

## 100 Years of Logical Investigations at University of Poznań

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### *Abstract:*

The aim of the paper is to describe the history of logical investigations at the University of Poznań. The organizational structures within the discipline as well as the outstanding logicians and their achievements are presented. Connections with the Lvov-Warsaw School are indicated.

*Keywords:* logic, University of Poznan, Lvov-Warsaw School.

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 establishing of a university was possible only after the First World War in 1919 – the first inauguration took place on 7th May 1919. At the very beginning the university was called Piast University [*Wszotechnica Piastowska*], 1920 it was renamed to 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 Second World. 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). Next year the Philosophical Faculty was split into Faculty of Humanities and Faculty of Mathematics and Natural Sciences. At the former faculty the Chair of Theory and Methodology of Natural Sciences and Humanities [*Katedra Teorii i Metodologii Nauk Przyrodniczych i Humanistycznych*] was established – its head was Władysław Mieczysław Kozłowski.

Who was Kozłowski? Born in Kiev he studied medicine at St Vladimir University in Kiev. 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 doctor's degree in philosophy at the Jagiellonian University. In 1900, he presented his habilitation thesis to the Jan Kazimierz University of Lvov – however, he did not get *veniam legendi* since under political pressure the ministry refused to accept his habilitation. From 1901, he lectured at Université Libre in Brussels and from 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*]. From 1919 he was a professor of the University of Poznań. His scientific interests included philosophy, sociology, history and botany. However he was known mainly as a philosopher and logician – problems from logic and the methodology and philosophy of various disciplines he regarded 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 he knew quite well the new achievements of contemporary logic, his approach to logic was in fact traditional. Kozłowski characterized logic as „the science about the activities of the mind which seeks truth” [20, p. 8]. The first chapter of his book *Podstawy logiki* was entitled „Thinking as object of logic” [20, p. 22]. He repeated this thought in *Krótki zarys logiki* [Short outline of logic] claiming that logic is a normative science and its task is „to examine the ways leading the mind to truth” [21, 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 [21, pp. 8–9].

Finally, he stated that logic can be defined „as the science about the forms of every ordered field of real or imaginary objects” [21, p. 9]. So he treated logic rather as a tool of science and not as an independent and autonomous discipline. His publications did not influence Polish logicians, however his books were the first Polish books in which the theory of Boolean algebras and the theory of relations were presented.

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

Zawirski brought to Poznań new spirit and new ideas. He was educated mainly in Lvov where 1901–1906 he studied mathematics, physics and philosophy at Jan Kazimierz University. He completed his studies in Berlin (1909) and Paris (1910). 1910 Zawirski got a doctorate in 1910 in Lvov under the supervision of Kazimierz Twardowski – the founder of Lvov-Warsaw Philosophical School [43]. Then he taught mathematics and the propedeutics to philosophy in various Lvov gymnasiums. He was habilitated in 1924 at the Jagiellonian University in Cracow on the basis of the thesis on the axiomatic method in natural sciences. In 1924–1928, he lectured on philosophy at the Faculty of General Studies of the Lvov Polytechnic. And in 1928 he was appointed to University of Poznań.

Zawirski, being a student of Twardowski, is treated as a member of Lvov-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. Poznań period belongs to the most creative in his scientific career.

Problems of logic were not in the centre of his investigations. However one should say here about two things. 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 was for him not only a formal system (or collection of such systems) but he included here also studies on reasoning. This was in fact a reflection of contemporary tendencies in Poland (and not only there) both in investigations as well as in didactics. In *Logika teoretyczna* [Theoretical Logic] [46] 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” (p. 2). And on p. 1 of [46] he 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.

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] [45]. He claimed there 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” [45, p. 171].

Emphasizing 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 – 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 the significance of logic and mathematics for natural sciences. He dedicated much attention to the problem of axiomatizability of theories in physics.

Zawirski – as mentioned above – was interested in intuitionistic logic. He devoted to it a paper “Geneza i rozwój logiki intuicjonistycznej” [The origin and development of intuitionistic logic] [47]. It has rather an informational character – 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 there about 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 appreciated very much 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 [33], [34] 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 generalized logic, whereas Zawirski outlined the parallelism between the expressions of probability calculus and formulas of the many-valued logics. In his opinion probability calculus and many-valued logic should be treated as two separate systems. Zawirski 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 Chair of Theory and Methodology of Science till the end of 1936 and in 1937 he left University of Poznań and moved to Jagiellonian University in Cracow. He left in Poznań his students. Among them were Franciszek Zeidler (1907–1972) and Zbigniew Jordan (1911–1977). Zeidler continued Zawirski's investigations of problems on borderline of physics and philosophy. Jordan studied 1930–1934 philosophy at University of Poznań [19]. Under the influence of Zawirski he got interested in axiomatic method in philosophy. 1936 he was rewarded PhD on the base of the dissertation *O matematycznych podstawach systemu Platona* [Mathematical foundations of Plato's system] [17] – its supervisor was Zawirski. He continued his studies in Bonn and Paris and prepared there the *Habilitationsschrift* devoted to the problem of the 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 – 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 then happened is explained by Anita Burdman-Feferman and Solomon Feferman in their book *Alfred Tarski. Life and Logic* where they wrote<sup>1</sup>:

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 further 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 [14, pp. 102–103].

Woleński explains this in the following way: “According to Hiż<sup>2</sup>, 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 [44, 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 the offers from universities in Warsaw and Cracow and decided to take the position just in Poznań.

Ajdukiewicz studied philosophy, physics and mathematics at the University of Lvov [34]. In 1912, he obtained there his doctor's 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 *Habilitationsschrift*. In the years 1919–1922, he worked as a teacher in a gymnasium in Lvov conducting at the same time scientific researches. In 1921, he completed his habilitation at the Philosophical Faculty of the University of Warsaw. 1922–1925, he lectured as a private docent at the University of Lvov and taught in secondary schools in Lvov. In 1925, he became professor of the University of Warsaw, and from 1928 he was professor of the University of Lvov. In 1940–1941, he lectured on psychology at the Lvov State Medical Institute. During the Nazi occupation he was active as an accountant being at the same time involved in the underground education. In 1944–1945, he held the Chair of Physics at the Ivan Franko University in Lvov.

Ajdukiewicz is one of the outstanding representatives of Lvov-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 in the world. His scientific interests included mainly semiotics, epistemology, logic and general methodology of sciences.

To main achievements of Ajdukiewicz belongs the conception of meaning which formed the logical base of his radical conventionalism – later he moved however towards empiricism stressing the role of experience and measurement in science. Formal logic was treated by him as a

tool of philosophy making possible a 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 to Tarski's definition), formulation of the deduction theorem as well as 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 represented always anti-irrationalism and in works published in his Poznań period he criticized 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 took discussions with Marxist philosophy (prevailing at that time in Poland) and Marxist philosophers defending his own philosophical views against attacks of opponents and suggesting them 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] [1], „Zmiana i sprzeczność” [Change and contradiction] [2], „Epistemiologia i semiotyka” [Epistemology and semiotics] [3], „Metodologia i metanauka” [Methodology and metascience] [4], „On the notion of existence” [6], „W sprawie artykułu prof. A. Schaffa o moich poglądach filozoficznych” [Concerning the paper by Professor A. Schaff on my philosophical views] [7], „Klasyfikacja rozumowań” [Classification of reasonings] [8].

Ajdukiewicz paid great attention to the problem of teaching logic. He wrote some excellent textbooks of logic and philosophy,<sup>3</sup> took part in discussions concerning the didactics of logic,<sup>4</sup> organized meetings devoted to 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 Faculty of Mathematics, Physics and Chemistry and Ajdukiewicz's chair was renamed to the Chair of Logic [*Katedra Logiki*]. Ajdukiewicz created here a significant scientific center in logic and in philosophy. In logico-methodological seminars directed by him took part many scholars from various Polish universities [35]. 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 here 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. In Poznań was published also the journal *Studia Philosophica* co-edited in the period 1935–1951 by Ajdukiewicz. One can certainly say that Ajdukiewicz really instilled in Poznań the spirit of Lvov-Warsaw School.

As said above Ajdukiewicz left University of Poznań and moved to Warsaw University in 1955. However he left here 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 1952–1956 physics, mathematics and chemistry at the University of Poznań and during the war at underground schools in Cracow. In 1945 he obtained master degree in philosophy at Jagiellonian University under the supervision of Zawirski and 1946 he started the work in Ajdukiewicz's Chair of Theory and Methodology of Sciences at the University of Poznań. Here he obtained 1948 the doctor's degree under the supervision of Ajdukiewicz and 1951 the habilitation. He was also – as mentioned above – the secretary of the Editorial Board of *Studia Logica*. 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 the Poznań period were devoted to logical rules of reasoning and their relations with laws of logic, 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” [39] was devoted to the explication of Skolem paradox and contained general metatheoretical considerations concerning

models of axiomatic theories, in particular models of set theory. During his work in Poznań Suszko published also a few other minor papers, in particular a critical discussion of logical positivism [40] and began his work on diachronic logic.

Zbigniew Czerwiński (1927–2010) studied 1945–1949 law and economy and 1950–1952 logic in Poznań and 1952 became assistant of Ajdukiewicz. In his works devoted to logic he 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 (since 1961 he was at 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 Institute of Philosophy and Sociology of Polish Academy of Sciences in Warsaw. However he collaborated with Jerzy Topolski, a historian from University of Poznań – they were interested in the methodology of historical sciences. Malewski wrote also an interesting and popular handbook of logic *ABC porządnego myślenia* [ABC of a proper thinking] [31].

As said above, the successor of Ajdukiewicz as the head of the Chair of Logic became Seweryna Łuszczewska-Romahnowa (1904–1978), his student from Lvov [36]. She studied there philosophy and mathematics under Twardowski, Ajdukiewicz and Roman Ingarden (philosophy) as well as Hugo Steinhaus and Stefan Banach (mathematics). 1932 she obtained the doctor's degree. Her real supervisor was Ajdukiewicz, however for formal reasons the official supervisor was Kazimierz Twardowski. She started then to work at Chair of Philosophy I of the University in Lvov whose head was Ajdukiewicz. 1943 arrested by Gestapo she was sent to concentration camps in Majdanek, Ravensbrück and Buchenwald. In December 1946 she came to Poznań and 1947 she started the work at the Chair of Theory and Methodology of Sciences of the University of Poznań directed by Ajdukiewicz. Add that 1970 the chair was incorporated into the newly founded Institute of Mathematics and renamed to Department of Mathematical Logic [*Zakład Logiki Matematycznej*].

Łuszczewska-Romahnowa worked mainly in mathematical logic, methodology and history of logic. Due to her dramatic experiences during the war she published relatively few papers. However one can recognize in her works the influence of her studies in Lvov. This can be seen in particular in the synthesis of analytical philosophy and logic characteristic for 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 [23], “Analiza i uogólnienie metody sprawdzania formuł logicznych przy pomocy diagramów Venna” [An analysis and generalization of Venn's diagrammatic decision procedure] [24] where she proposed a method of checking the decidability of the first-order monadic predicate calculus, papers dealing with argumentation theory [27], [28] or with the problem of induction [25]. She wrote also papers on multi-level classifications and on the distance functions connected with such classifications [26], [29], [30].

S. Łuszczewska-Romahnowa retired in 1974 – her successor as the head of Department of Mathematical Logic became Tadeusz Batóg (born 1934). He studied Polish philology at the University of Poznań. 1956–1957 he was an assistant in Chair of Logic at Philosophico-Historical Faculty and in 1957 he moved to Chair of Logic at 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, history of logic, philosophy of mathematics and history of philosophy. He is also the author of some works in the history of literature. What concerns his logical achievements one should mention here his monograph *The Axiomatic Method in Phonology* [10] where an axiomatic-deductive system of theoretical phonology was presented and developed. This system was based on type theory and an extended mereology. He published also (together with his wife Maria Steffen-Batogowa) an extensive *Słownik homofonów polskich* [Dictionary of Polish homophons] [37]. As examples of his analyses devoted to the methodology and philosophy of mathematics one should mention at least two his studies: *Dwa paradygmaty matematyki* [Two

paradigms of mathematics] [12] and „Kantowska filozofia matematyki a paradygmat Euklidesa” [Kant’s philosophy of mathematics versus Euclidean paradigm] [13]. Batóg published also a handbook of logic *Podstawy logiki* [Foundations of logic] [11] which enjoyed and still enjoy great interest – it was and still is used in courses of logic for students of mathematics as well as students of philosophy and generally humanities.

In the 70’s there were several students of mathematics who are interested in logic and the foundations of mathematics. They became assistants in 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 have been significantly extended. Among them 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 Department of Legal Applications of Logic – see below). Their fields of scientific interests were very wide. Buszkowski, Zielonka and Kandulski worked mainly in logical theory of categorical grammars and Lambek calculus. Buszkowski’s and Kandulski’s interests included also substructural logics, algebra of logic and their applications in computer science as well as 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 he 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 history and philosophy of computer science and of mathematics as well as didactics of computer science.

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

Department of Mathematical Logic at Faculty of Mathematics and Natural Sciences *vel* Faculty of Mathematics, Physics and Chemistry was not the only center of logical investigations at University of Poznań. Since 1952 there was also Chair of Logic [*Katedra Logiki*] at Philosophico-Historical Faculty. It referred to the tradition of Chair of Theory and Methodology of Natural Sciences and Humanities which existed in the 20’s and whose head was Kozłowski (see above). The first head of Chair of Logic was Adam Wiegner (1889–1967). He studied 1909–1914 philosophy, mathematics and psychology at Jagiellonian University where 1923 he was awarded the doctor degree in philosophy. Since 1928 he was at University of Poznań – here in 1934 he was given the habilitation. After the Second World War he became the head of Chair of Philosophy (reactivated 1945 at Faculty for Humanities and renamed 1951 to Chair of History of Philosophy). Since 1952 till his retirement in 1960 he directed Chair of Logic.

Scientific interests of Wiegner were very wide and included 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 modern treatment of the so called traditional logic – however they were far from current logical investigations in logic. He defended the principle of reciprocity between the contents and the extension of a notion. He claimed that sources of some of 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 axiomatize 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 carried out also an analysis of important concepts of the philosophical logic such as abstraction, generalization, idealisation, concretisation. His analyses influenced in a significant way the methodological reflection undertaken later in Poznań.

Wiegner was an author of two handbooks of logic: *Elementy logiki formalnej* [Elements of formal logic] [41] and *Zarys logiki formalnej* [An outline of formal logic] [42]. They were written in an very accurate way. He proposed there axiomatics for the propositional calculus which turned out to be of a didactic value (it has two primitive notions, namely conjunction and negation and is based on four axioms).<sup>5</sup>

Wiegner retired in 1960 and the head of Chair of Logic at Philosophico-Historical Faculty became Jerzy Giedymin (1925–1993). He studied 1945–1950 English philology in Cracow and in Poznań as well as economy in Poznań. Since 1953 he was assistant in Wiegner's chair. In 1951 he got doctorate under the supervision of Wiegner and in 1960 he was awarded the habilitation. He considered himself as a pupil of Kazimierz Ajdukiewicz and Karl R. Popper – he took part in Ajdukiewicz's seminars in Poznań and attended Popper's seminar at London School of Economics during his stays as a scholar in London in late 50's. In 1968 Giedymin left Poznań and moved to Great Britain. Since 1971 he was profesor at School of Mathematical and Physical Sciences at University of Sussex. His works from 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] [15] he dealt with the general theory of questions and with the methodology of empirical, in particular of social disciplines referring to it. He wrote also (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] [16].

After Giedymin left Poznań the head of Chair of Logic became Jerzy Kmita (1931–2012). The chair was incorporated as Department of Logic and Methodology [*Zakład Logiki i Metodologii*] into 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 center of logic became a vivid and creative center 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 a historian Topolski. They founded the so called Poznań methodological school. Main problems considered by members of this group were the following: 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 humanities, analysis of methodological assumptions of Karl Marks' *Kapitał*, 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 wydziałów humanistycznych* [Lectures in logic and methodology of science for students of faculties of humanities] by Kmita [18] and *Wstęp do metodologii ogólnej nauk* [Introduction to general methodology of science] by Such [38].

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

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



The above panorama of logical investigations at University of Poznań shows that logic was present there from the very beginning and that it was intensively developed and kept pace with other centers 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, of 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 what made such studies easier. In the interwar period the scope of logical investigations and the obtained results had 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 literature by specialists abroad.

It can be said that in a certain sense Poznań center of logic was in fact a continuation or a part of Lvov-Warsaw School and in particular of Warsaw School of Logic (which formed a part of the former) [43]. At University of Poznań were active some members of the school (students of Twardowski or students of students of him), in particular Zawirski before the war and Ajdukiewicz and Łuszczewska-Romahnowa after the war. They brought here the spirit of this school and instilled its tradition. It can be seen in the relations supervisor–doctoral student 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 of spirit of Lvov-Warsaw School influenced next generations of scholars active in the field of logic in Poznań.

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## Notes

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- <sup>1</sup> Add that no documents concerning this problem survived in archives of University of Poznań – cf. [32, pp. 131–132].
  - <sup>2</sup> Henryk Hiż (1917–2006) – logician and philosopher. He studied at 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 Philadelphia. He had strong connections with Tarski – first as a pupil of gymnasium in Warsaw and later as *protégé* in USA [my remark – R.M.].
  - <sup>3</sup> Let us mention here *Zagadnienia i kierunki filozofii* [Problems and trends in the philosophy] [5] and *Zarys logiki* [The outline of logic] [9].
  - <sup>4</sup> Let us mention here the discussion which took place in the journal *Mysł Filozoficzna* [Philosophical Thought] in the fifties. Among its participants were leading Polish logicians (Ajdukiewicz, Andrzej Grzegorzczak, 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.
  - <sup>5</sup> For details see for example [35].