

Why Russia has So many Distinguished Physicists and Mathematicians

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Abstract:- Russians have their own distinguished textbooks in addition to their unique way of teaching math and physics. The Russian education of physics and mathematics has priority and paramount importance in formalities and finances, from school education to university and postgraduate studies. As a result, Russian researchers and university professors in mathematics and physics have a different way of thinking or analyzing theories and evidence.

They continue to develop students' deep understanding and imaginative power and not just lifeless study courses and textbooks. In short, imagination comes first and knowledge comes after.

I. INTRODUCTION

Recently, the world has become more and more interested in why Russians excel so much in physics and mathematics.

The Moscow Times, an independent online newspaper in English and Russian, published in the early 1920s, stated that [1]:

During the Soviet era, the fields of mathematics and physics attracted a large number of talented people. They were not so much motivated by the special privileges enjoyed by the upper caste of academics and civil servants or by the way Soviet films glorified them as heroes. The main reason they chose these disciplines was that the most talented and ambitious people were largely banished from the fields they would normally choose to pursue.

Reddit World News which is a place of major news from around the world recently released,

Why are Russians so good at all intellectual areas like chess, computer science, and math/physics Olympiads?[2]

Company Russians do it better than most countries with equal (or higher) economic development, is it because the Russian family or society places a high value on intelligence, or does the government invest more in education and science than other countries?

To answer this subtle question in more detail, we present the following main survey in Section II.

II. BASELINE SURVEY

The answer to this subject is yes they do, and there are reasons why? I only count a few:

- In Western countries, teachers who teach math and physics courses and students who take them are not the best, while talented students in Russia are sent directly in universities of mathematics and physics. Teachers and researchers in Physics and Mathematics have the best salaries.
- Russians have their own unique way of teaching mathematics and physics, from school education to university and post-graduate studies. Russian teachers and researchers of mathematics and physics have a different way of thinking or analyzing theories and proofs, and they have different ways of thinking about learning mathematics and physics.
- Generally, there are two different thinking patterns, one is Western: speed kills strength, compared to Russian: strength kills speed. Both sentences are correct but only under different conditions, e.g. manufacture of heavy machinery, weapons, athletics, etc... I assume the study of physics and mathematics belongs to the second.
- The number of weekly hours of study devoted to mathematics and physics in Russian schools is higher than in the West. The result is that the Russian student leads to a Western colleague of about 2 years.

We have to mention here that the Russians have their own distinguished textbooks where Lev Landau's textbook is a living example.

An important version of the Russian Textbooks of Theoretical Physics is a ten-volume series of books covering theoretical physics which was initiated by Lev Landau [3] from the first decades of the 20th century.

- Words of Albert Einstein [4]: "Imagination is more important than knowledge"**, and words of David Hilbert commenting on the researcher's resignation [4]: "Well, he didn't have enough imagination to become a mathematician" * *

Here we could say that rigorous chess games are an interconnected thing.

Imagination is the main common factor between mathematics, physics and chess![5]. Imagination in Russian chess is a unique, solid and creative field of imagination.

Of course, playing chess does not necessarily improve mathematical and physical abilities, but it demonstrates the most distinguished Russian strategy[5].

The Soviet Union and Russia dominated the chess world for decades until, in the 1970s, Bobby Fischer came along and broke it.

Most people know what Russian chess and Russian strategy are[5]. To play against a Russian player, especially when you have black pieces, you must follow the rules of

Russian chess strategy until move 20 or find that all your piece strategies are misplaced and game loss is inevitable.

It worth mention that A Einstein's best friends were the giant chess champions of the early 1890s, especially Emanuel Lasker (mathematician), the chess legend and world champion at the time. Shown in Fig 1.

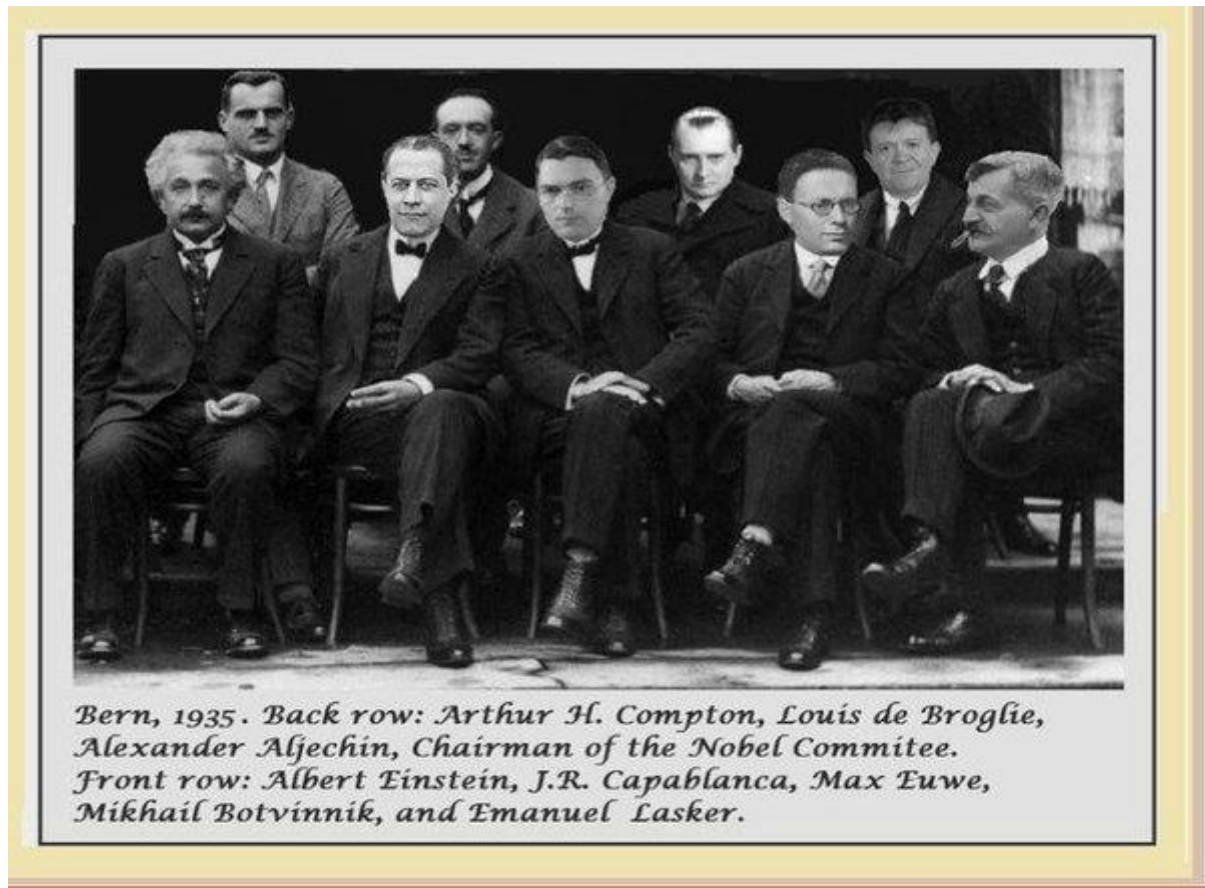


Fig. 1: he picture shows the pioneers of modern physics and modern chess coming together

Albert Einstein regularly played chess to train his memory and the "muscles" of his mind. He once said that the complexity of chess problems had exceeded human intelligence.

A BBC reporter once came to Einstein for an interview and was surprised to find him deeply focused on analyzing complex games on the chessboard. He told the reporter, "Please wait... I'm solving some chess problems."

When Einstein finished, the reporter's first question: "Professor, how do you find time for chess?" »

Einstein looked at him and said, "Young man, do you find time to train the muscles of the body and not find time to train the muscles of the brain?"

The only way to train your head muscles is to play chess. "

III. CONCLUSION

During education imagination and deep understanding are more important than knowledge, especially in physics and mathematics.

Moreover, the educational process is an integral collective process of education, deep understanding and formation. It goes firmly from primary school to postgraduate higher education. The fundamental objective of education and training is to ensure both knowledge and creative thinking.

REFERENCES

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- [4.] Google search.
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