I. Banakh

SALA WEINLÖS AND IRENA KRAMPNER, STUDENTS OF HUGO STEINHAUS AND KAZIMIERZ TWARDOWSKI

The motivation for writing this article was the discovery of photographs of Sala Weinlös and Irena Krampner. For mathematicians, the first one is especially valuable, as it is the only known photograph of the only woman who earned a doctorate in mathematics in Lviv before World War II. The archival findings presented here complement the few existing publications about Sala Weinlös and introduce another female student of the University of Lviv also highly successful in mathematics, Irena Krampner, who completed a doctoral dissertation in philosophy. In the 1920s–1930s, professors Hugo Steinhaus and Kazimierz Twardowski played a significant role in their education and shaping their subsequent careers.

1. Introduction. In the beginning of the 20th century, the University of Lviv had four faculties: Theology, Medicine, Law, and Philosophy. During their studies, students of the Faculty of Philosophy could choose from various disciplines, including philosophy, history, philology, natural sciences, and mathematics. They selected courses based on their interests, but in the first year, studying philosophy was mandatory. Some students focused on a particular field at the beginning of their studies, while others decided on their specialization later.

Between 1920 and 1939, in Lviv 15 doctoral degrees in mathematics were awarded, only one of them to a woman, Sala Weinlös ([1], [2]). It is also worth mentioning those who studied mathematics but earned doctorates in philosophy. Professor Kazimierz Twardowski (1866–1938) played a key role in this trend, consciously and effectively gathering around him students not only with a purely philosophical education, but also with solid knowledge in other fields, being convinced that a broad horizon and multifaceted interests contribute to the expansion of the field of philosophical research. Twardowski himself, as a student at the University of Vienna, in addition to philosophy, attended lectures on history, law, philology, mathematics, and physics.

Sala Weinlös and Irena Krampner were enrolled in the Faculty of Philosophy of the University of Lviv (then Jan Kazimierz University in Lwów) in 1921 and 1920, respectively, and studied mathematical and philosophical disciplines. Both were, in particular, active participants in Hugo Steinhaus' mathematical seminar, which resulted in Sala's doctorate in 1927. The same year, Irena defended her dissertation under the supervision of Kazimierz Twardowski.

This article explores Sala's and Irena's studies, the choice of research areas for their doctoral theses, and the place of mathematics and philosophy in their later careers.

2. Biographical information: family, secondary education. Sala Weinlös[1] was born on February 6, 1903 in Rohatyn (70 km from Lviv, now in Ivano-Frankivsk Oblast) to a Jewish family of Israel Weinlös and Rebekka Damm. When applying to the university, Sala listed her father as a clerk. Israel Weinlös was also a historian and scholar of Jewish literature and published his works in newspapers and journals. Sala studied in Lviv. In 1914, she completed the first grade at the Juliusz Słowacki Private Girls' Gymnasium. From 1914 to 1921, she attended the Private Girls' Gymnasium of Mrs. Goldblatt-Kamerling, where she passed the matriculation examination and obtained a certificate with distinction. In 1921, Sala Weinlös became a student of the Faculty of Philosophy at the University of Lviv. Her sister, Helena Bronisława (born 1899), studied philology at the same university.

Irena Krampner was born on October 18, 1901, in Lviv to Markus Ber Krampner, an owner of real state, and Ryfka Regina Isenberg. In 1912–1920, Irena studied at the Juliusz Słowacki Private Girls' Gymnasium, where she received a maturity certificate with distinction. For some time during this period, she studied in Vienna, having probably relocated there with her family at the outbreak of World War I in 1914[2]. In 1920, Irena Krampner began her studies at the Faculty of Philosophy at the University of Lviv. Her sister, Bronisława Adela (born 1894), studied philosophy there.

3. University studies. Although Sala and Irena started their studies a year apart, their paths often crossed in classrooms as they chose mainly courses in philosophy, logic, and mathematics. Incidentally, they attended lectures together with Herman Auerbach, Stanisław Mazur, Juliusz Schauder, Władysław Orlicz, later well-known representatives of the famous Lwów School of Mathematics headed by Stefan Banach (1892–1945) and Hugo Steinhaus (1887–1972).

To get an idea of what the study program was like at the Faculty of Philosophy in the 1920s, below is a nearly complete list of the courses that Sala took in 1920–1926[3].

i) K. Twardowski: Introduction to Psychology; Syllogistics; Development of Modern Philosophy; On Some Attempts to Reform Traditional Logic; Mental Life and Nervous System; Main Areas of Scientific Ethics; Ethical Skepticism; Development of Greek Philosophy; Theory of Knowledge.

ii) M. Wartenberg: Introduction to Philosophy; Encyclopaedia of the Philosophical Sciences; On the Concept and Principles of Causation; Mechanism and Teleology; Concept of Reality; On Kant's Ethics.

iii) K. Ajdukiewicz: Main Issues of the Theory of Knowledge; On the Justification of Axioms; Russell's Theory of Deduction; Logic; Methodology of Deductive Sciences.

iv) E. Żyliński: Introduction to Mathematics; Algebra; Theory of Algebraic Numbers; Algebraic Equations; Group Theory; Higher Algebra; Higher Level Elementary Mathematics; Hypercomplex Numbers.

v) S. Ruziewicz: Mathematics for Philosophy and Natural Sciences Students; Differential Equations; Infinite Algorithms; Lebesgue Integral; Mathematical Analysis; Theory of Numbers.

vi) H. Steinhaus: Introduction to Analysis and Geometry; Analysis; Probability Calculus; Theory of Analytic Functions; Theory of Ordinary Differential Equations; Foundations of Geometry; Mechanics; Numerical Solution of Equations; Graphical Methods for Solution of Equations; Fourier and Taylor Series; Orthogonal Series; Linear Functional Operations; Integral Equations.

vii) S. Banach: Differential Geometry; Set Theory.

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[1]For more information, see [3], [4].

[2]CSHAUL [5], Fond 175 Ser. 2 File 2002.

[3]See catalogs of students in LRSA [6], Fond 26 Ser. 15.

viii) W. Sierpiński: Recent Research in Function Theory; Abstract Set Theory.

ix) Experimental Physics (taught by R. Negrusz); Geometric Crystallography, General Mineralogy (taught by Z. Weyberg); Stenography.
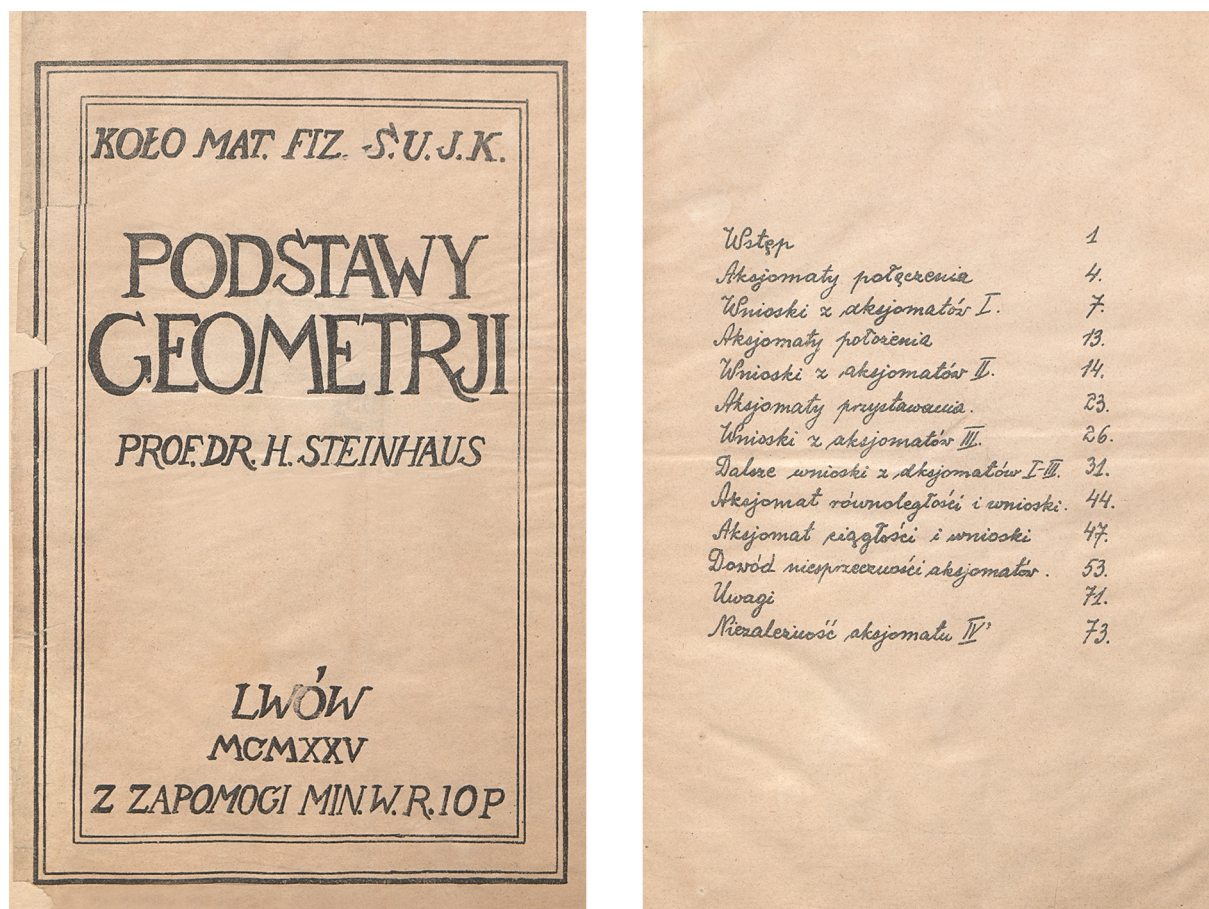

Fig. 1: Hugo Steinhaus. Foundations of Geometry (1925) [23].

During her studies (1921/22–1925/26), Sala participated in a number of seminars in mathematics and philosophy conducted by Hugo Steinhaus, Eustachy Żyliński, Stanisław Ruziewicz, Wacław Sierpiński, and Kazimierz Twardowski. The scope of scientific interests of Hugo Steinhaus was very broad, and this was particularly reflected in the variety of courses he taught to students. In 1911 in Göttingen, he received his doctorate under the supervision of David Hilbert (1862–1943) based on the dissertation entitled "Neue Anwendungen des Dirichlet'schen Prinzips" ("New applications of Dirichlet's principle"). In 1899, in his book "Foundations of Geometry", Hilbert presented a complete system of axioms for Euclidean geometry along with a proof of its consistency ([7]). In the 1920s Hugo Steinhaus became interested in that area. He modified Hilbert's system to systematize the structure of Euclidean geometry by means of purely logical deductions and in the 1924/25 academic year at the University of Lviv, introduced a course on the foundations of geometry and a seminar based on it. In 1925, his lectures were published by the Mathematics and Physics Students' Society ([23], Fig. 1). Sala Weinlös took an active part in discussions of the problems proposed by Steinhaus. On March 3, 1926, she submitted her doctoral dissertation to the Faculty of Mathematics and Natural Sciences of the University, which she performed at the seminar of Prof. Steinhaus. It should be recalled that in 1924, the Faculty of Philosophy was divided into the Faculty of Mathematics and Natural Sciences and the Faculty of Humanities.

Irena Krampner has taken mostly the same courses as Sala. Below are some more that Irena has taken and Sala hasn't.

i) K. Twardowski: Logic; History of Philosophy; Techniques and Methodology of Psychological Experiments.

ii) M. Wartenberg: Problem of Free Will; Soul and Body; Schopenhauer's Philosophy; Essence and Causality; Three Critiques of Kant; Introduction to Metaphysics; English Philosophy from Bacon to Hume.

iii) A. Plamitzer: Descriptive Geometry.

iv) S. Ruziewicz: Introduction to Analysis; Analytic Functions; Theory of Functions of a Real Variable; Theory of Functions of a Complex Variable.

v) W. Stożek: Theory of Logarithmic Potential.

Besides, Irena studied English at the university.

Fig. 2: Irena's courses in 1924/25 ([6], Fond 26 Ser. 15 File 676).

During her studies from 1920/21 to 1924/25, Irena Krampner participated in mathematical seminars of Hugo Steinhaus, Eustachy Żyliński, Stanisław Ruziewicz, Stefan Banach and Wacław Sierpiński, and philosophical seminars of Kazimierz Twardowski and Mścisław Wartenberg. The Polish-American mathematician M. Kac, who was a doctoral student of Steinhaus, considered his scientific supervisor "unique as a mathematician and a man" ([8]). Professor lectured very lively, with a sprinkling of images and comparisons, which posed some difficulties for weaker students to understand. Marceli Stark, a student and assistant at Lviv University, reminisced: "He masterfully demonstrated the depth and beauty of the theory. [...] I recall the day he gave us a very simple example of a trigonometric series that diverged everywhere. He [Steinhaus] concluded, "You are the first to learn this example. I found it last night". This gave us the impression that we were witnessing an important event" ([9]).

Steinhaus' lectures impressed Irena and Sala as well. Both were active participants in his seminar on the foundations of geometry, and he highly evaluated their work (Fig. 2). However, it seems that Kazimierz Twardowski managed to get Irena more interested in philosophy. Hugo Steinhaus described this ability of Twardowski in his characteristic humorous manner: "Kazimierz Twardowski must have been a magician – this is the only explanation for the hypnotic effect of his personality" ([10]). It is worth adding that, as a first-year student of the Faculty of Philosophy of Lviv University in 1905/06, Steinhaus attended Twardowski's lectures.

4. Doctorate of Sala Weinlös. The title of Sala's work which she submitted as a doctoral thesis was "On the independence of groups I, II, and IV of axioms of three-dimensional Euclidean geometry". The introduction states: The manuscript titled "Foundations of Geometry" based on the course of lectures delivered by Professor Steinhaus in the winter trimester of 1924/25 presents an axiomatic system that defines Euclidean three-dimensional geometry. We will denote this system by the letter S. The questions arise 1) whether this axiomatic system is consistent; 2) whether system S is sufficient for Euclidean three-dimensional geometry, i.e., whether all the fundamental statements of this geometry can be proven using the system S in a purely logical way; 3) whether it is possible to simplify system S by eliminating some axioms that depend on others. The fact that axiomatic system S satisfies the postulates 1), 2) was proved in Steinhaus' manuscript. Concerning the last question, we know about the independence of axioms IV, V and some axioms of group III (see D. Hilbert, Foundations of Geometry, 6th ed., 1923), but the same is not known about the axioms of groups I and II. The aim of this work is to investigate which axioms of groups I and II from system S are independent, and which axioms can be deduced from the other axioms of S.[4]

Professors Hugo Steinhaus and Eustachy Żyliński were appointed as reviewers. In his review, Steinhaus noted that the essential advantage of the work is the originality of all the results obtained by Sala in his seminar. "Even if it turned out that the independence of the axioms of groups I and II from the entire system had been investigated by someone (though I have not come across such a type of work in any of the mathematical journals), then since the system S is a modification of Hilbert's system, and the system S' (proposed by the candidate) is an even further modification, the study of independence in those systems is truly new. [Sala Weinlös] showed that the construction of non-Euclidean geometry in the system S' is very simple, it required mastering logic [. . .]. I consider the results to be an interesting discovery." Prof. Żyliński believed that Sala's work "represents a significant advance towards a complete simplification of Hilbert's axiom system for Euclidean geometry. [. . .] The candidate demonstrates a strong capacity for fruitful reasoning in abstract fields." Thus, both reviews were positive and Sala was admitted to doctoral examinations[5].

On June 13, 1927, Sala Weinlös passed a two-hour exam in mathematics as a main subject and crystallography as an additional one. The examination committee consisted of two mathematicians, H. Steinhaus and E. Żyliński, mineralogist Z. Weyberg, and physicist S. Loria, who was dean of the Faculty of Mathematics and Natural Sciences in 1926/27. Prof. Weyberg recognized Sala's knowledge as excellent. Other members of the examining board rated her answers as satisfactory[6]. On October 13, 1927, Sala passed a one-hour exam in philosophy. All members of the committee, namely, philosophers K. Twardowski

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[4]LRSA [6], Fond 26 Ser. 9 File 386.

[5]LRSA [6], Fond 26 Ser. 15 File 1003. The results obtained in the doctoral dissertation of Sala Weinlös are thoroughly reviewed in [3], [4].

[6]The range of grades on the doctoral exams was as follows: excellent, satisfactory, unsatisfactory.

and M. Wartenberg and a geophysicist H. Arctowski (dean of the Faculty of Mathematics and Natural Sciences in 1927/28) gave her an excellent grade[7].

On October 17, 1927 the doctoral degree was officially awarded at a formal ceremony, the so-called promotion, with Prof. Steinhaus as Sala Weinlös' promoter.

5. Kazimierz Twardowski, his goals and methods in teaching philosophy. Prof. Twardowski's activity in the field of education and science was incredibly broad and multi-faceted ([11]). Not only through his own scientific work, but also through educational, publishing and popularization activities, Kazimierz Twardowski created a philosophical culture in the society. He was deeply involved in both higher and secondary education. At the university, he set himself the goal of educating a generation of people capable of logical thinking. His lectures always gathered a large audience who had the opportunity to gain knowledge in all philosophical sciences. In addition to lectures, Twardowski conducted a two-level seminar. While working in the higher philosophical seminar under his guidance and supervision, students prepared for independent scientific work. Each year, each of them wrote an essay on a chosen topic. Often, the second seminar paper was independent scientific research and could be submitted as a doctoral dissertation ([12]). It is worth mentioning here that Twardowski advocated for women's right to higher education since the late 19th century and continued to support them in universities ([13]), as evidenced, in particular, by the significant number of women among his doctoral students ([14]).

Twardowski was a strict but fair teacher and his students loved and appreciated him. Some students, having defended their dissertations, continued to remain in his circle. They met systematically in seminars where they studied the original works of the classics of philosophy, interpreted them, and also made translations ([15]).

Kazimierz Twardowski created a card index (personal cards) for all the students he taught.[8] He noted down the educational institution that issued the certificate of complete secondary education, the students' language skills, and the chosen specialty of study at the university. Each year, Twardowski recorded their grades from semester colloquiums, essay titles, various notes, and comments.

In Sala's personal file Twardowski inscribed that she studied Greek at the gymnasium, also knew German and English, and at university she chose mathematics as a major, being interested in "mathematics and philosophy (logic)". In her first year she passed the colloquium on syllogistic with an excellent grade, and the following year she wrote her first work. In 1923/24 and 1924/25 Sala participated in the higher seminar and also achieved great success. For the next two years she did not attend Twardowski's seminar, the reason for which was the preparation and defense of her doctoral dissertation under the supervision of Hugo Steinhaus. Later, in 1927/28, she asked Prof. Twardowski for permission to continue attending the philosophical seminar.

Twardowski's notes on Irena Krampner indicate that she knew French and German and chose mathematics and philosophy for higher education. During her studies, she received "very good" and "excellent" marks, was hardworking and did everything diligently and thoroughly. In 1922/23, Irena prepared her first seminar paper, which became the basis for her doctoral dissertation.

The deep study of philosophical disciplines, Kazimierz Twardowski's charisma, and the atmosphere conductive to scientific work influenced Irena's decision to receive a doctorate in

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[7]LRSA [6], Fond 26 Ser. 9 File 386.
[8]Lists of participants of seminars and classes [16], RKP-P-86-82.

philosophy. Although she continued to study mathematics and participate in math seminars and was among the best graduates of the Mathematics and Natural Sciences Faculty, she completed her doctoral thesis in Twardowski's seminar and submitted it to the Faculty of Humanities on September 16, 1926.

6. Doctorate of Irena Krampner. The title of Irena Krampner's doctoral dissertation was "Lachelier's views on syllogisms" ([15], [17], [18]). Jules Lachelier (1832–1918) was a French philosopher who dealt with logic.

The efforts of the doctoral student and the dissertation itself were highly evaluated by Irena's supervisor and reviewer Twardowski. "Lachelier once presented views on the traditional theory of direct and syllogistic inference, which are partly opposed to this theory and partly complement it. The author of this dissertation took on the task of critically examining these views. [. . .] [The work is] the fruit of a conscientious insight into Lachelier's considerations and a keen analysis of his statements and proofs. The clear structure of the work and the coherence of the reasoning testify to the author's well-developed sense of rigor. The dissertation makes a noticeable contribution to the research currently conducted in the field of the theoretical foundations of traditional logic, eliminating certain erroneous actions in this direction and pointing to certain possibilities that have not yet been considered."[9]

Prof. Wartenberg joined Twardowski's positive review, and Irena Krampner was admitted to the doctoral exams. On April 28, 1927, she passed a two-hour exam in philosophy as a main subject. The examination committee included two philosophers, K. Twardowski and M. Wartenberg, and an archaeologist E. Bulanda, who was dean of the Faculty of Humanities in 1926/27. All of them recognized Irena's knowledge as excellent. On June 1, 1927, she passed a one-hour exam in mathematics as an additional subject. Professors H. Steinhaus, S. Ruziewicz and E. Bulanda gave her an excellent grade. On June 6, 1927, Irena Krampner was awarded a doctoral degree. The official promotion ceremony took place on October 17, 1927. Clearly, the promoter was Prof. Twardowski.

7. Publications of Sala Weinlös and the mention of Irena's name in them. After earning her doctorate, Sala continued her scientific activity as a mathematician. Yet in 1926, she was accepted to the Lviv branch of the Polish Mathematical Society, and in September 1927 she participated in the First Polish Congress of Mathematics held in Lviv. On the advice of Steinhaus, Sala prepared an article based on her dissertation and entitled "Sur l'indépendance des axiomes de coïncidence et de parallélité dans un système des axiomes de la géométrie euclidienne à trois dimensions" ("On the independence of the axioms of coincidence and parallelism in the system of axioms of three-dimensional Euclidean geometry"). The work appeared in the journal *Fundamenta Mathematicae* in 1928 ([19]).

The young mathematician's work aroused interest, which led to a discussion in a series of articles in *Fundamenta Mathematicae*. Namely, in 1929, a German mathematician Arthur Rosenthal (1887–1959), a geometry specialist, wrote a paper "Eine Bemerkung zu der Arbeit von Fräulein S. Weinlös . . ." ("Remarks on the work of Mrs. S. Weinlös . . .", [20]). The next year Sala responded with "Remarques à propos de la note de A. Rosenthal . . ." ("Remarks on A. Rosenthal's note . . .", [21]). Adolf Lindenbaum (1904–1941), a mathematician and logician from Warsaw, joined their dialogue with his paper "Remarques sur une question de la méthode axiomatique" ("Remarks on a question of the axiomatic method", [22]).

Here we will point out an interesting detail. Both in her dissertation and in her articles, Sala Weinlös mentioned Irena Krampner: "an axiom proposed by my colleague Krampner",

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[9]LRSA [6], Fond 26 Ser. 15 File 798.

"it was suggested to me by Mlle Krampner", "this remark belongs to Mlle Krampner", "these geometries were constructed by Mlle Krampner"[10] (Fig. 3).
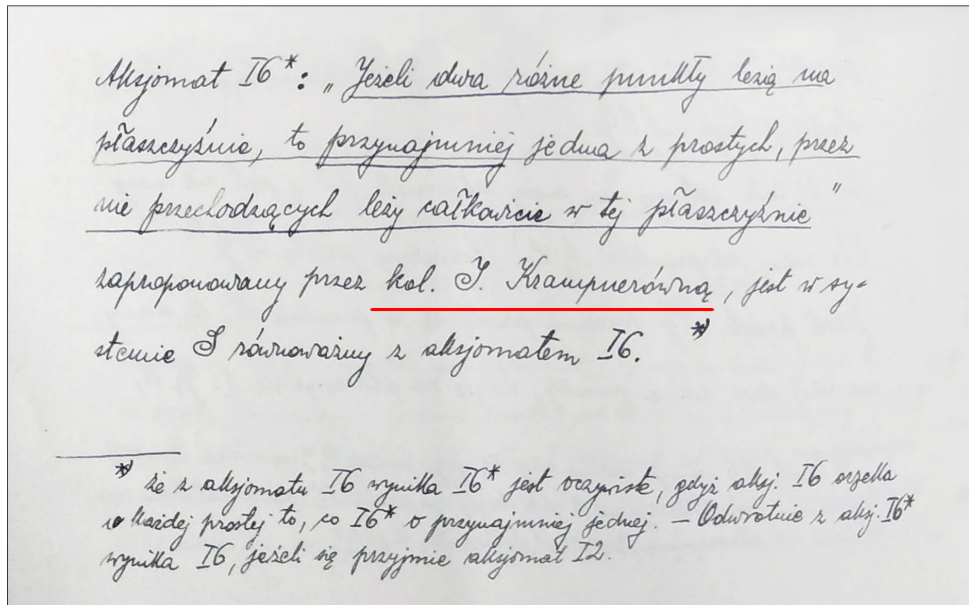
Si nous remplacions l'axiome I5 du système $(\overline{\overline{S}})$ par l'axiome I5′: „*Par trois points non situés sur la même droite passe tout au plus un plan*″ — nous obtiendrions un systéme (S') dans lequel *l'axiome I1 serait dépendant.* — Cela a été démontré par Mlle I. K r a m p n e r. Voici sa démonstration:

Il mérite d'être remarqué qu'en changeant un peu l'axiome I6 du système S et en postulant au lieu de lui l'axiome I6′: „*Deux points différents étant situés sur un plan α, au moins une des droites qui passent par ces points est entièrement située sur le plan α*″ on trouvera que l'axiome I2 est indépendant. Cette remarque est due à Mlle. I. Krampner.

Les géométries qui montrent l'indépendance des axiomes: $I3_2$, $I4$, $I5$, $I6$ dans le système $(\overline{\overline{S}})$ la montrent aussi dans le système (S). L'indépendance de l'ax. I1 dans le système (S) on peut démontrer à l'aide d'une autre géométrie construite par Mlle I. Krampner:

Fig. 3: Mention of Irena's name in Sala's doctoral dissertation ([6], Fond 26 Ser. 9 File 386) and in her article in *Fundamenta Mathematicae* ([19]).

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[10]This was noticed by Taras Banakh in his talk about Sala Weinlös' doctoral dissertation at the meeting of the Lviv Mathematical Society "In search of the unknown: female mathematicians in Lviv in the beginning of the 20th century", February 21, 2025, https://youtube.com/watch?v=sJ9pZcvy1u4

It looks like the discussion at Steinhaus' seminar on the foundations of geometry in 1924/25 was lively and fruitful, and Irena made a rather significant contribution. Who knows, maybe she also considered writing a dissertation under Steinhaus' supervision.

In 1932–1933, S. Weinlös was involved in preparing for the publication of an updated edition of "Foundations of Geometry" by H. Steinhaus ([3], [4]), supplemented by her corollaries, which included Irena's contribution.

8. Obtaining teacher's diplomas. In the 1920s, an academic career seemed unrealistic to both girls, so they decided to start the qualification process for obtaining a secondary school teacher's diploma in mathematics and philosophy.

On July 7, 1928, the State Examination Commission in Lviv for candidates for secondary school teachers admitted Sala Weinlös to the examinations that were usually more complicated than those for doctorate. In the first stage she completed her homework essay in philosophy, which was graded as excellent. Her doctoral dissertation was accepted as a math essay. In 1927/28, Sala completed pre-exam teaching practice at the Private Seminar Courses of the Jewish Society of the Folk and Secondary Schools in Lviv, where she taught mathematics. On May 19, 1932, she passed a written exam, and on June 21, 1932, an oral exam in philosophy. Sala was exempted from the math examination. The last pedagogy exam included questions from the field of philosophical sciences, pedagogy, and didactics. Finally, on December 6, 1933, the commission confirmed Sala's qualification and issued her a secondary school teacher diploma, signed by the board's president K. Chylinski and its members H. Steinhaus, K. Ajdukiewicz, and S. Lempicki, professors of the Lviv University[11].

Irena Krampner was admitted to the exams on June 30, 1927. As a homework essay in philosophy, she submitted her doctoral dissertation. The title of her math essay was the following: "On the completeness of geometries satisfying systems of axioms that are modifications of the systems of axioms of three-dimensional Euclidean geometry". Apparently, this work included Irena's results, which she obtained in Steinhaus' seminar and which Sala Weinlös referred to in her doctoral dissertation. On October 24, 1927, Irena passed a written exam in mathematics and the next day in philosophy. On November 21, 1927, professors S. Ruziewicz and H. Steinhaus rated her oral exam in mathematics as "very good". On December 16, 1927, Irena received the highest grade in the oral exam in philosophy from professors K. Twardowski and I. Zakrzewski. In 1928/29, Irena practiced as a math teacher at the 3rd State Gymnasium in Ternopil, and in 1929/1930 at the Kornel Ujejski State Gymnasium in the town of Kamionka Strumiłowa (now Kamianka-Buzka, 40 km from Lviv). Finally, on June 5, 1930, professors K. Twardowski and S. Lempicki highly evaluated her answers on the pedagogy exam, and the State Examination Commission granted her secondary school teacher qualification[12].

9. Sala's teaching career: mathematics, philosophy, didactics. In 1928, within the Pedagogical College of the Faculty of Philosophy of the Jagiellonian University in Cracow, the Ministry of Education launched a Two-Year Pedagogical Course due to the lack of qualified teachers of pedagogical disciplines in teacher training institutions. The Ministry introduced scholarships for active secondary school teachers who expressed a desire to improve their qualifications by studying there. A prerequisite for admission to this course was the completion of university studies supplemented by passing a teacher's examination or the possession of a doctoral or master's degree. Of the 37 enrolled persons, five had doctoral degrees. During

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[11]CSHAUL [5], Fond 175 Ser. 2 File 1991.
[12]CSHAUL [5], Fond 175 Ser. 2 File 2002.

two years of study, the students passed the exams for the master's degree in pedagogy and also obtained a certificate of completion of the Pedagogical College.

Psychology, pedagogy, and didactics were among Twardowski's areas of interest. He paid great attention to the need to train secondary school teachers who should be not only highly qualified in the subject they teach but also well prepared for the profession in general. Continuing her participation in Twardowski's seminars and communication with him after graduation, Sala was inspired to develop further in this direction. So, the opening of the Pedagogical Course in Cracow was a good opportunity for her.

In 1928, Sala Weinlös was listed among the Pedagogical Course students as a teacher of the State Teacher Training Courses in Lviv with a doctorate in mathematics. In 1929, she passed exams in the history of education, law, and biology, as well as the master-level exam in general psychology. In the 1929/30 academic year, Sala enrolled in Otto Nikodym's[13] class on didactics of mathematics. A review written by one of the teachers noted that she was a talented student but had been ill for a long time. Due to illness, S. Weinlös was granted leave and allowed to take the exams next year. But, most likely, she did not complete the Pedagogical Course and did not receive a master's degree in pedagogy[14].

In 1930, probably for the same reason (health problems), Sala lost her teaching job in Lviv. While unemployed, she collaborated with Prof. Steinhaus on preparing an updated edition of his lecture course on the foundations of geometry[15] and went through the process of obtaining a secondary school teacher's diploma as was described above. From the 1934/35 school year, she resumed her work at school as a certified teacher of mathematics and propaedeutics of philosophy at the Private Girls' Gymnasium of Mrs. Goldblatt-Kamerling[16]. The program of propaedeutics of philosophy aimed to provide basic knowledge in the field of logic and psychology and general familiarization with some issues from other areas of philosophy and to teach young people clear, precise and critical thinking. According to K. Twardowski, the high quality teaching of this subject was of great importance for the intellectual development of the young generation[17].

Sala continued to maintain contact with Twardowski's circle. In 1934, she became a member of the Polish Philosophical Society in Lviv. In early 1936, a Methodological Group of Teachers of Philosophy Propaedeutics was established in Lviv under the leadership of Leopold Blaustein (1905–194?), who belonged to Twardowski's school and was a professor at the 10th Gymnasium. The Group closely cooperated with the Philosophy Teaching Section of the Polish Philosophical Society, and they had joint meetings. The aim of the Group was to improve the methodology of teaching propaedeutics of philosophy in secondary schools. For this purpose, it organized exchanges of experience in the form of discussions of sample lectures conducted by the Group members. Dr. Sala Weinlös' lectures were devoted to teaching philosophy and logic[18].

After the death of Kazimierz Twardowski in 1938, some of his students who were not

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[13]Otto Nikodym, born in 1889 in Zabolotiv near Kolomyia, studied mathematics at Lviv University and earned his doctorate from Warsaw University. In 1928–1930, he worked as a high school teacher and a professor of the Pedagogical Course at the Jagiellonian University. Nikodym was a participant in the landmark meeting of Hugo Steinhaus and Stefan Banach in the Planty Park in Cracow in 1916.

[14]Archive of the Jagiellonian University ([24]), S II 517; SP 11, 17, 36, 42–46, 48; WF 433, 437.

[15]We were unable to find either the manuscript of this edition or confirmation of its publication.

[16]CSHAUL [5], Fond 179 Ser. 3 File 2392.

[17]Kazimierz Twardowski, *Filozofia w szkole średniej*, Ruch Filozoficzny, **1** (1919), 1–6.

[18]L. Blaustein, *Z działalności grupy metodycznej propedeutyki filozofii we Lwowie*, Muzeum, **53**:1 (1938), 46–48; Ruch filozoficzny, **14**:(1-3) (1936–1938).

working scientifically in the field of philosophy, such as Sala and Irena, withdrew from activity within the Philosophical Society and focused on teaching. During the Soviet occupation of Lviv, in 1939–1941, Sala Weinlös taught mathematics at the Pedagogical and Teacher Training Institute. It was a new institution created by the Soviet authorities. Among the mathematicians who worked there were Volodymyr Levytskyi (1872–1956), Yulian Bohachevskyi (1897–1970), and Ludwik Sternbach (1905–1942). The lecturers were encouraged to engage in scientific research and to participate in conferences. For the fall 1941 scientific session, S. Weinlös announced the topic of her upcoming report, "Some Issues in the Axiomatics of Geometry". In addition, in 1941 the Institute planned to publish her textbook for students of pedagogical institutes and universities entitled "Foundations of Geometry"[19]. Earlier, she submitted an article "Beitrage zur Axiomatik der Euklidischen dreidimensionelen Geometrie" ("Contributions to the axiomatics of three-dimensional Euclidean geometry") to *Studia Mathematica*[20].

Sala resumed her mathematical research considering an academic career. To do this, she had to obtain a Soviet-style Doctor of Philosophy degree. In the fall of 1940, Sala Weinlös applied for postgraduate study at the Faculty of Physics and Mathematics of the Ivan Franko State University of Lviv and successfully passed the entrance exams, but unfortunately, she was not accepted ([3], [4]).

10. Irena's teaching career and activity in the Polish Philosophical Society. After receiving her teacher's diploma, in 1931, Irena Krampner was appointed as a full-time teacher at the gymnasium in Kamianka-Buzka, where she taught mathematics. For one school year, 1934/35, she worked as a teacher of mathematics and propaedeutics of philosophy at the gymnasium in Nisko[21], an administrative center in the Lwów Voivodeship.

Immediately after earning a doctorate in June 1927, Irena became a member of the Polish Philosophical Society and participated in its meetings and seminars. From 19 to 22 September 1927, the First Congress of Philosophical Societies of Students of Polish Universities was held in Warsaw. It brought together delegates from Cracow, Lviv, Warsaw, and Vilnius. Irena was among the participants ([15]).

Irena Krampner belonged to a narrow circle of Twardowski's students who, as early as 1926, at the initiative of his assistant Izydora Dąmbska (1904–1983), gathered for additional seminars to analyze and translate Twardowski's habilitation work[22] from German to Polish. These seminars, the so-called privatissimum, were held with his participation ([15]). The group's joint trips outside the city and their photos with the professor testify to the close, friendly relationship that had developed between them. They maintained regular contact with Prof. Twardowski, turned to him for advice at any time and always received support.

On Twardowski's 70th birthday, his former students presented him with an artistically designed greeting card and an album of their photographs ([25]). Among others, the album contained a photograph of Irena Krampner and a wonderful find for mathematicians, a photo of Sala Weinlös, the only known one.

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[19]LRSA [5], Fond 7 Ser. 1 File 26.

[20]Sala Weinlös wrote about this in her autobiography in October, 1940 [3], [4]. The article did not appear in either volume 9 in 1940 or any subsequent volumes. Due to the war, the journal resumed its activities with volume 10 in 1948.

[21]CSHAUL [5], Fond 179 Ser. 3 Files 2117, 2118.

[22]"Zur Lehre vom Inhalt und Gegenstand der Vorstellungen" ("On the Doctrine of the Content and Object of Presentations").

11. Tragic fate. Both Sala and Irena were Jewish. This fact largely determined their fate with the outbreak of World War II.

The German occupation of Lviv at the end of June 1941 destroyed all plans and the lives in general. Sala's father was killed in November or December 1941 near the entrance to the ghetto during a campaign against elderly Jews. Sala and her mother appear on the list of residents of Lviv ghetto from 1941–1942[23]. The final action of the Lviv ghetto liquidation took place in June 1943. Sala Weinlös and her mother did not survive.

Irena Krampner lived in Kamianka-Buzka with her husband, Dr. Emanuel Fischbein, a lawyer, and their daughter Marta, born in 1937. The last Jews from the local ghetto were exterminated in January 1943. Irena and her family did not survive.

Fig. 4: Sala Weinlös and Irena Krampner [25].

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[23]CSHAUL [6], Fond 701 Ser. 5 contains the registration cards of Jews.

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