Jarvis, 2009, p. 28)

It is now clear that a crowd, when asked to resolve a problem will not in any case do better than any expert. The success of the crowd will depend on the external and internal conditions influencing the crowd, a proper aggregation of the single solution and, of course, the nature of the problem.

In order to insure that the collective solution would be intelligent it is crucial for a group of people participating in resolving a problem to be diverse enough. The greater the diversity of participants, the better the results are. This follows from the argument mentioned above. The Collective Intelligence is able to bring about the best results, when the errors of individual judgments cancel each other out. If we admit that there is only one right solution, or the most convenient solution, it means that the information present in each individual judgment would be relevant for the solution of the given problem only if the information would make a part of a single right solution that would be common for all. Whereas that, in which these judgments differ from each other are the errors.

In order to separate the information from the error it is necessary to determine the information and the error. The diversity of the crowd becomes crucial at this point, since as it has been stated, the errors are different, since the fallacies and biases differ from an individual to another, while the information is the same for all guesses.

In practice it means that when the individual solutions are collected, by making an average of all guesses or individual judgments or solutions, the errors would represent the least significant part of the sum and thus this average would be constituted almost exclusively by the proper information.

This is obviously possible only when the participants do dispose of at least some information in their guesses. The collective guess on who has been responsible for the *Challenger* catastrophe in 1986 could not be intelligent, if the participants providing their individual guesses would be children. On the other hand, the market did determine the company whose fault in constructing booster rockets did cause this accident. Few minutes after the accident the stocks of all four companies that were participating in building *Challenger* were being dumped. By the end of the day, there was one company left whose stocks did fall more significantly than of the other three. Without any reasonable explanation of how did the investors came to the idea that it was this company, the Morton Thiokol, that was responsible for the accident (except from few conspiracy theories of information being spread by some employees of Morton Thiokol that will not be taken into account) the market did a good job in predicting the guilty part. While the official results of investigation have been released several months after the accident, the market, as the mechanism of aggregation of individual guesses and the creator of collectively intelligent guess, did determine the company responsible for the catastrophe almost instantaneously. (Surowiecki, 2004)

This is also a particularly good example of how the proper aggregation of data should look like. The markets belong among the best ways of obtaining the best result possible when it comes to the Collective Intelligence. This ability of markets is not only demonstrated by similar on actual stock markets, but there exist even markets that specialize to Collective Intelligence – the decision markets. There exist several decision markets, among which the IEM (Iowa Electronic Market) of the University of Iowa may be mentioned. These markets work the same way the stock markets do, although instead of investing, these investors do *bet* on the outcomes or solutions of a

diversity of issues, while not being personally involved in them. These markets are indeed very reliable and it is because they foster the diversity of participants in several ways.

First, the participants are motivated to make the best guess possible in order for them to win and thus they are motivated into participating at all. The bigger the motivation to participate is, the larger the group of participants, the higher the chance of diversity of participants there is.

Secondly, since every participant is striving for winning, it is less probable that he would get influenced by others – the fewer people would bet on the result he does and believes to be right, the higher will be his win. The independence of participants is crucial when insuring the diversity of participants, since the Collective Intelligence works thanks to the conflict, not consensus.

> "Independence is important to intelligent decision making for two reasons. First, it keep the mistakes that people make from becoming correlated[…]Second, independent individuals are more likely to have new information rather that the same old data everyone is already familiar with." (Surowiecki, 2004, p. 41).

When participants are influenced and do not act from their own belief, there is much higher chance that their errors would be similar and it would not be evident to separate them from the proper information. And thirdly, the decision markets allow participants to construct they individual solutions upon local knowledge or information, the knowledge is thus decentralized (Surowiecki, 2004). The prediction markets are certainly not the only process of aggregation of data that makes the aggregate solution collectively intelligent, but the conditions for Collective Intelligence to take place are easily demonstrated when considering these markets.

1.2. Finding social solutions

Now that the functioning of Collective Intelligence has been explained, it is important to mention that it does not perform this good only in solving cognition problems, but also the coordination and cooperation problems. Among cognition problems, as Surowiecki puts it, belong those problems, where the possible outcomes are given and the crowd is about to decide which of them is the right and even those, when the collective is about to find different possible outcomes and only after that decide which is the right one. The coordination problems involve those problems, where the participants are about to coordinate themselves in such a way that it would be profitable for all parts. And thirdly, the cooperation problems are those that are about to manage the cooperation among those, whose interests command them not to cooperate (Surowiecki, 2004).

This work is about to treat the contribution of Collective Intelligence to social sciences and within this realm to the good functioning of society. It is because Collective Intelligence is not only a construct that works in abstract environment of scientific experiments, on the contrary, it works within society and has worked for centuries when the conditions for its proper functioning were more or less convenient.

When treating solutions to social problems, Collective Intelligence is of much help, and this not only by making certain individuals gaining from betting in decision markets, nor in predicting political evolution. Collective Intelligence contributes directly into the functioning of society – making it work, a society is able to find convenient solutions in a bottom-up fashion. This means that if appropriate conditions are given, people are able to find an organization that would be beneficial for the society as a whole, even if it would be only from the utilitarian point of view[1]. A way the Collective Intelligence demonstrates itself within a society is also social networking and creating the most convenient structure of thee. This is how the Collective Intelligence is connected with Social Capital.

[1] - Utilitarian is here understood in terms of bringing the greatest utility for the greatest number of people (Mill, 1987)

CHAPTER 2: SOCIAL CAPITAL

A political scientist R. D. Putnam has been making a research in the past century in Italy focusing his research on an interesting phenomenon – the spectacular differences in political culture and, subsequently, efficiency of institutions between the south and north of the country. Beside the more or less obvious conclusions of making historical factors responsible for the present behavior of the populations in question, he became convinced that among the factors influencing efficiency of political institutions and their policies belong also certain social culture of citizens, he decided to call Social Capital (Putnam, Making Democracy Work). He described it later on as follows:

> "Whereas physical capital refers to physical objects and human capital refers to the properties of individuals, social capital refers to connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them. In that sense social capital is closely related to what some have called "civic virtue." The difference is that "social capital" calls attention to the fact that civic virtue is most powerful when embedded in a sense network of reciprocal social relations. A society of many virtuous but isolated individuals is not necessarily rich in social capital." (Putnam, 2000, p. 19)

This means that the Social Capital present in a society can be understood in a similar way as the physical capital is, except that the Social Capital has a diametrically different value – its perfection is demonstrated by the quality of social networking among individuals within a society. These networks are constituted by basically any relations between people, from neighborhood, universities, to readers rings. The benefits flowing from these interactions are due to the feeling of belonging, to the mutual trust these relations bring along.

The most interesting were the findings Putnam has made about the impact a high level of Social Capital in a society has on the efficiency of institutions and their policies, civic culture and even economic prosperity. He has found out that the regions, where the Social Capital was at a higher level, these had a better economic

situation, the civic culture of the citizens was much more spectacular, the population had significantly more trust in institutions, which has made them a source of a greater authority (since the population trusting them is a legitimizing factor), which has made these institutions all the more efficient.

> "Social capital here refers to features of social organization, such as trust, norms, and networks, that can improve the efficiency of society by facilitating coordinated actions" (Puttnam, 1993, p. 167)

While the society then benefits from the effects of Social Capital, the individuals do indeed too. The benefits flowing from the Social Capital for individuals are even more obvious. These do create necessary social networks the Social Capital requires out of their own will, following their own interests. All individuals participating in these networks participates because of their own motivation – and this can be understood in several ways – it is very agreeable to share one`s interest with others; it appears to be advantageous to have „the connections" – the more people from different professions one knows, the more it is probable than he would be able to profit from these relations later on and so on. But no matter what the respective individual motivations to social networking are, the outcomes are clear – these interactions are profitable as well as for the participants as for the society as a whole.

> "Success in overcoming dilemmas of collective action and the self-defeating opportunism that they spawn depends on the broader social context within which any particular game is played. Voluntary cooperation is easier in a community that has inherited a substantial stock of social capital, in the form of norms of reciprocity and networks of civic engagement." (Puttnam, 1993, p. 167)

Furthermore, not only does the Social Capital contribute to the proper functioning of institutions by fostering their efficiency, it is important to mention that the Social Capital is a notion that could exist only in democracies. The reason to that is obvious – only in political systems that are not intervening into one`s private life such social networks are capable of creating the desired positive effects of Social Capital. In other words, if people do interact creating social networks freely and not when being forced by any kind of authority, the Social Capital takes place. The totalitarian

regimes do interfere into the private sphere of individuals by establishing an all-encompassing ideology (Roskin, 2002). On the other hand authoritarian regimes do not allow any interference of its citizens into the public sphere – hence even if these are allowed to create social networks, the effects could not be put into political practice and hence there would be only the benefits of individuals that would follow the useful social networking and the society would remain untouched, since it is fully controlled by the ruling authority. This is to show that the notion of Social Capital can be understood only when employed in the context of democratic systems and vice versa – Social Capital is contributing to the good functioning of democracies via rendering their institutions more efficient.

The Social Capital is indeed a social phenomenon, where Collective Intelligence demonstrates itself in several ways. Firstly, the Collective Intelligence is a phenomenon that is capable to create conditions for a high level of Social Capital to take place. However citizens do need a drive for themselves to associate in various social networks. This is also a problem Collective Intelligence is able to deal with – in running democracies, it is the collectively intelligent coordination of members of a society that keeps and makes people interacting with each other.
However social problems such as making the conditions for Social Capital to take place in a society or making people coordinate themselves in a beneficial way are in many cases too complex to be solved the same way as the results of the Challenger investigation were. In these cases the Collective Intelligence is nevertheless able to find an appropriate solution by using other processes in problem solving. One of these processes is in a way evolutionary, the other is of a whole different kind.

2.1. Intelligent Coordination

How did the people interacting within social networks manage, all in pursuing their own interests to come up with a solution that is beneficial for the entire society, even for those who do not participate in these networks? And there is a vaste number of examples of people being this good at coordinating themselves.

A sociologist W. H. Whyte did in 1969 a research in New York on how do pedestrians coordinate themselves in a crowded street. Not only they do avoid each other, but this happens in a systematic fashion. What did Whyte observe was the crowd creating one single moving body, where only rarely someone was hit others, most often the pedestrians walked smoothly, as if some kind of an authority dictated them the way how to walk. But there was no external authority – the people were able to coordinate themselves – „There is a kind of collective genius at play here." (Surowiecki, 2004, p. 85)

However the solutions for coordination problems are not available that naturally. Not only a group would have to be intelligent and diverse enough, it is necessary for the participants to have some common grounds that constitute their culture or norms they respect – in the example of pedestrians these common norms were, for example, that if one is passing another pedestrian, one tries to avoid him by the declining his trajectory to the right, and similar. In terms of how does Collective Intelligence work (see 1.1.) – trajectories and logic of movement of an individual is the piece of information by which individuals contribute to the aggregate, while the errors of movement are the non-respecting of norms Hence once certain common acknowledgment of norms is given and followed from the habit (and hence the individual solutions do posses at least some information), the coordination problems may be solved.

The same problem solving would a collective adopt when maintaining proper functioning of social networking – the citizens would have to coordinate themselves in order for them to benefit from various social networks and make the whole society benefit from it as well.

> „In contrast to complex group collaboration tools, wikis conform naturally to the way people think and work, and have the flexibility to evolve in a self-organizing fashion as the needs and capabilities of the organization change." (Tapscott, Williams; 2006, p. 255)

Because Social Capital does not involve only the relations and interactions between individuals, it does consider also the interactions and relations among the networks and groups themselves. This is the difference between bonding and bridging Social Capital. Hence for a social organization to be the most beneficial possible, it needs to be organized in such a way so that people would not only assembly, but that there would be a much more complicated structure of social networks that constitute Social Capital. Collective Intelligence is a phenomenon that is capable of creating such a structure.

It is by solving a coordination problem a society is able to deal with the social structure. The same applies for the Social Capital as for the pedestrians on crowded streets. For social networking to be efficient and beneficial, people would have to coordinate themselves and that would be possible only if these people share basic cultural features and are aware of and respect certain norms.

However this does not in any case mean that democracies with a multicultural society would not work as well as those having homogenous one. This is only to show, how bonding Social Capital may exist in a society – people would assembly even in authoritarian regimes – but only the bridging Social Capital its positive effects are able to follow social networking, and that it is exactly this bridging that is collectively intelligent.

This theory may be well demonstrated on the research R. D. Putnam has made in the United states on how does immigration affect Social Capital in this society. He came to the conclusion as depicted on the Figure 2:

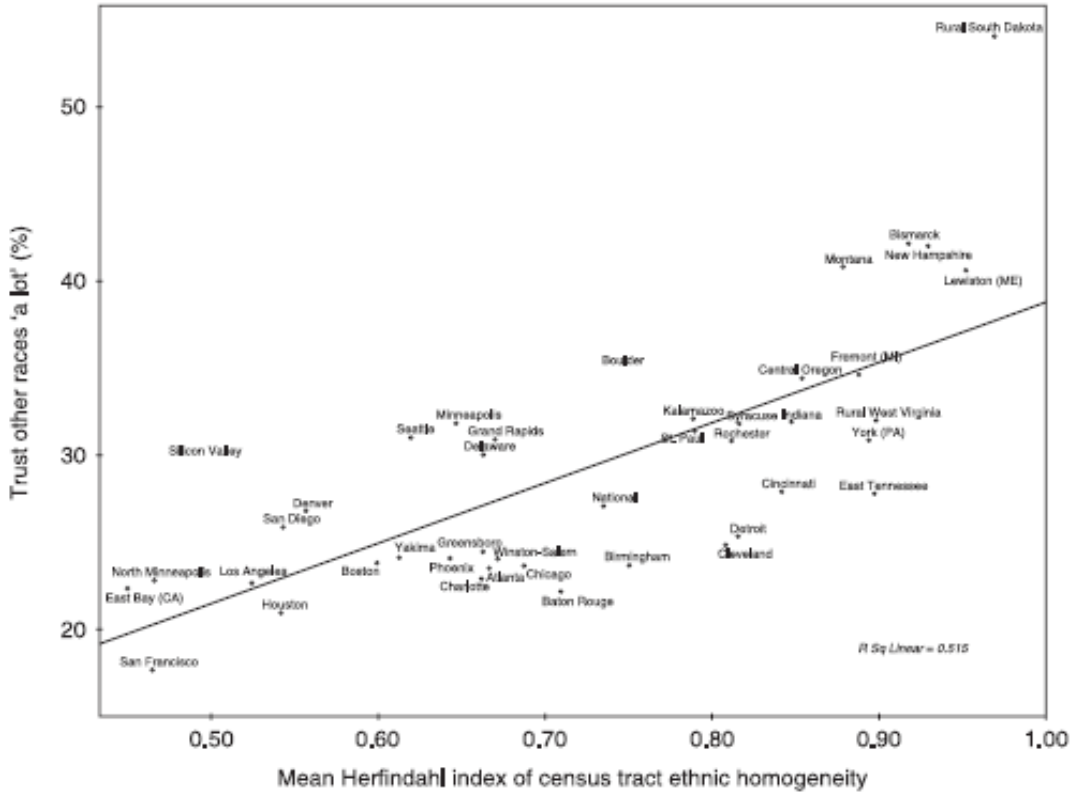

Figure 2 - Dependence of trusting other races on ethnic homogeneity in respective regions in the U.S. (Putnam, 2007)

This means that the more homogenous a population is, the more it trusts other cultures. On the other hand the population in more heterogeneous regions trusts other ethnics much less. In other words – more immigration – less trust – lower Social Capital. However it would be wrong to assume that immigration has only negative impact on social networks. Putnam did, among other, demonstrated on the example of United States (a country spectacularly marked by colonization) that the immigration and the new cultural environment that is being subsequently created decreases the level of Social Capital within a society in a short term, but on the other hand, fosters and enriches social networks in the long term.

This may be once again explained by Collective Intelligence. Ever since a cultural structure of society is disrupted, the population has problems to coordinate themselves. The culture and the norms that has been formerly implicit for the

population have now to be reconsidered with taking into account new cultural structure of this society in order for new culture and norms to emerge. The immigration then is not a problem but only a change of circumstances Collective Intelligence has to deal with. And then, as it has been mentioned, immigration is able to foster Social Capital in the long term. This is possible because of immigration enriching the society in question – immigration brings along more diversity, which improves collective judgments.

2.2. Participatory evolution

Social Capital is a bright example of how is Collective Intelligence dealing with cognition problem of a society – a kind of problem where people are about to come with a solution knowing that everyone wants to achieve the same thing. In this case the problem would be as follows – how to ensure stability of a convenient political system, to make prosperous economy and how to ensure the economy to prosper – in other how to make everyone better off. These are the positive effects of Social Capital, hence creating Social Capital would be the collectively intelligent solution for given problem. The most interesting part is the examination of how did the society come up with such an intelligent solution.

This means that creating Social Capital would be once again treating a cognition problem. The only difference between this case and the case of Challenger is that while then the market was deciding about which of the given possible answers of the who was responsible question, here, the society is about to answer a question, while it has no possible answers given. Here is the collective also responsible for creating possible solutions, among which it is then able to choose which one would be the most appropriate.

This is something society has been good at through history. As, for example, in the case of the formation of automobile industry in the early decades of the twentieth century, as depicted on the Figure 3. Even though the electric-powered vehicles, for

example, are recently considered being a new invention in the environmental struggle, the truth is that those have existed since the car industry itself emerged, and that along with, for example gas, or steam-powered vehicles. It is then interesting to study why have these alternatives disappeared from the market in favor of the gasoline-powered engines.[2]

Within the terminology of this thesis the reason to that is simple. It is the Collective Intelligence that has shaped the market so that only the vehicles whose production had the lowest cost, whose performance has been the best compared to its price and whose merchandizing had been the most profitable for all parties and hence for the whole society had maintained in the market. This is the way in which Collective Intelligence resolves a problem – in this case the problem of transport – through an evolutionary process. Collective creates the most solutions possible, and subsequently chooses the most convenient one.

The diversity of participants to the solution of the problem is crucial in any point of this evolution. In the beginning – the more diverse people create more diverse possibilities (or individual solutions), however there is no collective solution yet. The latter begins to form once the possible outcomes are known, and at this point, the decision-making process continues as in treating any other cognition problems.

[2] - the same applies to the question of producers themselves – from the originally great amount of these, through evolution by bankrupt and merges only the strongest and best would survive.

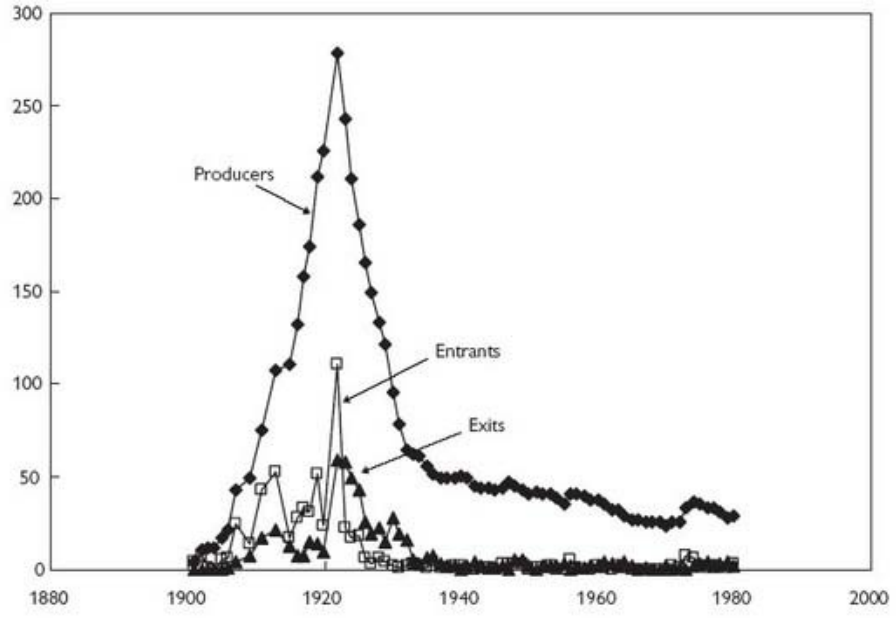

Figure 3 - Evolution of the number of producers in the automobile industry in the past century (Klepper, 2006)

Now, the same applies to the Social Capital. To the purpose of the argument, the social networks are similar to the types of automobiles in terms of creating a vaste number of possible solutions of interacting with each other. This would mean that bonding Social Capital would correspond to tracing possibilities of creation of social structure, while bridging Social Capital to the process of choosing the proper structure. This means that even though bonding Social Capital, creating organized groups within a society, is crucial for the benefits it brings along, it is not by any case sufficient. Bridging Social Capital, representing the relations between social networks, could not exist without bonding, and provides the society the benefits flowing from high level of Social Capital.

An example of the problems of creation of Social Capital being solved by Collective Intelligence would, once again, be the study of R. D. Putnam on the immigration in the United States. When people of a new culture arrive to a society, not only their presence harms the level of the present Social Capital, but even breaks up the whole

structure of social networks within this society. However Putnam has proved that the presence of immigrants is beneficial for a society in the long run.

The manner in which the society deal with this problem is employing Collective Intelligence and its abilities to solve problems in this evolutionary way. The immigrants, when have come to a society, are creating new social groups and consequently networks – bonding Social Capital is present. The greater the diversity, the greater will be the chaos of diverse social groups and networks will be present in this society. However ever since the society would find the convenient structures and exclude the inconvenient ones, a functioning structure of social networks would be established and thanks to the diversity the immigrants have brought along this structure would be even better than the previous one.

CHAPTER 3: IMPLICATIONS OF COLLECTIVELY INTELLIGENT SOCIAL CAPITAL IN POLITICS

If one assumes that from the study of R. D. Putnam does follow the existence of such a social concept that could be called Social Capital, and that this concept when applied, does bring along certain benefits for a democratic society, this concept has then several impacts on understanding of a variety of social and political issues.
It has been mentioned above that the Collective Intelligence is one of conditions for Social Capital to work within a society and is the drive for a population of a society to create a high level of Social Capital. It now then rests to illustrate how exactly is the Collective Intelligence related to the conditions making Social Capital possible, to the Social Capital itself and how does one create other on hypothetical example of functioning of a just democratic society.

3.1. Rawlsian model

One of the plausible close insights into the relationship between Collective Intelligence and Social capital may be shown using a mechanism inspired by the model used by J. Rawls in his work *Justice as Fairness*. For the purpose of this thesis, this mechanism will be called rawlsian model later on.

The following self-made figure is about to represent in the clearest way possible to mechanism of how may be the concept of Collective Intelligence implemented into the social and political practice inspired by the model Rawls uses to legitimate the principles of *Justice as Fairness*[3]:

[3] - In his work *Justice and Fairness* Rawls uses the idea of *original position* and *basic structure of society* in order to explain the hypothetical mechanism through which the principles of justice (in the figure as variable X) and any norms a society wishes to impose are being leg*i*timized in a democratic society.

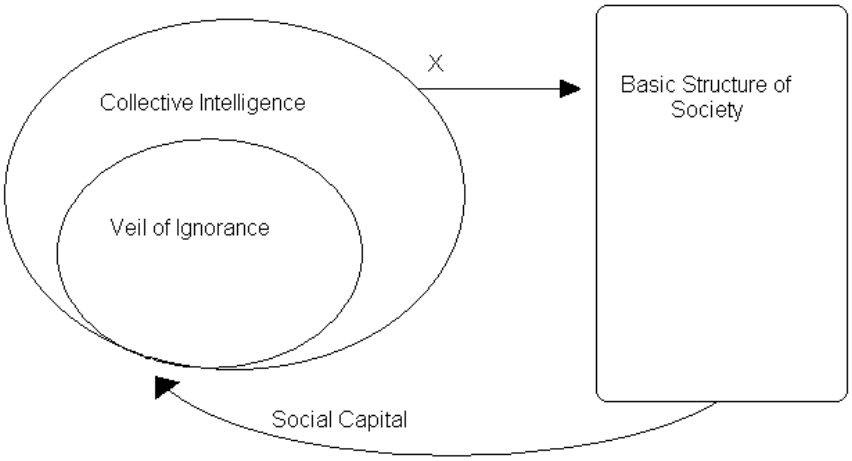

Figure 4 - Making Social Capital work in rawlsian model

For the purposes of explaining the model on the Figure 4 it is crucial to begin the explanation by describing the idea of *original position* Rawls employs. The original position in rawlsian terminology is one of the fundamental ideas of society. It is a hypothetical model of legitimizing social norms via rational consensus. This implies a certain common rationality of participants in this model, who are able to make decisions regardless their status within the society. This is what Rawls calls the *veil of ignorance*. The veil of ignorance is a concept which allows Rawls to explain how rational people are able to make reasonable decisions without any self-interest and thus such decisions that would be profitable for the society as a whole and even to its least advantaged members. Once a person is about to decide on social issues from behind the veil of ignorance, this person is supposed to do so from a spectator point of view while being still a member of a society. It means that within this context the members of a society decide about the issues that are directly applicable to them, but from a point of view of an independent spectator – in other words, when one is involved into this decision-making process he is about to make a decision on a given social issue in the name of the society one is a part of, without knowing the status of oneself within this society. This means that whether one would be the most or the least advantageous member of this society, in the final decision one has to take into

consideration his own self-interest, which makes him independent to the issue, while still being involved.

The idea of the original position is thus a very useful one. The citizens are directly participating into the decision-making process of the society they live in without being biased. This model of original position can be as well transferred into the realm of Collective Intelligence as well. The members of a society deciding from behind the veil of ignorance are similar to the participants on the collective judgment within the process of Collective Intelligence solving a cognition problem. A perfectly non-biased decision could be made by a rational member of a society behind the veil of ignorance and driven by his own self-interest as well as by the whole society by aggregating a collective judgment. Such a collective judgment, as it has been mentioned above, is the one that is not biased, and the most convenient for the entire society. Hence the positioning of the Collective Intelligence as containing the notion of the veil of ignorance in the model.

The variable "x" on the figure stands for basically any norm that has been created by the members of society behind the veil of ignorance, or in other words by the aggregate of the collective judgment.

Rawls defines the idea of *basic structure of society* as follows:

> „Basic structure of society is the manner in which the main political and social institutions are applied to one system of cooperation, and the manner in which they confer the basic rights and obligations and regulate the distribution of advantages." (Rawls, 2006, p.33)

This means that the basic structure refers to what may be called the implementation of the results of the above mentioned decision making into political and social practice.

Now, as the figure suggests, this process of decision-making is able to create Social Capital within a society. This is because the norms that have been approved by the members of a society in the original position are being basically approved by any

rational member of a society. This makes them all the more legitimate and more efficiently put into practice by being applied into the basic structure of society.

What then results from such a common decision making is greater legitimacy of norms being adopted within this system. This means that not only the norms are being widely recognized, but from this follows the greater authority and efficiency of institutions. Furthermore, the institutions implementing the norms that have been if not adopted then at least approved by the rational decision maker in this process earn greater trust within a society. This is logical, since once the citizens have rationally recognized a norm or a law being just, then it is easier for the institutions to implement these norms and laws, since the population itself recognizes them and since the institutions are efficiently implementing what the citizens do understand as being right, they are being trusted.

This model is only feasible in democratic regimes, where the democratic institutions are established. Now this means that in such case there is within a society present a high trust towards democratic institutions, which makes them being efficient, there is a very participatory civic culture (deduced from the participation of the citizens into the decision-making process), which are the effects a high level of Social Capital has on the political situation. From this can be deduced the presence of Social Capital in societies functioning in this way.

The figure then suggests, that the Social Capital then makes from this model a cycle. Shortly, the Social Capital is as well as the outcome of this scheme the anticipator of the whole process. This is because the high level of Social Capital implies a high level of civic culture within a society. The higher the civic culture, the more are the citizens interested into the politics, the bigger is the probability that such a model would be employed. This is because such a model could not be adopted by any case within a society, where the citizens are not willing to participate into the political life.

> "In general, the basic structure forms the way how social system, in a long-term perspective, is producing and reproducing specific form of culture, which the individuals commonly accepts with their own conceptions of good." (Rawls, 1993, p. 223)

3.2. Direct applications of collectively intelligent social capital to political theory and practice

Studying the interconnectedness of Collective Intelligence and Social Capital has considerable consequences in understanding of society as a whole in several ways. First, it may bring whole other perspective into the ideological discussion between the Conservatives and Liberals. Secondly, it can explain why the multiculturalism is not a threat for a society but, on the contrary, in the long run it enriches the society and help it to benefit from it economically and politically. And last, but not least it may add a new perspective into perception of the ideal of democracy.

3.2.1 Conservative or Liberal?

The hypothesis suggests that where the Collective Intelligence creates a high level of Social Capital in a society, the society generally benefits from it. From this follows that where is the level of Social Capital high, there the social structures have overcome a relatively long evolution creating the best structures possible – this would favor the conservative[4] theory, since it supports the idea of rather preserving the existing and expose the existing structures only evolutionary transformations. On the other hand, where the structure of the population changes, in the period of increased immigration, a society faces new challenges making the existing structures inefficient (Putnam, R. D., 2007). As it follows from the way how Collective Intelligence deals with cognition problems in the evolutionary way – creating quantum of new structures and gradually selecting the successful ones – a society would be better off

[4] - "In general terms, a political philosophy which aspires to the preservation of what is thought to be the best in established society, and opposes radical change." (McLean, 2009, p.112)

in this situation when it changes its structures. Nevertheless, this would mean that it has come through some evolution anyway, which still favors the conservatives. On the other hand, when it comes to the values of liberal democrats, the Collective Intelligence does not oppose them. On the contrary, the concept of Collective Intelligence, as well as for the concept of Social Capital indeed, works the best under the conditions of the liberal democracy[5] (Atlee, 2002).

An interesting point may be shown thanks to the rawlsian model of generating public consent with respective norms being established into society. As efficient as any institutions or policies may be, it is not always guaranteed that they would be approved by collective judgment. Even though an institution or a norm may be established for a relatively long time, and it can be thus claimed that it has survived the evolutionary process of selection, it does not have to be the best institution or norm possible.

Let us take an obvious example of slavery. Slavery has been making part of societies for centuries and has been indeed profitable for the free people or slave owners, and even for the whole societies, since it has been bringing along economic prosperity (as for example in the eighteenth century in America). It has been approved by history, its long-term survival has given slavery tradition and thus legitimacy. But when it comes to the collectively intelligent agent, it would not approve of slavery. This is because this rational agent will have to treat this issue from behind the veil of ignorance – from the position of not knowing its possible status within thus organized society. If this agent were about to be the owner, its self-interest would dictate it to approve of slavery, on the other hand if it were to be the slave, it would not be rational for it to chose the option of society organized in such a way. Since this agent is supposed not to know its status within the society, it would not consider this organization of a society to be an option.

[5] - "In general, the belief that it is the aim of politics to preserve individual rights and to maximize freedom of choice." (McLean, 2009, p. 306)

Even though this concept appears to favor the liberal standpoint, the conservatives may use the argument of the collectively intelligent agent as well. It is because this agent does not truly consider whether an institution, a norm or policy has been incorporated into the society for a long time. It only considers its benefits for any member of a society – from the least to the most advantaged ones.

This work thus cannot resolve the battle between these two ideologies. However it brings new point of view into this issue.

3.2.2 Dealing with Multiculturalism

When it comes to the multiculturalism, as it has been already suggested, the great flows of immigrants are not a threat to a society in the long run. When a large number of new participants become a part of a society, the Social Capital is not beneficial for a society in the short term, but rather in the long term (Putnam, 2007).

This may be seen as demonstration of Collective Intelligence demonstrating itself in the realm of Social Capital in two respective ways – and this as a factor contributing to the creation of Social Capital, and secondly as a factor making people preserve a certain level of Social Capital.

In the first case the Collective Intelligence would be demonstrating itself in Social Capital by dealing with a cognition problem. Following the findings Putnam has made in the research in question (a research on the question of how is Social Capital related to the immigration), it shows that the more gets a society culturally diverse, the less Social Capital may be observable in the society in question in a short time. Even if this may seem being in contradiction with the theory of Collective Intelligence creating Social Capital, since diversity is crucial for Collective Intelligence to take place and the more diverse are the participants on the collective solution, the better are the chances that the collective judgment would be right. But the decline in Social Capital in a society marked by recent immigration may be

explained by Collective Intelligence dealing with a cognition problem (of how should the society reorganize the structure of its social networks when new circumstances have arose) by what this work calls evolutionary process.

This is how a collectively intelligent society reacts on such new challenges. It comes up with a variety of new possible social networks (and this primarily thanks to the great diversity among population) and then chooses the best structure by an evolutionary process – the most convenient structure of social networks would be chosen. This would explain also why after a recent immigration flow there is still bonding Social Capital present, while it is the bridging that is declining in a significant way – which means that the social networks are being created, while there are no connections being built between them – bonding Social Capital would refer to coming up with a variety of new networks and bridging refers to creating a structure where there are functional relations even between these networks (see 2.3.).

The other way the decline of Social Capital due to the immigration may be explained would be the way how a problem of coordination would be solved by Collective Intelligence. Since in terms of Collective Intelligence the abilities of crowds to coordinate are due to two factors. Those factors are culture and convention – these are making coordination possible. Now obviously when a society becomes more diverse being enriched by people not sharing the culture with those who were previously easily able to coordinate among themselves, the coordination within this society is disrupted and needs to be reestablished. However this is not a question of a short-time solution. Creating new conventions and new common culture is rather a long-term process. This is why social networking is threatened by recent immigration.

Hence the issue of nowadays – the problem of dealing with great immigration flows is not an element necessarily threatening our societies. However for a certain period of time there will necessarily be a chaos in social networking that might be demonstrated by xenophobia and distrust towards the immigrants. What is though

important is that according to this concept the immigration would even bring along benefits for our societies by making them more diverse.

3.2.3 Deeper Democracy

The ideal of democracy is a system, where the citizens rule by means of some kind of representation with a goal of well-being of all citizens. The response on how the results of this work have an impact on seeing this ideal hence become quite clear. The Collective Intelligence may be the answer on how a crowd can rule efficiently and reasonably. If the Collective Intelligence would be ruling a society, a representative would then have only the task of managing it, finding „proper tools“ for aggregation of collective wisdom and procuring the right conditions for it to be truly wise:

> „The best government is that government which enables communities to do this - to nurture and utilize their wisdom and resources - especially their diversity - in such a way that they require less and less government.” (Atlee, 2002)

For a government to be wise it would then in such a case mean to provide a convenient environment for diversity of citizens to take place, not to allow an authority to take over the monopoly of knowledge – it would have to ensure the decentralization of knowledge.

And then, nothing could provide better „proper tools“ than efficient social structures. Which brings us back to the Social Capital. Social Capital, as a concept that enhances and fosters civic culture within a society would contribute into the concept of deep democracy by fostering diversity of participants on the political process:

> „Through building creative partnerships among empowered, deeply unique individuals and groups, deep democracy enables real community wisdom to emerge. Peace, justice and fruitful, sustainable lives are natural concomitants of this process.“ (Atlee, 2002)

The better the civic culture in a society exists, the higher is the chance that the citizens would be willing to participate into the decision-making process, the higher the possibility that the participants would be diverse enough.

As it has been shown, there exists even a concept of ideal of democracy functioning upon the concepts of Collective Intelligence and Social Capital. This is how the theory of collectively intelligent Social Capital is applicable also for creating models of democracy.

CONCLUSION

The purpose of this work has been to analyze the relationship between the concepts of Collective Intelligence and Social Capital and illustrating the way how are they interconnected on various examples – from practical to the abstract ones.

As depicted in the first chapter, human mind doesn't work in any occasions as well as we usually suggest and we tend to make mistakes without knowing that we are actually wrong.

The accumulation of knowledge through networking of individuals, makes the intelligence collective and, as presented, in many ways much more efficient to solve a large scale of difficulties and problems such as problems of coordination, cognition and others.

Solving these problems, the Collective Intelligence can be perfectly applied on the concept of Social Capital which faces exactly the same difficulties with coordination, and cognition mentioned above. Also, Social Capital is predominantly the phenomenon of individuals located in societies and hence the understanding of how men think, and revealing the possible ways of organizing their cohabitance in a political subject is of high importance for making life in such a community easier.

As i was trying to argue, the Social Capital is a form of highly developed political culture and is possible almost exclusively in democratic countries with already established democratic institutions.

Collective Intelligence than provides an adequate background for citizens of democratic states to constitute policy, answering questions about legality of political decision making and thus enhancing political culture, hence, the Social Capital.

Applied on both, the hypothetical model of John Rawls and his ideas about democratic society and practical implications connected with multiculturalism,

ideological disputes and the nature of democracy, concepts of Collective Intelligence and Social Capital seems to be largely interconnected and by studying the relationship between them may be profitable for not only academic field, but mainly for improving the quality of life in a society by simple understanding of how to be social, through collectiveness.

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