

# **CHESS AND KNOWLEDGE MANAGEMENT**

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## **Abstract:**

**The relationship between chess and knowledge management, chess and military strategy, chess and skills development, chess and personality development is far from being new. The timeliness of our presentation and suggestions is supported by the development of information technology in the recent decades. In 2004 Swedish and Australian scientists achieved substantial results in the research of the relationship between chess and warfare by using computer technology and mathematical methods. Due to the excellent information technological background of chess, the effectiveness of chess education has substantially increased, as a result of which, up-to-date methods of skills and personality development through chess are relatively easy to work out and accomplish. This work, by presenting some scientific results, points at the possibility of joining in the research on one hand and at the possibility of exploiting the educational, skills and personality development applications on the other.**

*Motto: On the chessboard lies and hypocrisy do not survive long.<sup>1</sup>  
- Emanuel Lasker<sup>2</sup>*

## INTRODUCTION

*Sors bona nihil aliud<sup>3</sup>*, that is good luck and nothing more – says Hungarian military commander of the XVII. Century Miklós Zrínyi<sup>4</sup>. *The good player is always lucky<sup>5</sup>* – says José Raoul Capablanca<sup>6</sup>, world chess champion between 1921-1927. Military commander and chess champion, conducting war and conducting chess pieces – is there any relationship whatsoever between the two fields? Tactics and strategy, initiative, breakthrough, attack, defense, counter attack, what analogies exist? It is well known that chess was a martial game, its Sanskrit name *chaturanga* (chatur=four, anga=part) refers to the four Indian arms (infantry, cavalry, war carts, elephants) from the period when Alexander the great defeated the Indian king Poros at Hydaspes.<sup>7</sup>

When Jingis Chan could not occupy a town for 30 days he said to his strategist: think! They thought and they made a special table with wood pieces of own and enemy forces – warriors, cavaliers, martial carts. Actually they constructed a board on which they planned their strategy and tactics.<sup>8</sup>

Chess is a possible model of war. Power of any figure depends also on its position. Knight is powerful and dangerous on one position – powerless and weak on other position. A pawn can come to position, when it can transform itself to a powerful piece.<sup>9</sup>

Nowadays the economic environment is very turbulent where the knowledge elements are falling into disuse rapidly therefore obtaining competitive advantages and increasing the added value depends on how to learn and use in practice the tacit knowledge components. This fact emphasises why the tools of knowledge management is essential.<sup>10</sup>

It is likely collection of chess games are the oldest digital Knowledge Base on the World. Largest on the World knowledge base is ChessBase online database. It contains more than 3

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<sup>1</sup> World Chess Federation Homepage. (<http://www.fide.com/news.asp?id=692>).

<sup>2</sup> Emanuel Lasker (December 24, 1868 – January 11, 1941) was a German chess player and mathematician. In 1894 he became the second World Chess Champion. In 1921, he lost the title to Capablanca. ([http://en.wikipedia.org/wiki/Emanuel\\_Lasker](http://en.wikipedia.org/wiki/Emanuel_Lasker))

<sup>3</sup> A concise history of the Bibliotheca Zriniana. ([http://www.eruditio.hu/zrinyi3d/bz/hist\\_eng.html](http://www.eruditio.hu/zrinyi3d/bz/hist_eng.html))

<sup>4</sup> Miklós Zrínyi (Croatian: *Nikola Zrinski*, Hungarian: *Zrínyi Miklós*; 1620-1664) was a Croatian and Hungarian warrior, statesman and poet, member of the Zrinski noble family. [http://en.wikipedia.org/wiki/Miklos\\_Zrinyi](http://en.wikipedia.org/wiki/Miklos_Zrinyi)

<sup>5</sup> The good players. (<http://www.geocities.com/Colosseum/4278/quotes6.html>)

<sup>6</sup> José Raúl Capablanca y Graupera (November 19, 1888 – March 8, 1942) was a Cuban world-class chess player in the early to mid-twentieth century. He held the title of world chess champion from 1921 to 1927. ([http://en.wikipedia.org/wiki/Jose\\_Raul\\_Capablanca](http://en.wikipedia.org/wiki/Jose_Raul_Capablanca))

<sup>7</sup> R. Finkeller et al.: Sakk. A játék 2000 éve. (Chess. 2000 Years of the Game). Kulturtrade Publishing House, Budapest, 1993. p. 14.

<sup>8</sup> Кто создал шахматы? Зеркало Недели, (Улан-Батор, № 12 (25), 25 - 31 Марта 1995 г.) <http://www.zerkalo-nedeli.com/nn/show/25/42045/>

<sup>9</sup> Суворов, Виктор: Самоубийство: Зачем Гитлер напал на Советский Союз? <http://militera.lib.ru/research/suvorov5/17.html>

<sup>10</sup> Erzsebet Noszkay: The most important experiences on the field of knowledge management in Hungary <http://www.vti.hu/mtatudas/NoszkayErzsebet-HolTartATudasmgmt.pdf>

million complete chess games. First chess game in this knowledge base is game of Lopez de Segura, Ruy and Leonardo, Giovanni da Cut in 1560 year!

Does this old connection between chess and the conduct of war carry any messages for us today? Is it worth carrying out research in these fields, can we link the excellent information technology and knowledge management background and the present day development of the theory of chess to military research? Are there any consolidated scientific results on the basis of which teaching chess in officer training and in skills development in general could be an object of consideration? We conducted research in these fields, the findings of which will be the subject of our study below.

## **MILITARY ANALOGIES**

### **Hungarian Relations: Works of Chess Authors**

First a Hungarian antecedent: the book titled *Harcászat 64 mezőn*<sup>11</sup> (Tactics on 64 squares) published in 1972 by András Ozsváth, chess master and coach. The author is an excellent tactician with a combative style, so his approach with respect to military analogies is understandably intuitive in the first place. Ozsváth in his excellent work seems to recognize several tactical parallels. The following chapter titles illustrate this: The Science of Tactics (p. 23.); The Restriction of the Movement of Military Force (p. 48), Initiative and Attack (p. 72.); Disruption of Balance (p. 109); Active Defence (p. 185.); Attitude and Conduct of War (p. 217); Cooperation of Combat Units (p. 288.); Planning and Executing Military Operations (p. 315.)

Another Hungarian author Mario Pap published an interesting piece of work in the Hungarian chess magazine *Sakkvilág* (The World of Chess)<sup>12</sup> about the warfare doctrine of Siegbert Tarrasch, German chess grandmaster (1862-1934). In 1903 Tarrasch published a representative size article in the Berlin weekly *Die Woche* about chess as a very favourable potential school subject. In this article Tarrasch states that the events of the great wars of world history often repeat themselves in chess, since every possible war action can appear during a chess-game. Outflanking, isolation, concentrated attack and even diversionary actions along internal positions can be carried out just as on the battlefield. According to Tarrasch this relationship between reality and chess makes it possible to present events in military history as chess games, what's more to disclose mistakes and by analyzing them make suggestions for the future. Tarrasch presents these thoughts through an authentic chess game (Dr. Siegbert Tarrasch – Heinrich Teichmann, Ostende, 3<sup>rd</sup> July 1905). The topic of the game was: how Count Helmuth von Moltke led the Prussians to an unexpected roaring victory at Sedan on 1<sup>st</sup> September 1870. Some details of the game analysis: Mobilization has finished, the troops have moved behind the frontiers (in the language of chess: the opening has finished); military operations started with the fast advance of the left flank lead by the Prussian Crown Prince Frederick William (in the language of chess: White starts a dynamic queenside action); Von Moltke, commander-in-chief issues his famous order of the day: Cavalry forward! (in the language of chess: white with its knight maneuvers disarranges black's positions); and so on.

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<sup>11</sup> Ozsváth: *Harcászat 64 mezőn*. (Tactics on 64 squares). Zrínyi Military Publishing House, Budapest, 1972.

<sup>12</sup> M. Papp: *Újrajátszott és kijavított történelem*. (History Replayed and Corrected.) Magyar Sakkvilág, 2005. 7. p.21.)

Yet another Hungarian relation: János Harsányi (1920-2000) got his Nobel Prize for his pioneer work on the field of balance analysis in the theory of non-cooperative games.<sup>13</sup>

## Foreign Relations: Swedish and Australian Research

*What is chess good for?* This is the title of Emma Young's article published in the 4<sup>th</sup> March 2004 issue of *The Guardian*<sup>14</sup>. To war – say the Swedish and Australian researchers, who think that studying chess will improve the understanding of real fight. Below there are some citations from this article to illustrate the main goals, methods and results of Swedish and Australian researchers.

*So, what is chess good for? War, say researchers in Sweden and Australia.* They are using the game to improve understanding of *real battles*, where you can't always see what your opponent is up to.

Chess in all its variations has been used historically to illustrate *battlefield tactics and probe new strategies*; today nothing's changed. Teams at the Swedish National Defence College in Stockholm and the Defence Science and Technology Organisation in Australia are studying the game afresh in an attempt to understand better how to gain *military success*. In *Sweden*, the researchers are using real players. In *Australia*, the team has run tens of thousands of virtual games - with some clear messages for their military sponsors.

On the face of it, the bloodless, low-tech game of chess might seem to bear little resemblance to modern warfare. "*But it resembles real war in many respects,*" maintains Jan Kuylenstierna, one of the Swedish researchers.

One major *difference between chess and war* is that chess does not contain what the military terms "information uncertainty". Unlike a battle commander, who may have incomplete intelligence about his opponent's level of weaponry or location of munitions depots, one chess player can always see the other's pieces, and note their every move. So Kuylenstierna and his colleagues asked players to compete with a board each and an opaque screen between them. A game leader transferred each player's moves to the other's board - but not always instantaneously. For instance, one game modification resulted in a player being prevented from seeing their opponent's latest two moves.

But what do the experts think? Retired Australian *Air Vice Marshal Peter Nicholson* agrees that fast tempo is a key to military success. "It's something that many military commanders have been doing instinctively for a long time," he says. "*Napoleon* was one of the first proponents of it in nation-state warfare. And the Mongols were another. Their rapidly moving small forces of armed horsemen completely threw conventional forces off balance."

Sun Tzu, author of *The Art of War*, had his own take on this: "An attack may lack ingenuity, but it must be delivered with supernatural speed," runs one translation.

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<sup>13</sup> Cs. Fenyvesi: In Memoriam János Harsányi (1920-2000), the Nobel Prize winner in economy for the theory of games. ([http://www.c3.hu/~mfsz/MFSZ\\_0013/Fenyv.htm](http://www.c3.hu/~mfsz/MFSZ_0013/Fenyv.htm) )

<sup>14</sup> E. Young: Chess! What is it good for? *The Guardian*, 4 March 2004. (<http://www.guardian.co.uk/life/feature/story/0,13026,1161128,00.html> )

*Nicholson* says he welcomes the new work, and considers the chess research one of the "tools in the armoury" for developing, testing and evaluating operational concepts and strategies. "It's not the panacea," he says. "It's one of several methods, which are all valuable and each have their place."

The Swedish and Australian approaches to game analysis each have their own strengths, says *Kuylenstierna*. While the Australians could look at many thousands of games, the Swedes used real people. But in writing the agent-playing software, *Scholz's* team did integrate techniques from a *new area of math called neurodynamic programming*. This allowed the agents to learn as they played and, as a result, more accurately mimic real human game-playing behaviour.

Using the same *new mathematical techniques*, and building on the chess and checkers work, *Scholz* and his colleagues are now creating improved computer-based war games for use in military training. *Good artificial intelligence has been lacking from most war games until now* and they hope their work will provide more realistic characters and situations, and therefore not only better training but also an improved method for considering *new strategies for real warfare*. One important advance from the *chess simulations is to allow multiple moves at the same time, as would happen in a battle*.

Finally an opinion, a short story and some thoughts of the afore mentioned *Jason Scholz*, Australian research leader, to illustrate the relationship between chess and war. The opinion: according to *Murray*, the English Orientalist, historically chess should be ranked among martial games<sup>15</sup>. The short story: the Arabs occupied Persia in 638 BC. Caliph Omar, the father-in-law of Mohamed had already known chess. He was asked why chess was not against the law while all games had been prohibited by the Prophet with the exception of riding, bow and arrow and women. "There is nothing unobjectionable in it," – answered Omar, "*since it deals with war!*"<sup>16</sup> According to *Schulz veiki*, the Chinese version of chess, which is about gaining territories and outflanking, has long been in relationship with warfare. The oldest references originating from the time of the Hong Han dynasty between 25-220 BC, considered *weiki* as a *martial game*, and according to some present day scientists, the Chinese used *the game as a model of military strategy*.

About these researches British International Master *Colin Crouch* wrote in to the Guardian with this to say:

"I do not wish to condone the bloodthirsty business of warfare, but I agree that chess has much to teach military strategists."<sup>17</sup>

And now, following the above overview on the relationship of chess and conducting war, we would like to briefly summarize our own opinion. As chess players say you must be able to see on the board, always on the complete board, and we are absolutely convinced that you must be able to see in the same way on the battlefield. As long as we are not able to see clearly, as long as we are not able to disclose the plans of our enemy, we will not be able to take a real good step on the chessboard - but we won't be able to make a good decision on the

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<sup>15</sup> P. Hardicsay: *Miért gondolkodik másként a sakkozó?* (Why does a Chess Player Think Differently?) Spirál Publishing House, Budapest, 2004. p.3.

<sup>16</sup> *ibid.* p. 4.

<sup>17</sup> How about a nice game of war? <http://www.chessbase.com/newsdetail.asp?newsid=1523>

battlefield either. Careful planning, objectivity, bravery but no bluffs, consideration and recognition of important or decisive moments are vitally important. Players must possess skills like taking the initiative, bravery, consistency, flexibility, and most importantly they must be able to disclose and counter the plans of the enemy. In our opinion the most grievous mistake is to underestimate the enemy's plans and possibilities or the enemy itself. We think that the above skills can be learnt in chess and then utilized in conduct of war.

## **ANALOGIES IN EDUCATION**

### **Skills Development: Scientific Research and Findings**

#### **Hungarian Relations**

Before talking about skills development, the connection of some outstanding Hungarian statesmen, artists and scientists with chess is worth mentioning. Just a short list: István Széchenyi<sup>18</sup>, Ferenc Erkel<sup>19</sup>, Otto Titusz Bláthy<sup>20</sup>, the excellent author of chess problems, Nobel prize winner Albert Szent-Györgyi<sup>21</sup>, the president of the Szeged chess circle, and Szilveszter Vizi E. the present President of the Hungarian Academy of Sciences were all competitive chess players.<sup>22</sup>

Hungarian researcher of this topic, Peter Hardicsay, international master, is a doctoral student at the Faculty of Physical Education and Sports Sciences of the Semmelweis University (Budapest, Hungary). The in-house debate of his PhD dissertation, which is a summary of his research, was held on 21<sup>st</sup> September 2005. One of the hypotheses in his draft dissertation is that "chess makes it possible for different age groups (from kindergarten to adult age) to understand the logic of problems and to make definite decisions, that chess is a very important means of teaching and education and after having been mastered it is an unique method of skills development". "Chess teaches adequate concentration, self discipline and improves willpower." It was also Hardicsay, who found a sentence, which – although doubtlessly originating from dark times – is correct in its content and which was written by Dr. János Hankiss, cultural undersecretary of the Ministry of Religion and Public Education of the Hungarian Monarchy, in the memorandum nr. 191.33/1944: "Chess has the power to make the mind keener, and through creating discipline, to develop the personality."

We will introduce some further findings of Hardicsay, including the effects of chess on skills development on the basis of one of his comprehensive works (Why does a chess player think differently?) [3] In this work Hardicsay examines several questions, out of which we would

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<sup>18</sup> Gróf Széchenyi István (Count Stephen Széchenyi) (September 21, 1791, Vienna, Austria-Hungary – April 8, 1860 Döbling), known as "*The Greatest Hungarian*", was a Hungarian politician and writer, one of the founding fathers of "New Hungary" after the revolution of 1848. ([http://en.wikipedia.org/wiki/Istvan\\_Szechenyi](http://en.wikipedia.org/wiki/Istvan_Szechenyi))

<sup>19</sup> Ferenc Erkel (November 7, 1810, Gyula - June 25, 1893, Budapest) was a Hungarian composer. He was the father of Hungarian grand opera, written mainly on historical themes, which are still often performed in Hungary. He also composed the music of "Himnusz", the national anthem of Hungary. ([http://en.wikipedia.org/wiki/Ferenc\\_Erkel](http://en.wikipedia.org/wiki/Ferenc_Erkel))

<sup>20</sup> Ottó Titusz Bláthy (1860-1939), was a Hungarian electrical engineer, co-inventor of the electric transformer, the tension regulator, the watt meter, the alternating current (AC) electric motor, the turbo-generator and high efficiency turbo-generator. Beside his scientific work, Ottó Titusz Bláthy is well known as author of chess problems. ([http://en.wikipedia.org/wiki/Otto\\_Blathy](http://en.wikipedia.org/wiki/Otto_Blathy))

<sup>21</sup> Albert Szent-Györgyi (September 16, 1893 – October 22, 1986) was a Hungarian physiologist who won the Nobel Prize in Physiology or Medicine in 1937. (<http://en.wikipedia.org/wiki/Szent-Gyorgyi>)

<sup>22</sup> P. Hardicsay: *Miért gondolkodik másként a sakkozó?* (Why does a Chess Player Think Differently?) Spirál Publishing House, Budapest, 2004. p. 6.

like to point out some, which are important from the point of view of the present paper: strategic theory of game, the findings of international research in skills development through chess, applying chess thinking in decision making systems, the personality developing effect of chess.

Hardicsay lists the following abilities, which can be attained through chess, but which can be very well used in other walks of life:<sup>23</sup>

- Willpower (coping with and digesting failure, drawing the conclusions, preparing for new tasks)
- Lasting and concentrated attention, dividing of attention
- Developing the memory
- Thinking, judgments, and ability to draw conclusions
- Reproductive and productive creative imagination, planning, creativity, the ability of thinking
- Decision making ability, power of judgement, determination, bravery
- Systematic thinking
- Deliberation
- Evaluation of the situation.

In connection with the personality developing effects mentioned by Hardicsay, we would like to quote two appropriate reflections from Dr. Ervin Nagy psychiatrist, international chess master: “*Beside their skills, the complete personality of chess players is manifested by the way they play the game.*”<sup>24</sup> Also from Ervin Nagy: “*It seems to me that the power of chess players is in their three dimensional thinking...*”<sup>25</sup> It seems probable, that through teaching chess the personality of the students will develop, so it can be formed on one hand, and evaluated on the other. Therefore beside skills development the personality development through chess can be an exceptionally interesting, and in our opinion, a basically new field of research. We think that introducing chess education would make it possible to reveal and develop the personality traits of students taking part in military officer training. The methods of this would be worth doing research on, working out, and applying.

## **Foreign Relations Franklin’s Essay**

*Benjamin Franklin*<sup>26</sup> in his work titled “Morales of Chess” (1779)<sup>27</sup> states: The Game of Chess is not merely an idle amusement. Several *very valuable qualities* of the mind, *useful in*

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<sup>23</sup> P. Hardicsay: *Miért gondolkodik másként a sakkozó?* (Why does a Chess Player Think Differently?) Spirál Publishing House, Budapest, 2004. p.18.

<sup>24</sup> D. Trencsényi: *Hatvannégy harcmező.* (Sixty-four squares of Battlefields.) 168 óra, 2004.39.  
<http://www.168ora.hu/article.php?id=2719>

<sup>25</sup> P. Szilágyi: *A sakkozó lelke.* (The Soul of the Chess Player.) Magyar Sakkvilág (Hungarian World of Chess) 2005. 7. p. 40.

<sup>26</sup> Benjamin Franklin (January 17, 1706 – April 17, 1790) was one of the most prominent of Founders and early political figures and statesmen of the United States. Considered the earliest of the Founders, Franklin was noted for his curiosity, ingenuity and diversity of interests. His wit and wisdom is proverbial to this day.  
[http://en.wikipedia.org/wiki/Benjamin\\_franklin](http://en.wikipedia.org/wiki/Benjamin_franklin)

<sup>27</sup> B. Franklin: *The Morales of Chess.* ([http://chessville.com/misc/Quotes/misc\\_trivia\\_quotes\\_Franklin.htm](http://chessville.com/misc/Quotes/misc_trivia_quotes_Franklin.htm))

*the course of human life*, are to be acquired or strengthened by it. Franklin outlines three advantages of chess: *foresight, circumspection, and caution*.

*Foresight*, which looks a little into futurity, and considers the consequences that may attend an action; for it is continually occurring to the player, "If I move this piece, what will be the advantages of our new situation? What use can our *adversary* make of it to annoy me? What other moves can we make to support it, and to *defend myself from his attacks*?"

*Circumspection*, which surveys the whole chess-board, or scene of action, the relations of the several pieces and situations, the dangers they are respectively exposed to, the several possibilities of their aiding each other, the probabilities that the *adversary* may make this or that move, and *attack* this or the other piece.

*Caution*: not to make our moves too hastily. As the game thereby becomes more the image of human life, *and particularly of war*; in which, if you have incautiously put yourself into a bad and dangerous position, you cannot obtain your *enemy's leave to withdraw your troops*, and place them more securely, but you must abide all the consequences of your rashness.

*Franklin's view on the game as such, on courage and victory*: The game is so full of events, there is such a *variety of turns in it*, the *fortune* of it is so subject to sudden vicissitudes, and one so frequently, after contemplation, discovers the means of extricating one's self from a supposed insurmountable difficulty, *that one is encouraged to continue the contest to the last, in hopes of victory* by our own skill, or, at least, of giving a stale mate, by the negligence of our adversary.

Finally, Franklin's closing remarks on what we can learn by chess: And, lastly, we learn by chess the habit of not being discouraged by present bad appearances in the state of our affairs, the habit of hoping for a favorable change, and that of persevering in the search of resources.

## **Foreign Studies**

We succeeded in discovering several foreign research findings dealing with the question of skills and personality development. Out of these we would like to give a short overview of *The Use and Impact of Chess* by Dr. Robert Ferguson<sup>28</sup>, probably the most noted expert of the topic. We would like to quote some parts of this work with the aim of introducing the usefulness of chess:

In Zaire the research conducted by Dr. Albert Frank in 1974 on a group 92 chess players between 16-18 years of age showed that the students made a remarkable progress in spatial, numerical and administrative-leadership skills as opposed to the non chess playing control group. What makes this result exceptionally interesting is that it was regardless of the level of chess knowledge of the experimental group.

According to the findings of the research conducted by Dr. Yee Wang at the Chinese University, Hong Kong, between 1977-1979 the chess playing students' results showed a 15% improvement in mathematics and science tests.

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<sup>28</sup> Homepage of Illowa Chess Club. Teacher's Guide: Research and Benefits of Chess by Dr. Robert C. Ferguson. ([http://www.quadcitychess.com/benefits\\_of\\_chess.html](http://www.quadcitychess.com/benefits_of_chess.html))

Beside the two above examples, Ferguson gives an account of similar experiments conducted in Belgium, Venezuela, Pennsylvania, Kisinov, Texas and New Jersey, naturally with exact listing of his sources. In New Jersey the self esteem of those taking part in chess education showed a substantial, often dramatic raise, which is a new and interesting experience.

At the 40th World Chess Congress in 1969, Dr. Hans Klaus, *Dean of the School of Philosophy at Humboldt University in Berlin*, commented upon the chess studies completed in Germany: "*Chess helps any human being to elaborate exact methods of thinking... Everybody prefers to learn something while playing rather than to learn it formally...*"<sup>29</sup>

We would like to mention a 104 page long, comprehensive Canadian collection of articles: *The Benefits of Chess in Education*<sup>30</sup>. Some titles of studies: *Chess in Education Research Summary; Chess Improves Academic Performance; Teachers Guide: Research and Benefits of Chess; The Importance of Chess in the Classroom; Developing Critical and Creative Thinking Through Chess; The USA Junior Chess Olympics Research: Developing Memory and Verbal Reasoning; Chess and Aptitudes – Summary; The Role of Chess in Modern Education; Chess in the Math Curriculum; Chess Anyone? – Chess as an Essential Teaching Tool.*

And a very interesting citation from the former world chess champion Emmanuel Lasker: "*Properly taught, a student can learn more in a few hours than he would find out in ten years of untutored trial and error.*"<sup>31</sup>

### **My Research Methods, Further Directions of Research**

During the course of preparing this publication – as it is also indicated in the list of literature, we relied on traditional printed sources, magazines and books only to a small extent. My research was done mainly on the internet, to be more exact with the help of *Google* search engine, we tried to find the most appropriate search words and expressions. The ones below proved to be the most effective (or lucky):

*"Chess education", "Chess military education", "Chess military training", "Chess war", "Chess war game", "Military Chess";*

*„Шахматы военная стратегия”, „Шахматы военное дело”, „Шахматы воспитание”, „Шахматы война”.*

Naturally it is possible that there are better and more effective search words than the above – further research would definitely find new sources. We have done any research in Russian but we are convinced that there are more remarkable Soviet, Russian, Ukrainian etc. results in this field. It would also be interesting to find out if there are any instances of chess education in military educational institutions abroad. Another direction of research could be to investigate the home pages of foreign universities famous for their chess education programs

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<sup>29</sup> World Chess Federation Homepage. (<http://www.fide.com/news.asp?id=692>). Click on "all of the above on zip file", then choose "The Benefits of Chess in Education".

<sup>30</sup> World Chess Federation Homepage. (<http://www.fide.com/news.asp?id=692>).

<sup>31</sup> The Chess Drum's Chess Academy Homepage. (<http://www.thechessdrum.net/chessacademy/index.html>)

and courses (e.g. The University of Texas in Dallas<sup>32</sup>). It would also be expedient to study the homepage of FIDE<sup>33</sup> (Fédération Internationale des Échecs, World Chess Federation) with respect to parts dealing with chess education (e.g. The Benefits of Chess in Education; Academic Benefits of Chess; Chess, the World's Greatest Problem Solving Activity)<sup>34</sup>.

## Summary and Suggestions

In this paper we tried to point out certain relationships between chess and conduct of war, and also the latest research in connection with it. We also introduced the role of chess in skills and personality development. Below are our suggestions as to the further direction of study:

- to thoroughly get acquainted with *the latest Swedish and Australian findings* of the research about the connection between chess and conduct of war, and to investigate the possibilities of joining this research;
- how can knowledge bases of chess games be used in training of military officers, in BSc and MSc education;
- to study if the present day super grandmaster level chess programs can be utilized in the algorithm of the *computer assisted conduct of war and training*;
- how can the applicability of chess in the skills and personality development be used in *training of military officers, in BSc and MSc education*;
- furthermore, what, how and with what content would be worth teaching not only in Zrínyi Miklós National Defence University but in other Hungarian universities also.
- utilizing *EU competition possibilities* with the purpose of writing course books, preparing study materials and creating a research and teaching laboratory;
- *introducing a facultative subject* (possible name: Chess, conduct of war and skills development);
- writing course books, preparing study materials and multimedia distance learning materials, to assess the effects of introducing the subject, survey, analysis, judgment of usefulness;
- in the event of substantial achievements in the above topics looking for the possibility of *international (NATO) cooperation, organizing conferences and courses*;
- attract doctoral students and to start *PhD research topics*.

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<sup>32</sup> The University of Texas at Dallas Chess Program Homepage. (<http://chessweb.utdallas.edu> )

<sup>33</sup> World Chess Federation Homepage. (<http://www.fide.com> )

<sup>34</sup> World Chess Federation Homepage. (<http://www.fide.com/news.asp?id=692>).

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