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100 Years of Logical Investigations at the University of Poznań

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Abstract:
The aim of this paper is to describe the history of logical investigations at the University of Poznań. The organisational structures within the discipline as well as the outstanding logicians and their achievements are presented. Connections with the Lviv–Warsaw School are indicated.
Keywords: logic, University of Poznan, Lviv–Warsaw School.

1. Introduction

Logic was present at the university in Poznań since its very beginning. Though the academic tradition was present here already in the 16th century, the establishment of a university was possible only after the First World War in 1919 — the first inauguration took place on 7 May 1919. At the beginning, the university was called Piast University [*Wszechnica Piastowska*], but in 1920 it was renamed to the University of Poznań [*Uniwersytet Poznański*]. During the Second World War, staff and students of the university (expelled by the Nazis) founded an underground Polish University of the Western Lands [*Uniwersytet Ziem Zachodnich*]. The university was reopened in Poznań after the war. In 1955 the name was changed to Adam Mickiewicz University. In what follows, I will abstract from the changes of the name and say simply "University of Poznań".

The first chair of logic at the University of Poznań was the Chair of Theory and Methodology of Sciences [*Katedra Teorii i Metodologii Nauk*] at the Philosophical Faculty, founded in 1920. Its head was Władysław Mieczysław Kozłowski (1858–1935). The next year, the Philosophical Faculty was split into the Faculty of Humanities and the Faculty of Mathematics and Natural Sciences. In the former faculty, the Chair of Theory and Methodology of Natural Sciences and Humanities [*Katedra Teorii i Metodologii Nauk Przyrodniczych i Humanistycznych*] was established, with Władysław Mieczysław Kozłowski as its head.

Who was Kozłowski? Born in Kyiv, he studied medicine at St Vladimir University in Kyiv. In 1890, he received a Candidate of Sciences in botany (equivalent to a doctorate) at the Faculty of Natural Sciences of the University of Dorpat (today's Tartu in Estonia). After having moved to Warsaw, he was involved in editorial work for several years. In 1896–1898, he worked as a teacher of Polish among Polish immigrants in North America. In 1899, he obtained his doctoral degree in philosophy at the Jagiellonian University. In 1900, he presented his habilitation thesis to the Jan Kazimierz University of Lviv; however, he did not get *veniam legendi*, since, under political

pressure, the ministry refused to accept his habilitation. Beginning in 1901, Kozłowski lectured at Université Libre in Brussels, and beginning in 1902, he was a docent of the University of Geneva. In 1905, he settled in Warsaw, where he taught philosophy in the Society of Science Courses [*Towarzystwo Kursów Naukowych*]. Beginning in 1919, he was a professor at the University of Poznań. His scientific interests included philosophy, sociology, history, and botany. However, he was known mainly as a philosopher and logician — he regarded problems from logic and the methodology and philosophy of various disciplines as fundamental. He proposed an original and interesting classification of disciplines. His lectures in logic and methodology given in Poznań enjoyed great interest; they were published as *Logika przyrodoznawstwa: Wykłady na Uniwersytecie Poznańskim* [Logic of natural sciences: Lectures at University of Poznań] in 1922.

Though Kozłowski knew quite well the new achievements of contemporary logic, his approach to logic was in fact traditional. He characterised logic as "the science about the activities of the mind which seeks truth" (Kozłowski, 1916, p. 8). The first chapter of his book *Podstawy logiki* was entitled "Thinking as object of logic" (Kozłowski, 1916, p. 22). He repeated this thought in *Krótki zarys logiki* [Short outline of logic], claiming that logic is a normative science whose task is "to examine the ways leading the mind to truth" (Kozłowski, 1918, p. 1). However, he stressed that logic:

> analyses mental operations conducted to reach the truth in a form that is so general that could be apply to any content. It investigates its form, separating it completely from the content. Logic shares this property with mathematics […]. […] This formal character, common to logic and mathematics, made these sciences close in their attempts, which were less or more developed, and led to the creation of mathematical logic. (Kozłowski, 1918, p. 8–9)

Finally, Kozłowski stated that logic can be defined as "the science about the forms of every ordered field of real or imaginary objects" (Kozłowski, 1918, p. 9). So he treated logic rather as a tool of science rather than an independent and autonomous discipline. His publications did not influence Polish logicians; however, his books were the first in Polish in which the theory of Boolean algebras and the theory of relations were presented.

In 1928, Kozłowski retired, and his chair at the Faculty of Humanities was cancelled. In the following academic year of 1929/1930, a new chair, the Chair of Theory and Methodology of Sciences [*Katedra Teorii i Metodologii Nauk*], was established at the Faculty of Mathematics and Natural Sciences. Its head became Zygmunt Zawirski (1882–1948).

Zawirski brought a new spirit and new ideas to Poznań. He was educated mainly in Lviv, where from 1901 to 1906 he studied mathematics, physics, and philosophy at Jan Kazimierz University. He completed his studies in Berlin (1909) and Paris (1910). Zawirski earned a doctorate in 1910 in Lviv under the supervision of Kazimierz Twardowski, the founder of the Lviv–Warsaw Philosophical School (Woleński, 1989). Then he taught mathematics and the propaedeutics to philosophy in various Lviv gymnasiums. He was habilitated in 1924 at the Jagiellonian University in Cracow on the basis of his thesis on the axiomatic method in the natural sciences. From 1924 to 1928, he lectured on philosophy at the Faculty of General Studies of the Lviv Polytechnic. And in 1928 he was appointed to the University of Poznań.

Zawirski, being a student of Twardowski, is treated as a member of the Lviv–Warsaw School. However, his scientific interests were not directly connected with the main trends of investigations of this school. He concentrated mainly on the methodology of sciences as well as the theory of cognition and ontology, especially on problems related to the development of physics — here he was interested in relativity theory and quantum theory. He was then the most outstanding Polish specialist in problems concerning the borderline of physics and philosophy. He was also interested in mathematical logic, especially in its applications. His Poznań period was the most creative in his scientific career.

Problems of logic were not at the centre of Zawirski's investigations. However, one should

say two things here. Zawirski was interested in problems on the borderline between logic and mathematics, in particular in connections between them as well as in the problem of meaning of non-classical logics, first of all of many-valued logics and intuitionistic logic. He treated logic in a broad sense; hence, logic for him was not only a formal system (or collection of such systems), as he included here also studies on reasoning. This was in fact a reflection of contemporary tendencies in Poland (and not only there) in both investigations and didactics. In *Logika teoretyczna* [Theoretical logic], he wrote that "logic is a general science and it indicates a structure common to all disciplines, ways in which in particular domains their statements are justified" (Zawirski, 1938, p. 2). He also wrote:

> The name of the science, which is now called logic, comes from the Greek *logos*, i.e. 'word,' 'speech' and 'reason' as well as 'reasonable thinking'; the name of the science is associated exactly with the last meaning. Since it is not a science about reason but rather about forms of reasoning that we use in all deductions or argumentations. (Zawirski, 1938, p. 1)

Considering Zawirski's views connected with the problem of relations between mathematics and logic, one should mention first of all his paper "Stosunek logiki do matematyki w świetle badań współczesnych" [The relation between logic and mathematics from the point of view of contemporary investigations] (Zawirski, 1927). In it, he claimed that "Mathematics, as an exact science, was created much earlier than logic; the Greek had known how to construct proper mathematical proofs before systematic investigations on the essence of all logical deduction and argumentation began" (Zawirski, 1927, p. 171).

Emphasising the importance of the Stoics' logic, Zawirski claimed that it was more important to mathematics than Aristotle's logic. He appreciated the works of Leibniz, Peano, and Frege, whereas he refuted Kant's conception. Analysing Whitehead and Russel's work *Principia mathematica*, Zawirski stressed that it is of no greater importance whether the judgements of logic and mathematics are regarded as analytic or synthetic — what is important is the problem of the consistency and independence of axioms.

Zawirski stressed that mathematics and logic do influence our cognition of the world. Therefore, logic and mathematics are of significance for the natural sciences. He dedicated much attention to the problem of the axiomatisability of theories in physics.

As mentioned above, Zawirski was interested in intuitionistic logic. He devoted to it a paper "Geneza i rozwój logiki intuicjonistycznej" [The origin and development of intuitionistic logic] (Zawirski, 1946). It has rather an informational character, as the author limited himself to discussing in a very competent way the effects of other people's investigations, not mentioning his own sympathies or antipathies towards intuitionistic logic. He wrote about the basic ideas of Luitzen Egbertus Jan Brouwer, discussed Arend Heyting's attempts to construct a system of intuitionistic logic, and presented results of Kurt Gödel and Stanisław Jaśkowski on matrices adequate for this logic.

Zawirski greatly appreciated Jan Łukasiewicz's idea of many-valued logics. He was of the opinion that the new logic was the only way to understand the phenomena of the micro-world. Combining the ideas of Łukasiewicz and Emil Leon Post, he tried to construct a system of logic that would be proper to interpret both certain problems of contemporary physics and probability calculus. He presented his ideas in various papers (Murawski, 2011; Murawski, 2014). as well as during various conferences. At the International Congress of Scientific Philosophy in Paris in 1935, he met Hans Reichenbach, who had also worked on similar problems. It turned out that their approaches to probability calculus and non-classical logics were different. Reichenbach interpreted some expressions of probability calculus as a kind of generalised logic, whereas Zawirski outlined the parallelism between the expressions of probability calculus and formulas of the many-valued logics. In Zawirski's opinion, probability calculus and many-valued logic should be treated as two separate systems. He was convinced that such compatibility of many-valued logics, in particular

three-valued logic, with probability calculus would allow its application in quantum mechanics. Let us add that further studies of this problem, in particular the investigations of Patrick Suppes and Paulette Destouches-Fevrier, followed just this direction. Therefore, Zawirski can be seen as a forerunner of quantum logic.

Zawirski directed the Chair of Theory and Methodology of Science till the end of 1936, and in 1937 he left the University of Poznań for Jagiellonian University in Cracow. He also left his students in Poznań. Among them were Franciszek Zeidler (1907–1972) and Zbigniew Jordan (1911–1977). Zeidler continued Zawirski's investigations of problems on the borderline of physics and philosophy. Jordan studied philosophy from 1930 to 1934 at the University of Poznań (Konstańczak, 2010). Under the influence of Zawirski, he got interested in the axiomatic method in philosophy. In 1936 he was granted a PhD on the basis of his dissertation *O matematycznych podstawach systemu Platona* [Mathematical foundations of Plato's system] (Jordan, 1937) — his supervisor was Zawirski. Jordan continued his studies in Bonn and Paris and prepared his *Habilitationsschrift* devoted to the problem of infinity. Unfortunately, the outbreak of the Second World War prevented the habilitation (the manuscript went missing). After the war, he worked in England and Canada, where his works were devoted mainly to the history of logic and philosophy.

After Zawirski left Poznań, there appeared a vacancy at the Chair of Theory and Methodology of Sciences. What happened then is explained by Anita Burdman-Feferman and Solomon Feferman in their book *Alfred Tarski: Life and logic*[1]:

> The Ministry of Education asked all the relevant professors in Poland to suggest a candidate to fill the vacancy, and Tarski was unanimously recommended. However, Poznan, always a stronghold of right-wing conservatism and dominated by the Catholic church, had, since Piłsudki's death in 1935, moved even farther to the right and become outright fascistic and anti-Semitic. Unanimous recommendations notwithstanding, Poznan University did not appoint Tarski, and since there would have been no way to appoint anyone else without making the reasons for denying him the professorship patently clear, the position was eliminated. (Feferman & Feferman, 2004, pp. 102–103)

Woleński explains this in the following way: "According to Hiż[2], the people in Poznań were afraid that Tarski would apply and win the competition. Poznań was perhaps the most anti-Semitic region in Poland. This would explain the situation" (Woleński, 1995, p. 400).

In fact, the position left by Zawirski was not filled in the period 1937–1939, and due to the outbreak of the Second World War, it remained unfilled until 1945. In 1945, the head of the chair became Kazimierz Ajdukiewicz (1890–1963), who rejected offers from universities in Warsaw and Cracow and decided to take the position in Poznań.

Ajdukiewicz studied philosophy, physics, and mathematics at the University of Lviv (Murawski, 2014). In 1912, he obtained there his doctoral degree under the supervision of Kazimierz Twardowski. He continued his studies (1913–1914) at the University of Göttingen, where he listened to lectures by Edmund Husserl, Leonard Nelson, and David Hilbert. The views of the latter had a considerable influence on Ajdukiewicz (cf. his *Habilationsschrift*). In the years 1919–1922, he worked as a teacher in a gymnasium in Lviv while conducting scientific research. In 1921, he completed his habilitation at the Philosophical Faculty of the University of Warsaw. From 1922 to 1925, he lectured as a private docent at the University of Lviv and taught in secondary schools in Lviv. In 1925, he became a professor at the University of Warsaw, and in 1928 he became a professor at the University of Lviv. In 1940–1941, he lectured on psychology at the Lviv State Medical Institute. During the Nazi occupation, he was active as an accountant while at the same time involved in underground education. In 1944–1945, he held the Chair of Physics at the Ivan Franko University in Lviv.

Ajdukiewicz is one of the outstanding representatives of the Lviv–Warsaw School. He had a significant influence on the development of logic and philosophy not only in Poland. When coming to Poznań, he was already widely known around the world. His scientific interests included mainly

semiotics, epistemology, logic, and the general methodology of sciences.

Among Ajdukiewicz's main achievements is the conception of meaning, which formed the logical base of his radical conventionalism. Later he moved towards empiricism, stressing the role of experience and measurement in science. Formal logic was treated by him as a tool of philosophy making possible precise and strict considerations. Among his main achievements in formal logic, one should mention his proposal of the definition of a consequence (in a certain sense, it prepared the way for Tarski's definition), formulation of the deduction theorem, and considerations on the rule of infinite induction and the calculus of syntactic types. In methodology, he was interested in problems connected with practical logic (classification of reasoning or the problem of rationality of inferences). He proposed a new definition and classification of reasoning and considered non-deductive reasoning. Ajdukiewicz always represented anti-irrationalism, and in works published in his Poznań period, he criticised severely and explicitly various idealistic tendencies in philosophy. He referred in those critiques to logical analysis of discussed conceptions and attempted to indicate logical mistakes and errors. He also engaged in discussions with Marxist philosophy (prevailing at that time in Poland) and Marxist philosophers, defending his own philosophical views against attacks from opponents and suggesting some solutions in favour of their ideas.

Among Ajdukiewicz's main works published in the Poznań period, one finds the following papers: "Logika i doświadczenie" [Logic and experience] (Ajdukiewicz, 1947), "Zmiana i sprzeczność" [Change and contradition] (Ajdukiewicz, 1948), "Epistemiologia i semiotyka" [Epistemology and semiotics] (Ajdukiewicz, 1948), "Metodologia i metanauka" [Methodology and metascience] (Ajdukiewicz, 1948), "On the notion of existence" (Ajdukiewicz, 1951), "W sprawie artykułu prof. A. Schaffa o moich poglądach filozoficznych" [Concerning the paper by Professor A. Schaff on my philosophical views] (Ajdukiewicz, 1953), and "Klasyfikacja rozumowań" [Classification of reasonings] (Ajdukiewicz, 1955). Ajdukiewicz paid great attention to the problem of teaching logic. He wrote some excellent textbooks of logic and philosophy,[3] took part in discussions concerning the didactics of logic,[4] and organised meetings devoted to the teaching of logic and philosophy.

Ajdukiewicz was the head of the Chair of Theory and Methodology until 1955. In the meantime, the Faculty of Mathematics and Natural Sciences was transformed in 1951 into the Faculty of Mathematics, Physics, and Chemistry, and Ajdukiewicz's chair was renamed as the Chair of Logic [*Katedra Logiki*]. Ajdukiewicz created here a significant scientific centre in logic and philosophy. Many scholars from various Polish universities took part in logico-methodological seminars directed by him (Murawski & Pogonowski, 2008). Numerous papers in logic, methodology, and philosophy representing the highest scientific level were written here.

Ajdukiewicz's activity in editing scientific journals must be mentioned as well. During his Poznań period, the journal *Studia Logica* was founded. Ajdukiewicz was editor-in-chief, and Roman Suszko the first secretary of the editorial board. The journal *Studia Philosophica* was also published in Poznań and was co-edited by Ajdukiewicz in the period 1935–1951. One can certainly say that Ajdukiewicz really instilled in Poznań the spirit of the Lviv–Warsaw School.

As said above, Ajdukiewicz left the University of Poznań and moved to Warsaw University in 1955. However, he left behind some of his collaborators and students who continued his tradition. Among them were Seweryna Łuszczewska-Romahnowa (who became the head of the Chair), Roman Suszko, Zbigniew Czerwiński, and Andrzej Malewski.

Roman Suszko (1919–1979) studied physics, mathematics, and chemistry from 1952 to 1956at the University of Poznań and during the war at underground schools in Cracow. In 1945 he obtained a master's degree in philosophy at Jagiellonian University under the supervision of Zawirski, and in 1946 he started work in Ajdukiewicz's Chair of Theory and Methodology of Sciences at the University of Poznań. Here in 1948 he obtained a doctoral degree under the supervision of Ajdukiewicz and in 1951 the habilitation. He was also, as mentioned above, the secretary of the editorial board of *Studia Logica*. In 1952, Suszko left Poznań and moved to Warsaw (to the Chair of Logic at the Philosophical Faculty of the University of Warsaw). His papers written during his Poznań period were devoted to logical rules of reasoning and their relations with laws of

logic, the theory of mathematical definitions, as well as some problems connected with the theory of axiomatic systems. In particular, he considered systems of logic without axioms but with appropriate finitistic inference rules. His *Habilitationsschrift* "Canonic axiomatic systems" (Suszko, 1951) was devoted to the explication of the Skolem paradox and contained general metatheoretical considerations regarding models of axiomatic theories, in particular models of set theory. During his work in Poznań, Suszko also published a few other minor papers, in particular a critical discussion of logical positivism (Suszko, 1952), and began his work on diachronic logic.

Zbigniew Czerwiński (1927–2010) studied law and economy from 1945 to 1949 and logic from 1950 to 1952 in Poznań, and in 1952 he became assistant to Ajdukiewicz. In his works devoted to logic, Czerwiński was interested mainly in the theory of induction and its connections with the statistics and theory of games. He wrote also about the paradox of implication and about deductive reasonings. Later, his scientific interests moved towards problems of economy and econometrics (starting in 1961 he was at the Higher School of Economics in Poznań) — he was mainly interested in applications of mathematics and statistics in economy.

Andrzej Malewski (1929–1963) was assistant in Ajdukiewicz's chair, and in 1956 he moved to the Institute of Philosophy and Sociology of the Polish Academy of Sciences in Warsaw. However, he collaborated with Jerzy Topolski, a historian from the University of Poznań; they were interested in the methodology of historical sciences. Malewski also wrote an interesting and popular handbook of logic: *ABC porządnego myślenia* [ABC of a proper thinking] (Malewski, 1957).

As said above, the successor of Ajdukiewicz as the head of the Chair of Logic became Seweryna Łuszczewska-Romahnowa (1904–1978), his student from Lviv (Murawski & Pogonowskim, 2018). There she studied philosophy and mathematics under Twardowski, Ajdukiewicz, and Roman Ingarden (philosophy), as well as Hugo Steinhaus and Stefan Banach (mathematics). In 1932 she obtained a doctoral degree. Her real supervisor was Ajdukiewicz; however, for formal reasons, the official supervisor was Kazimierz Twardowski. She then started to work at the Chair of Philosophy of the University in Lviv, whose head was Ajdukiewicz. In 1943 she was arrested by the Gestapo and sent to concentration camps in Majdanek, Ravensbrück, and Buchenwald. In December 1946, she came to Poznań, and in 1947 she started work at the Chair of Theory and Methodology of Sciences of the University of Poznań, directed by Ajdukiewicz. In 1970 the chair was incorporated into the newly founded Institute of Mathematics and renamed the Department of Mathematical Logic [*Zakład Logiki Matematycznej*].

Łuszczewska-Romahnowa worked mainly in mathematical logic, methodology, and the history of logic. Due to her dramatic experiences during the war, she published relatively few papers. However, one can recognise in her works the influence of her studies in Lviv. This can be seen in particular in the synthesis of analytical philosophy and logic characteristic of her style of writing.

As her main works, one can mention "Wieloznaczność a język nauki" [Polysemy and the language of science] (1948), devoted to the problem of the ambiguity of concepts used in the language of science (Łuszczewska-Romahnowa, 1948); "Analiza i uogólnienie metody sprawdzania formuł logicznych przy pomocy diagramów Venna" [An analysis and generalisation of Venn's diagrammatic decision procedure] (Łuszczewska-Romahnowa, 1953), in which she proposed a method of checking the decidability of the first-order monadic predicate calculus; and papers dealing with argumentation theory (Łuszczewska-Romahnowa, 1962; Łuszczewska-Romahnowa, 1964) and with the problem of induction (Łuszczewska-Romahnowa, 1957). She also wrote papers on multi-level classifications and on the distancefunctions connected with such classifications (Łuszczewska-Romahnowa, 1961; Łuszczewska-Romahnowa & Batóg, 1965; Łuszczewska-Romahnowa & Batóg, 1965).

Łuszczewska-Romahnowa retired in 1974. Her successor as the head of the Department of Mathematical Logic was Tadeusz Batóg (born 1934). He studied Polish philology at the University of Poznań. In 1956–1957 he was an assistant at the Chair of Logic at the Philosophico-Historical Faculty, and in 1957 he moved to the Chair of Logic at the Faculty of Mathematics, Physics, and Chemistry. Here he was awarded the doctor degree in 1962 and habilitation in 1968. His scientific

interests belong to applications of mathematical logic and set theory to theoretical linguistics (in particular to phonology), methodology, the history of logic, the philosophy of mathematics, and the history of philosophy. He is also the author of works on the history of literature. Concerning his logical achievements, one should mention his monograph *The axiomatic method in phonology* (Batóg, 1967) in which an axiomatic-deductive system of theoretical phonology was presented and developed. This system was based on type theory and an extended mereology. Batóg also published (together with his wife Maria Steffen-Batogowa) an extensive *Słownik homofonów polskich* [Dictionary of Polish homophons] (Steffen-Batogowa & Batóg, 2010). As examples of his analyses devoted to the methodology and philosophy of mathematics, one should mention at least two studies: *Dwa paradygmaty matematyki* [Two paradigms of mathematics] (Batóg, 1996) and "Kantowska filozofia matematyki a paradygmat Euklidesa" [Kant's philosophy of mathematics versus Euclidean paradigm] (Batóg, 2015). Batóg also published a handbook of logic, *Podstawy logiki* [Foundations of logic] (Batóg, 1986), which enjoyed and still enjoys great interest — it was and still is used in courses of logic for students of mathematics, as well as students of philosophy and the humanities in general.

In the 1970s there were several students of mathematics who were interested in logic and the foundations of mathematics. They became assistants in the Department of Mathematical Logic, directed then by Batóg. In this way, the number of members of this department grew, and the scope of interests and the spectrum of scientific investigations were significantly extended. Among those members were (in chronological order) Roman Murawski, Wojciech Zielonka, Wojciech Buszkowski, Zygmunt Vetulani, Wojciech Nowakowski, and Jerzy Pogonowski. Later, they were joined by Maciej Kandulski, Izabela Bondecka-Krzykowska, and Kazimierz Świrydowicz (the latter moved here from the Departmet of Legal Applications of Logic — see below). Their fields of scientific interests were broad. Buszkowski, Zielonka, and Kandulski worked mainly in the logical theory of categorical grammars and Lambek calculus. Buszkowski's and Kandulski's interests included also substructural logics, algebra of logic and its applications in computer science, and mathematical linguistics. Murawski worked in mathematical logic and the foundations of mathematics, in particular in the theory of models of arithmetic. Nowadays, he deals mainly with the philosophy and history of logic and mathematics. Vetulani started from the foundations of mathematics and later moved towards problems of computer linguistics. Pogonowski was interested mainly in applications of logic in linguistics. Świrydowicz dealt at the beginning with legal applications of logic and then moved to non-classical logics and algebraic methods in logic. Bondecka-Krzykowska's interests include the history and philosophy of computer science and of mathematics, as well as didactics of computer science.

From the Department of Mathematical Logic evolved in 1993 the Department of Theory of Computation [*Zakład Teorii Obliczeń*] (head: W. Buszkowski) and the Department of Computer Linguistics and Artificial Intelligence [*Zakład Lingwistyki Informatycznej i Sztucznej Inteligencji*] (head: Z. Vetulani). Pogonowski moved to the Institute of Linguistics and founded there the Department of Applied Logic [*Zakład Logiki Stosowanej*]. Nowadays, he is in the Department of Logic and Cognitive Science [*Zakład Logiki i Kognitywistyki*] at the Faculty of Psychology and Cognitive Science. Batóg was the head of the Department of Mathematical Logic till 1996; his successor was R. Murawski.

The Department of Mathematical Logic at the Faculty of Mathematics and Natural Sciences and the Faculty of Mathematics, Physics, and Chemistry was not the only centre of logical investigations at the University of Poznań. Since 1952, there is also the Chair of Logic [*Katedra Logiki*] at the Philosophico-Historical Faculty. It refers to the tradition of the Chair of Theory and Methodology of Natural Sciences and Humanities, which existed in the 1920s and whose head was Kozłowski (see above). The first head of the Chair of Logic was Adam Wiegner (1889–1967). He studied philosophy, mathematics, and psychology from 1909 to 1914 at Jagiellonian University, where in 1923 he was awarded a doctoral degree in philosophy. Beginning in 1928 he was at the University of Poznań, where in 1934 he was given the habilitation. After the Second World War, he became the head of the Chair of Philosophy (reactivated in 1945 at the Faculty for Humanities and

renamed in 1951 as the Chair of History of Philosophy). From 1952 till his retirement in 1960, he directed the Chair of Logic.

The scientific interests of Wiegner were broad and included the history of philosophy, epistemology, ontology, psychology, philosophical foundations of physics, and formal logic. Most important were his achievements in epistemology. His logical works were devoted to the modern treatment of so-called traditional logic; however, they were far from current investigations in logic. He defended the principle of reciprocity between the contents and the extension of a notion. He also claimed that sources of some critics of this principle can be seen in terminological mistakes and in unsound assumptions concerning the concept of richness of the contents. He attempted to axiomatise the traditional logic — he developed and improved the result of Ajdukiewicz by extending his system by an axiom ensuring the non-universality of all considered names. Wiegner also carried out an analysis of important concepts of philosophical logic, such as abstraction, generalisation, idealisation, and concretisation. His analyses significantly influenced the methodological reflection undertaken later in Poznań.

Wiegner was an author of two handbooks of logic: *Elementy logiki formalnej* [Elements of formal logic] (Wiegner, 1948) and *Zarys logiki formalnej* [An outline of formal logic] (Wiegner, 1952). They were written in a very accurate way. He proposed axiomatics for propositional calculus, which turned out to be of didactic value (it has two primitive notions, namely conjunction and negation, and is based on four axioms).[5]

Wiegner retired in 1960, and the head of the Chair of Logic at the Philosophico-Historical Faculty became Jerzy Giedymin (1925–1993). He studied English philology from 1945 to 1950 in Cracow and in Poznań as well as economics in Poznań. In 1953 he became assistant in Wiegner's chair. In 1951 he earned a doctorate under the supervision of Wiegner, and in 1960 he was awarded the habilitation. He considered himself a pupil of Kazimierz Ajdukiewicz and Karl R. Popper; he took part in Ajdukiewicz's seminars in Poznań and attended Popper's seminar at the London School of Economics during his stays as a scholar in London in the late 1950s. In 1968, Giedymin left Poznań and moved to Great Britain. Beginning in 1971 he was professor at the School of Mathematical and Physical Sciences at the University of Sussex. His works from his Poznań period were devoted to various problems of the methodology of empirical sciences as well as to some methodological problems of social sciences. In his main work from that period, *Problemy, założenia, rozstrzygnięcia* [Problems, assumptions, decidability] (Giedymin, 1964), he dealt with the general theory of questions and with the empirical methodology, in particular of social disciplines referring to it. He also wrote (together with Jerzy Kmita) a handbook of logic: *Wykłady z logiki formalnej, teorii komunikacji i metodologii* [Lectures on formal logic, theory of communication, and methodology] (Giedymin & Kmita, 1966).

After Giedymin left Poznań, the head of the Chair of Logic became Jerzy Kmita (1931–2012). The chair was incorporated as the Department of Logic and Methodology [*Zakład Logiki i Metodologii*] into the Institute of Philosophy, founded in 1970. Its head was Kmita, and after him Włodzimierz Ławniczak and later on Paweł Zeidler.

Under the direction of Kmita, this centre of logic became a vivid and creative centre of investigations in the methodology, especially the methodology of humanities. One should mention here the collaboration with philosophers interested in methodology (Jan Such, Leszek Nowak) and with the historian Topolski. They founded the so-called Poznań Methodological School. Main problems considered by members of this group included analysis of fundamental concepts of the theory of literature by applying the conceptual apparatus of logical semantics, analysis of methods of explanation of facts and phenomena as well as of justification of theses in humanties, analysis of methodological assumptions of Karl Marx's *Kapital*, and investigations concerning theory and methodology of the history of art.

Members of this group were also authors of important handbooks. One should mention here in particular *Wykłady z logiki i metodologii nauk dla studentów wydziałow humanistycznych* [Lectures in logic and methodology of science for students of faculties of humantities] by Kmita (Kmita, 1975) and *Wstęp do metodologii ogólnej nauk* [Introduction to general methodology of

science] by Such (Such, 1973). From that group came also Andrzej Wiśniewski, who was interested mainly in erotetic logic and epistemic logic (he is now in the Department of Logic and Cognitive Science at the Faculty of Psychology and Cognitive Science).

Besides groups of logicians at the University of Poznań described above, still one more should be mentioned here: the Department of Legal Applications of Logic [*Zakład Prawniczych Zastosowań Logiki*] at the Faculty of Law. Its head was outstanding legal theorist and logician Zygmunt Ziembiński (1920–1996). He dealt with logical problems of jurisprudence, applications of deontic logic in legal reasoning, and logic of norms. He also wrote a famous handbook of logic for students of law: *Logika praktyczna* [Practical logic] (published for the first time in 1956; since then the book has had many editions).

The above panorama of logical investigations at the University of Poznań shows that logic was present there from the very beginning and that it was intensively developed and kept pace with other centres in the world. The broad spectrum of concepts and problems studied there should be stressed. One developed there not only mathematical and formal logic but also logic connected with specific problems of humanities, natural sciences, or jurisprudence. Logical investigations were connected with methodological considerations and studies. The latter concern both formal (mathematical) disciplines as well as natural sciences and humanities. Specific philosophical problems of particular disciplines were also studied. Note that Poznań logicians were usually educated in several disciplines, which made such studies easier. In the interwar period, the scope of logical investigations and the obtained results had a rather local character. The situation changed radically after 1945: logic developed in Poznań was situated in the main trend of its development in the world, and results obtained here were known and quoted in the literature by specialists abroad.

It can be said that, in a certain sense, the Poznań centre of logic was in fact a continuation or a part of the Lviv–Warsaw School and in particular of the Warsaw School of Logic (which formed a part of the former) (Woleński, 1989). Some members of the school (students of Twardowski or students of students of his) were active at the University of Poznań, in particular Zawirski before the war and Ajdukieiwcz and Łuszczewska-Romahnowa after the war. They brought here the spirit of this school and instilled its tradition. It can be seen in the supervisor–doctoral student relations and, above all, in directions and tendencies of investigations undertaken here and in promoted methods, in the understanding of logic as a discipline and of its meaning for other disciplines, as well as in the importance attached to didactics of logic. The spirit of the Lviv–Warsaw School influenced the next generations of scholars active in the field of logic in Poznań.

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Notes

1. No documents concerning this problem survived in the archives of the University of Poznań (cf. Michalski, 2012, pp. 131–132).
2. Henryk Hiż (1917–2006), logician and philosopher. He studied at the University of Warsaw, where he was a student of Tadeusz Kotarbiński. In 1950, Hiż left Poland. He lectured at various universities, in particular at the University of Pennsylvania in Philadephia. He had strong connections with Tarski, first as a pupil at the gymnasium in Warsaw and later as *protégé* in the USA [my remark – R.M.].
3. Let us mention here *Zagadnienia i kierunki filozofii* [Problems and trends in the philosophy] (Ajdukiewicz, 1949) and *Zarys logiki* [The outline of logic] (Ajdukiewicz, 1957).
4. Let us mention here the discussion which took place in the journal *Myśl Filozoficzna* [Philosophical thought] in the 1950s. Among its participants were leading Polish logicians (Ajdukiewicz, Andrzej Grzegorczyk, Klemens Szaniawski, Roman Suszko), as well as Marxist philosophers (e.g., Adam Schaff). This discussion was important not only from the point of view of teaching logic but also for ideological reasons.
5. For details, see, for example, (Murawski & Pogonowski, 2008).