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► **To cite this version:**

Marek Grajek. The Long Road Toward the Rejewski-Różycki-Zygalski Cipher Center in Poznań. IFIP International Conference on the History of Computing (HC), Sep 2018, Poznan, Poland. pp.87-96, 10.1007/978-3-030-29160-0_5 . hal-02386546

HAL Id: hal-02386546

<https://inria.hal.science/hal-02386546>

Submitted on 29 Nov 2019

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The Long Road toward the Rejewski-Różycki-Zygalski Cipher Center in Poznań

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Abstract. This paper presents the plans to create a Rejewski-Różycki-Zygalski Cipher Center at Poznań, Poland, where the story of Enigma breaking took its beginnings, covering a long way of the project since the inauguration of the monument *in memoriam* of the three codebreakers in 2007.

Keywords: Polish Cipher Bureau, Enigma codebreaking, Rejewski, Różycki, Zygaliski, Cipher Center.

1 A Bit of History

1.1 Start of the Story: the Monument

Rumors persist concerning organization in Poznań, Poland, of a new Enigma Museum. In reality, the new institution will be neither an old-fashioned museum, nor will it be dedicated to German ciphering machine Enigma. This paper is hoped to unravel the mystery of the real nature and purpose of the center being organized, as well as to present the long way leading to its inauguration planned for 2020. It all started eleven years ago; in 2007, a monument commemorating Polish codebreakers, Marian Rejewski, Jerzy Różycki and Henryk Zygaliski, was inaugurated in front of the Poznań Castle, place most closely linked with the earliest part of their history.

In 1929, Poznan Castle was housing, among other institutions, the mathematical faculty of Poznań University. At that time, the Cipher Bureau of the Polish army was facing the challenge of a new cipher just introduced by the German Reichswehr. The commanding officer of Bureau's German section, Lt. Maksymilian Ciężki, recalled the hot days of the summer 1920, when the help of the three mathematicians, Stanisław Leśniewski, Stefan Mazurkiewicz and Wacław Sierpiński, had helped the Polish army to break the Soviet ciphers and defeat the Soviet army approaching Warsaw. He decided to reach again for the help of the mathematics and the mathematicians, so he organized the training in cryptology designed for a group of young students of mathematics at Poznań University. The best graduates of this course were later initiated into the subtler methods of cryptology working in Cipher Bureau's branch office conveniently arranged in the military building located across the street from their faculty. In 1932, when only three of the initial twenty-odd candidates for the codebreakers were left, they were put on their real challenge – the ciphers of the German Enigma. The idea of reaching for

the help of mathematicians paid off very soon; in the last days of 1932, Enigma was broken and cryptology adopted a new, purely mathematical face. It was thus natural to locate the monument commemorating this history in its proper starting place. From among over twenty proposals (Fig. 1) for the monument's design the jury selected the idea most closely related to mathematics: a simple prism covered with numbers, with codebreakers' names on each of its three faces.



Fig. 1. Some of the proposals in the contest for monument design

Soon thereafter, passers-by were surprised by the view of a group of men pushing around a model of the monument in the search for its best future location (Fig. 2).



Fig. 2. Monty Python episode?

Some of the spectators supposed having watched the filming of the next episode of the “Monty Python’s Flying Circus,” but their hypothesis was soon disproved when the foundation act and the cornerstone for the future monument were laid and the finally the monument itself was installed (Fig. 3).



Fig. 3. Laying of the foundation act and monument’s installation

Finally, on 10 November 2007, the monument was inaugurated (Fig. 4); people who stood behind its erection could start thinking about the next steps. In their common opinion the monument itself should be complemented by a place in its direct neighborhood, where the history of the codebreakers and their achievements could be explained.



Fig. 4. Inauguration of the monument

1.2 Long Road to the Cipher Center

Before the organizers were able to implement that plan, the history started to live its own life. Its heroes, forgotten for over fifty years, were now remembered and honored. In 2008, the ashes of Col. Maksymilian Ciężki were brought back from Par in Cornwall, where he died in 1951 in poverty and solitude, back to his native town of Szamotuły (Fig. 5). It was a triumphal return, the coffin with his ashes being carried by the members of the history reenactment groups wearing the colors of the army of the Greater Poland (1918-1919) uprising and the Polish-German war of 1939, campaigns that Ciężki participated in.



Fig. 5. Lt. Col. Maksymilian Ciężki returns to his native town

Two years later, the remains of Col. Gwido Langer, commanding officer of the Polish Cipher Bureau, were exhumed from the Wellshill cemetery in Perth, where he had been buried after his early death in 1947, and were transferred to his native Cieszyn (Fig. 6).



Fig. 6. Col. Gwido Langer's farewell to his temporary burial place in Scotland

The academic community of Poznań was celebrating the memory of its former members inaugurating in 2008 a series of lectures in mathematics and information science bearing their names. During the last 10 years these lectures were able to gain a prestigious profile and gather leading scholars in both disciplines from all over the world.



Fig. 7. Prof. Clifford Cocks at Rejewski, Różycki & Zygalski lecture in Poznań

The regional government of Poznań province sponsored the exhibition presenting the contribution of the Polish codebreakers towards the Allied victory in the World War II (Fig. 7). Inaugurated in 2010 at the EU Parliament in Brussels, this exhibition exists now in several language versions travelling all over the world and enjoying everywhere a welcome reception.



Fig. 8. “Enigma. Decipher Victory” exhibition at the European Parliament in Brussels

Younger generations are learning the codebreakers’ story participating in the urban games organized initially in Poznań, now spreading every year to new locations in Poland, linked with codebreakers’ fates (Fig. 9).



Fig. 9. Winning team at the urban game at Szamotuły

An Internet contest in the codebreaking organized usually one or twice a year represents a natural complement for the urban games (Fig. 10). Addressed mostly to the college students it enjoys an enormous popularity, gathering every time over thousand participants from all over the world, who not only break the ciphers, but also learn about the history of the Polish codebreakers.



Fig. 10. Participants of the Internet codebreaking contest cobreakers.eu

The importance of the codebreakers' achievements is now being generally recognized. In 2014, the largest professional organization of electric and electronic engineers, IEEE, decided to commemorate their services with one of its Milestone awards (Fig. 11). A Milestone in electrical engineering and computing dedicated to Rejewski, Różycki and Zygański was inaugurated in Warsaw, in August 2014.



Fig. 11. IEEE Milestone in Warsaw

The role of the Polish codebreakers in cracking the Enigma cipher is starting to be recognized even in the Great Britain, traditionally favoring the role of its own codebreakers. A new part of the exhibition at Bletchley Park, inaugurated in 2018 in Hut11A, includes the working model of Rejewski bombe provided on the initiative of the Polish embassy in London (Fig. 12).



Fig. 12. Reconstruction of Rejewski's "bomba" at Hut 11A, Bletchley Park

1.3 Rejewski, Różycki, Zygalski Cipher Center

It is time to return to place where it all began, Poznań. Two years ago, the regional government of the Poznań province, the mayor of Poznań, and the local university reached an agreement to create an institution commemorating the services of the three codebreakers and illustrating their importance for the history and in the present. The center shall be located in the very particular place, linked most closely to the history of Enigma breaking. The codebreakers used to learn the secrets of their new trade at the building of the local military staff erected at the beginning of the twentieth century.



Fig. 13. Former building of the Cipher Bureau's branch office in Poznań

The original building was heavily damaged during the heavy fighting in Poznań in February 1945. The new, communist rulers of the country decided to replace it with the new building, designed specially as the location of the local committee of the communist party. In that new role the building was a witness of the violent anti-communist protest in 1956 (Fig. 14).



Fig. 14. Construction of the communist party regional committee (around 1950)

After the collapse of communism in Poland in 1989 the building was donated to the university, which, very appropriately, located therein its historical faculty. However, once the faculty moved out to the new campus, the building was available for other purposes; currently its interiors are being arranged for its new role of the Cipher Center. Although plans for this new institution include some purely historical function, its main purpose will be far from the traditional museums. The experience of the urban games and the internet contests in the codebreaking demonstrated very clearly that cryptography and codebreaking offer a perfect foundation for the adventure addressed to any generation. Therefore, the Rejewski-Różycki-Zygalski Cipher Centre shall represent an adventure park based on the real story of Enigma breaking rather than an old fashioned museum. Its program shall be participatory, assuming spectator's activity during the entire visit (Fig. 15).



Fig. 15. Concept of the future Rejewski, Różycki, Zygalski Cipher Center, fragment

The inauguration of the center is scheduled for 2020, but one may taste its future offer even today. As a teaser for the future center, a so-called crypto container was installed in 2017 in front of the Poznań Castle, right next to the codebreakers' monument (Fig. 16). Arranged externally in the form of the huge Enigma machine the crypto container houses the program presenting an overview of the cryptology development from antiquity to the present times and offers its visitors an opportunity to learn the basic skills of a codebreaker. Popularity of the crypto container among the visitors to Poznań offers good prospects for its permanent successor – the Rejewski, Różycki, Zygalski Cipher Center.

Of course, the existence of the center shall not put an end to activities presented above as the fragments of the way leading to its inauguration. On the contrary, the center and its staff shall offer a permanent and institutional support to numerous activities being structured so far as private or semi-private initiatives, based mostly on the invention and goodwill of their participants.



Fig. 16. Crypto container