

MARIA SKŁODOWSKA-CURIE, A BRILLIANT CHILD AND A TALENTED TEACHER

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HISTORICAL BACKGROUND. POLITICAL SITUATION OF POLAND DURING MARIA SKŁODOWSKA-CURIE LIFE

With no doubt Maria Skłodowska's life fell on the worst period of Polish history. At the end of the eighteenth century Poland was erased from the map of Europe and partitioned among the Russian Empire, Kingdom of Prussia (since 1871 German Empire) and Austrian Empire (since 1867 Austria-Hungary). The best situation for Polish people was in Austria. In the second half of the nineteenth century the Empire was composed of several nations. Polish language was among the official ones, there were Polish schools and a university, Poles could take part in political life. The situation differed a lot in other parts of the occupied territory of former Poland. Similarly as it was during the Second World War, it is difficult to decide in which part, Russian or German, the life for Polish people was better. Or rather, in which part it was harder. Both occupying countries were dominated by the idea of one nation which should rule over the whole Earth. That's why, Polish schools were allowed neither in the Russian nor in the German part. More importantly, the use of Polish language was prohibited (we can find the reminiscence of it in Maria Skłodowska-Curie memoirs, where she mentioned that she could speak Polish without problems only when she visited her family living in the Austrian part). People who opposed occupants were arrested. The main difference, however, was that in Germany one could just go to a prison while in Russia the prison was usually located thousands of kilometers away from Poland, in Siberia. Nevertheless, there were several rises against occupants, which were deadly defeated. The most important of them took place in the years 1830-1831 and 1863-1864 (just before Maria's birth

in 1867). After every rising, the political situation in Poland became even worse than it had been before.

Rising suppression and cruel restrictions led to a new concept of a resistance. It was obvious that military actions against occupants in such a political situation were completely useless. Under the circumstances Polish elites gave up their earlier practice of "measuring their resources by their aspirations," and started to focus on hard work and study. The main interest of young Poles was turned into natural sciences, mathematics and engineering. Such people were called "positivists". Such an approach was based on the idea of "basic work". Positivists thought that the most important issue for the country was an elementary education. That way they wanted to build an economically powerful and modern nation that would be able to stop Russian and German expansion.

Poland restored its independence in 1918 (Maria was 55 then) when, first Russian and then German and Austrian empires collapsed as a result of the First World War.

MANYA SKŁODOWSKA – A BRILLIANT CHILD AND A COMPREHENSIVE PUPIL

Small Manya (Manya is a diminutive form of Maria) was the youngest child at home. That is why she started her education as a small child looking at her parents educating her brother and sisters. From the beginning she was a very clever child. She started to read at the age of four. One day she shocked her family. Her older sister Bronisława had a



Figure 1. Freta 16 street in Warsaw. House where Maria was born. Now the headquarter of the Polish Chemical Society and Museum of Maria Skłodowska-Curie

problem with reading. Suddenly Manya took her book and started to read fluently. Everybody looked at her with great surprise. She assumed that something was wrong, started to cry and said "I do not want to do anything bad. I just wanted to help. Reading is so easy!" Since then Manya had been reading a lot and liked it very much. Both her parents were teachers, but they decided that intensive reading was not the best form of activity for such a small child and preferred her doing something more suitable for her age. But later on her father (her mother died when she was still a very young girl) was a great help in her education, especially mathematics. Even when she was on holidays or worked outside Warsaw her father often corresponded with her about mathematics, sent problems and checked solutions. Maria did the same many years later with her daughter Irène Joliot-Curie.

When Maria was seven she joined her older sisters in attending the school for girls, where their mother had been a headmaster. After a year she went to a more serious school, one of the best schools for girls in Warsaw. Apart from the demands imposed by the school, there was an additional, patriotic duty to be fulfilled. On her long way to school, she would pass the monument of Polish generals who had supported Russia during the November Uprising in 1830, on which Maria and her friends would spit every day. At school all pupils and teachers were Polish. Thanks to this fact children were able to learn Polish language and history. Officially all lessons were in Russian but that was only in theory. A timetable was a bit peculiar - a kind of disguise. For example, botany meant Polish history and German language was simply Polish. Of course, all schools for Polish pupils were strictly supervised by a governor, the reason why Russian inspectors visited the school often. Those visits were very stressful for Maria because she was usually called on to recite some passage in Russian for inspectors since she was a top pupil. Maria liked going to that school but as she became older, at the age of ten, she had to go to a gymnasium. The gymnasium was totally controlled by occupants. Pupils had to speak Russian during classes as well as breaks. All subjects were taught in a politically correct way. Maria was considered as not well behaved, even a rude pupil, and thus had problems, especially with one teacher. Once, after the quarrel, the teacher said to her "I do not allow you to think that you are on a higher level than I am". Maria look down on the teacher and said with irony "Madame, it is impossible to think otherwise". It was true. Since Maria was quite a tall girl, much taller than her teacher, her words claimed the obvious fact, which emphasized the irony even more. However, Marie again enjoyed the school and obviously she was the top pupil, the best in the whole of Warsaw. But actually, it was not a nice thing as the best pupil used to receive the prize from Aleksandr Lvovich Apukhtin, who was the head of Russian education in Warsaw and probably the most hated person in the city. At the age of sixteen, Maria finished the gymnasium and... it occurred that there was not a suitable school in Warsaw for her further education. In order to continue, she had to go abroad. Due to a poor financial situation of her family Maria had to earn money for future studies. After a year holidays, she spent seven years as a governess. At that time she continued her education in the only possible way, i.e. taking part in unofficial courses.



Figure 2. A pretty girl. Maria Skłodowska-Curie in his youth

FLYING UNIVERSITY – ILLEGAL, DANGEROUS AND DIFFICULT WAY TO KNOWLEDGE

The only school, where Maria could continue her education was an illegal positivistic university. As it was mentioned above, women in the "Russian" part of Poland could obtain only basic and secondary education. But Maria, her sisters and other women wanted to study at the university. As a solution, an illegal higher school for women, so called "Flying University," was established. There were two reasons of its illegality. First, higher education of women was prohibited by occupants. Second, all the lectures were in Polish and a true Polish history as well as Polish literature were studied at that university. The lectures took place in private houses, and were moved frequently from one place to another. Hence, the name of the establishment. The Flying University started in the early eighties of the nineteenth

century and existed in an illegal form until 1905. Then it was legalized and called the Society of Science Courses (Towarzystwo Kursów Naukowych). It is worth noting that the Flying University was revived twice in a later history, during the Second World War (under German occupation) and in the years 1977–1983 (during communist times). During its best period (1885–1890) there were about 1,000 students. Because of its illegal character we do not have all the details about studying at the Flying University. The only existing documents mention lectures to have been performed in Kraków and all prices to have been in gulden (Kraków, the old capital of Poland was located in the Austrian Empire, and gulden was Austrian currency). In most cases, the information is taken from the Okhrana (tsarist secret police) archive. Students of the Flying University were divided into groups and the only person who had a contact with the University staff and other groups was a



Figure 3. Lecture on the Flying University

head of a given group. Usually, students paid a fee, but it was not obligatory. Studies were 5-6 years long and (according to the police documents) subjects were divided into four groups: social sciences (history of philosophy, ethics, psychology, sociology, law), history and philology (history of Poland, Polish language, Polish literature, geography and ethnology), pedagogy (theory of pedagogy, theory of teaching, teaching of Polish language) and mathematics and natural sciences (mathematics, physics, chemistry, mineralogy and geology, zoology, botany, anatomy). The university had also its library, which was conducted by a famous Polish literature novelist - Henryk Sienkiewicz.

Maria Skłodowska-Curie attended the Flying University in two periods of her life, before a stay in Szczuki (in the years 1884-1885) and in the years 1889-1891 (before she moved to Paris). We do not know what exactly Maria studied at the Flying University. Let alone, we do not

know if she studied chemistry or physics there. She probably took lectures from several topics, at that time she had not decided yet what was her favorite subject (she thought about natural sciences but also about sociology). Her sister, Helena Skłodowska-Szalay, who studied with her, wrote about those days in her memoirs: "Over the last years we spent together in Warsaw we studied in so the called 'Flying University'. I remember something what was very characteristic for Maria. Professor Mahrburg was a lecturer of ethics and psychology. We had a big problem with books, so we had to learn only from our notes that were checked very carefully by Professor. Professor chose Maria's notes as an obligatory textbook for all of us. That was because he could not find any mistake in them. But I know that Maria did not write a lot during lectures. Sometimes she wrote a keyword or important phrase. She remembered the whole lecture at home just from her mind. And ethics was very difficult, at least for me."

MARIA SKŁODOWSKA-CURIE AS BASIC WORKER DISCOVERING CHILDREN POTENTIALS

The Positivist idea of "organic work" was very important for Maria. As she said much later "You cannot hope to build a better world without improving individuals". Maria Skłodowska always tried to do what she believed in. Not otherwise was with the poor and women education. Many students of the Flying University had their own group of pupils, usually some girls from poor social strata. It is known that also Maria had a group of weaver workers to teach. She collected a small library for them and taught them Polish history. Maria expanded her "basic work" activity in the years 1886-1889 when she worked as a governess in a village called Szczuki. She taught four children of the village owners there but quickly she started to have many more pupils. Every kind of an illegal teaching was prohibited by occupants and if the police had received information about her educational work Maria could have spend the rest of her life in Siberia, not in Paris. Fortunately, Szczuki was only a small village and Juliusz Żórawski, the owner of the village, supported Maria in her efforts. Maria was also helped by one of the Żórawski's children, Bronisława. In August 1886, Maria mentioned it in the mail (writing about such things was not safe as letters were often opened and read by the police. But circumstances were difficult and people had to communicate with each other some way) to her cousin "After normal lessons I teach the son of a worker, who wants to go to the school. Additionally, me and Bronisława teach the girls from the village two hours per day. It is a kind of school, since there are ten girls. They are eager but it is very difficult to teach them anything." After just a few months, in December the school was already expanded. "I have lessons with peasant's children every day. Their number has reached 18. Of course, I cannot teach all of them at the same time. It is impossible. The lessons take me about two hours per day and on Wednesdays and Saturdays I spend about five hours with the children. I am very glad with my pupils". Maria spent her own money and bought pencils and notebooks for children. It is interesting that these ideas of basic work were refurbished in France, in the thirties years of 20th century by the form of the University for Workers organized by Paul Langevin, Frédéric Joliot-Curie and Jacques Solomon. It is very likely that it was Maria who was an inspiration of that project.



Figure 4. The house in Szczuki where Maria Skłodowska-Curie lived in the years 1886-1889

HOW MARIA SKŁODOWSKA-CURIE EDUCATED CHILDREN

Although Maria was a genius child, her greatness was probably not fully recognized by her family during her childhood. All Skłodowski's children learned very quickly, and not only Maria but also her brother obtained the prize for the best pupil in Warsaw. However, Maria was also a hardworking pupil. She spent a lot of time on learning during her school years and later. Thus, Maria would easily be expected to believe that children should study a lot, especially on subjects like mathematics, physics, or chemistry. Curiously enough, her personal point of view was completely different.

Maria did not approve of the methods used in schools at her time. She presented her opinion on many occasions. Probably the most powerful example of her disapproval can be found in one of the letters to her sister, Helena, "Sometimes I think that it would be better to drown the children than teach them in our schools." Of course, she exaggerated, but Maria thought that children cannot spend too much time in school banks learning many things in which they are not interested. Instead she preferred physical exercises interspersed only by a small amount of other subjects. The most important things, described by her in the letter to her friend Kazimiera Przyborowska, was "... make the children strong and healthy". Maria ordered her daughters' governesses spent an hour on teaching and the

rest of time on sport activities. In Maria's opinion teachers had to make children interested and only then could they teach them. The reflection of such an idea can be found in the diary (which for Maria was a form of conversation with Pierre Curie after his death) "(...) we discussed about teaching, the thing that was interesting for both of us. (...) The most important was that children should learn how to truly love nature and be curious about it. Your opinion was the same as mine...". Those ideas were clearly reflected in the education of her own children. Maria had two very different children. Irène Joliot-Curie was very similar to Pierre Curie, and to Maria, while Ève Curie Labouisse was their (Pierre, Maria and Irène) contradiction in most of things. Irène had been interested in science since her childhood. That is why Maria treated her in a similar way as her father worked with her or Eugène Curie worked with Pierre. She spent a lot of time on teaching her and corresponding with her about mathematics when they were not together. But Maria had been never disappointed that +ve interests were completely different. As a 4, 5- year-old child Ève revealed her musical talent. Maria quickly bought her a piano and wrote to Irène "This year can be difficult. We will have to find a way how our interest in science can survive with the interest of our small Ève in music". Later, when Ève decided to be a journalist, Maria fully supported her efforts. And of course, Maria had never tried to teach Ève anything about science.

The essence of Maria Skłodowska-Curie idea of a perfect education can be found in her pedagogical experiment, called "Association". Maria convinced some of her friends who also had children not to send them to school but to teach them by themselves. They formed an experimental school. The school's lecturers included Maria Skłodowska-Curie (physics), Jean Perrin (chemistry), Henriette Perrin (French language and history), Paul Langevin (mathematics), Henri Mouton (natural history), Alice Chavannes (English and German languages), and a famous sculptor Magrou (drawing). Twelve pupils were the children of "teachers" and their friends. The youngest children were six at that time. The school existed two years, 1907-1908. Lessons took place in "teachers" scientific laboratories, in museums or outside the city. We do not know anything about how the lessons were performed except for ten physics lessons performed by Maria Skłodowska-Curie in the autumn 1907. They were saved thanks to notes of one of the pupils, Isabelle Chavannes. Studying Isabelle's

notes one can see that Maria's approach to teaching physics was very innovative, even in comparison to nowadays standards. It was based on experiments carried out by young pupils who then drew their own conclusions. We do not know all the pupils' opinions, but certainly Irène was amazed by such a school. Of course, this type of school could only be a small pedagogical experiment. But it was quite famous. There was a note in the newspaper that the scientists made a new crazy thing, namely some experiments were performed in the Sorbonne by small children. As the journalist wrote "... so far there was no explosion in the laboratory but it is very likely to happen".

CONCLUSIONS

It is widely known that Maria Skłodowska-Curie had difficult conditions for studying in Paris due to the fact that she was just a poor student from a far away country. But she was used to difficult conditions. Maria's position in her own country was much worse due to a political situation and a general role of women in the community. Women's position in France was not perfect either, but in terms of educational possibilities it was much better than in Poland. Living in Paris, Maria had enough money to survive, she was free and had her elder sister who had started her studies earlier, and thus, could help Maria. Because of that Maria was able to overcome all adversities.

Maria Skłodowska-Curie had a very innovative but a rather utopian approach to children education. The main assumption was that children want to be taught. Children should have their own interests that could be developed during the process of education. Therefore, the teachers' role is to arise children's interests in science, engineering, art, etc., and then to develop them. Unfortunately, this assumption was problematic in a mass scale. Nevertheless, Maria was a happy mother. Her daughters were curious of the world and wanted to be educated, in the fields of their interests. The method of Maria Skłodowska-Curie seems to be ideal for such persons but rather difficult to apply for all children in mass education as it demands a very individual approach to every child. Nevertheless, her ideas are not unique. A similar approach was presented i.e. in Italy by Maria Montessori.

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