

The Warsaw School of Logic: Main Pillars, Ideas, Significance

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Abstract:

The Warsaw School of Logic (WSL) was the famous branch of the Lviv-Warsaw School (LWS) – the most important movement in the history of Polish philosophy. Logic made the most important field in the activities of the WSL. The aim of this work is to highlight the role and significance of the WSL in the history of logic in the 20th century.

Keywords: history of logic, program assumptions and ideas of the WSL, Łukasiewicz, Leśniewski, Tarski, major achievements of representative of the WSL, importance of the WSL in the history of logic in the 20th century.

1. Introduction

The Lviv-Warsaw School (LWS) was the most significant Polish philosophical formation in the 20th century (Woleński, 2015).¹ The interest in logic in its broad scope, understanding of it, was one of the more important attitudes represented by the founders of the LWS – Kazimierz Twardowski and his Lviv disciples. At least several of them undertook to conduct research in the area of logic. Some time later, those disciples, having transferred to Warsaw, formed the Warsaw School of Logic (WSL), shaped the image and contributed to the success of Polish logic as well as to its international recognition.

The work presents the beginnings of logic in Poland (Section 1), outlining the functioning of the domain at the time of establishing the LWS (Section 2). Section 3 focuses on the program assumptions and ideas lying at the heart of the WSL, while Section 4 provides its characteristic. Next, Section 5 discusses the most prominent achievements of logicians forming the WSL.

The aim of the paper is to emphasize the role and the significance of the WSL in the history of logic in the 20th century. They are presented in the last part of this work (Section 6).

2. The Beginnings of Logic in Poland

The history of Polish logic (as a domain of science) dates back to the Middle Ages and is connected with the Cracow Academy (later the Jagiellonian University). Jan of Głogów (1445-1507), called also Głogowczyk or Głogowita, is commonly acknowledged to have been the most outstanding of

its representatives. He was one of the teachers of Mikołaj Kopernik (Nicholas Copernicus), himself the author of the coursebook of logic entitled *Exereitium novae logicae*, as well as commentaries on texts by Aristotle and Petrus Hispanus (Peter Spaniard). The end of the Middle Ages was marked by a decline in the interest in logic.

Until the end of the 19th century, in Poland, logic had developed in line with all-European trends and it was the 20th century that saw a revival of interest in logic – primarily owing to the scholars of the Lviv-Warsaw School of Logic (LWS), in particular Warsaw-based logicians forming the Warsaw group of the LWS, i.e. the Warsaw School of Logic (WSL), which was active in the years 1918-1939.

The members of the WSL made Polish logic famous in the world. This would not have been possible if it had not been for the program assumptions and attitude towards logic, which functioned in the LWS.

3. Functioning of Logic at the Beginnings of the LWS

The beginnings of the LWS date back to the end of the 19th century, precisely the year 1895, when Kazimierz Twardowski arrived in Lviv and took the position of professor of philosophy there. His aim was to found a strong philosophical center in Poland, one functioning in the spirit of philosophical and methodological guidelines delineated by his teacher Franz Brentano. Twardowski's philosophical inquiries and his teaching were marked by a clear and concise way of thinking, precision of formulation of the presented theses, as well as their correct justification. All these characteristics were also binding for his disciples.

The following were the features connecting all the members of the School established by Twardowski: the manner of joint practicing philosophy, exchange of thoughts and openness to cooperation with representatives of other disciplines, including Lviv-based mathematicians. The philosophers of the LWS maintained contacts with their counterparts all over the world. Consequently, the LWS became one of the most significant phenomena of European culture.

As regards the program of philosophy of the LWS, logic in its broad sense, i.e. formal logic, semantics and methodology of sciences, made a relevant element. Although Twardowski himself was not an enthusiast of logic, he lectured in logic, in particular algebra of logic, and had an influence on taking interest in logic by some of his disciples.

Therefore, already in the first Lviv period of the LWS, studies in logic were conducted by the following of Twardowski's disciples: Jan Łukasiewicz (principles of contradiction and the excluded middle, logical values, logical entailment, an important monograph on the principle of contradiction); Kazimierz Ajdukiewicz (logical entailment); Tadeusz Czeżowski (theory of antinomy); Tadeusz Kotarbiński (logical values, principles of non-contradiction and the excluded middle); Stanisław Leśniewski (theory of antinomy, principles of contradiction and the excluded middle, logical values); Zygmunt Zawirski (modality theory). All of them exerted a considerable influence on the development of Polish logic. Nevertheless, it is two of them: Jan Łukasiewicz and Stanisław Leśniewski, as well as their disciples, who contributed the most to the success of Polish logic, formal logic, in the international arena.

4. The Genesis of the Warsaw School of Logic: its Program Assumptions and Ideas

The regular scholarly and educational activity of the LWS, suspended in the period of the First World War, was resumed following the reactivation of the Warsaw University in 1916 and developed after Poland's regaining independence in 1918. Twardowski's School ceased to be one based in Lviv and became Nationwide School. Twardowski's former disciples took posts at chairs of philosophy of all Polish universities (with the exception of the Catholic University of Lublin). Many of them transferred from Lviv to Warsaw.

As a result, Lviv and Warsaw were the main centers of the LWS. It is worth noting here that Lviv and Warsaw were also centers of Polish School of Mathematics which was developing parallel

to, but independent of, the LWS. Warsaw, in the interwar period (1918-1939) became the chief center of logic, whose development was largely due to Zygmunt Janiszewski and his program of development of mathematics, in which mathematical logic with set theory occupied an important place. (At that time, i.e. in the interwar period, another center of logic in Poland was also Krakow, yet not as important as that in Warsaw, since there was not much acceptance of logic among the mathematicians there.)

The beginnings of the WSL were connected with the establishment of the Chairs of Philosophy at the Faculty of Mathematics and Natural Sciences of Warsaw University. They were especially created for Jan Łukasiewicz (in 1915) and Stanisław Leśniewski (in 1919) who were offered the positions of their heads. Both philosophers met with openness on the part of mathematicians based there: Zygmunt Janiszewski, Waclaw Sierpiński, Kazimierz Kuratowski, Stefan Mazurkiewicz and others. In compliance with Janiszewski's program, Warsaw-based mathematicians paid a lot of attention to mathematical logic, set theory and foundations of mathematics. Łukasiewicz and Leśniewski – regarded as the founders of the WSL – in the first period of their activity of their School concentrated on intensive teaching of mathematical logic mainly to mathematicians, still they also taught the subject to philosophers.

Thus, it was the two-stream source: Twardowski's philosophical program and Janiszewski's mathematical one that the manner of practising logic characteristic of the WSL drew on. Mathematical logic was founded here on the assumption that it is an autonomous discipline, self-contained and independent either of philosophy or mathematics.

Obviously, this fact was not deciding for Warsaw-based logicians to abstain from cooperation with either philosophers or mathematicians. Such a cooperation was very fruitful and materialized in maintaining philosophical motivation in logical investigations, and in preserving exactness and precision in logical reasonings, with simultaneous intensive development of formal calculation techniques, similar to those applied in mathematics.

It needs to be added that the founders of the LWS genetically connected with philosophy, yet working in the mathematical environment, as well as their disciples, did not only maintain contacts with the leading Warsaw mathematicians: Sierpiński, Mazurkiewicz and Kuratowski, but also successfully developed close contacts with logicians-philosophers, in particular Tadeusz Kotarbiński who was appointed professor of philosophy at the University of Warsaw in 1919, concentrating logicians of less formal interests (connected rather with semiotics and methodology of sciences, philosophy of science). Kotarbiński attended joint seminars conducted by Leśniewski and Łukasiewicz.

The assumption made by the WSL of the autonomous status of mathematical logic – a discipline not being part of either philosophy or mathematics – was indeed a peculiar one, yet it stimulated the development of theoretical logical studies and working out special techniques to obtain significant scientific results.

The WSL had its own research program and the program of practicing logic in an exact and the most approachable way. Realization of those programs yielded outstanding scientific results and a substantial rise in the significance of Polish logic as well as attractiveness of logical studies.

5. Main Representatives of the WSL and Characteristics of the School

Among the disciples of Jan Łukasiewicz and Stanisław Leśniewski, the founders of the LWS, were: Alfred Tarski – acknowledged to be one of the most outstanding



J. Łukasiewicz



S. Leśniewski



A. Tarski

logicians in the history of logic, Stanisław Jaśkowski, Czesław Lejewski, Adolf Lindenbaum, Andrzej Mostowski, Mojżesz Presburger, Jerzy Słupecki, Bolesław Sobociński, Mordechaj Wajsber. Along with the founders of the School, it is they who formed the core. Most of them were mathematicians, with the exception of Sobociński, a philosopher by education, and Lejewski who studied classical philology.

A few characteristic features of the WSL are listed below:

5.1. The Majority of Problems Dealt with by the School Belonged with Mathematical Logic, Although their Solving was Influenced by the Philosophical Education of its Founders

At the beginning of his scholarly activity, Łukasiewicz dealt with the methodology of empirical sciences. In his monograph entitled *O zasadzie sprzeczności u Arystotelesa* [On the Principle of Contradiction in Aristotle] (Łukasiewicz, 1910) we can find a short lecture on ‘algebraic logic.’ This work by Łukasiewicz, along with works by Jan Śleszyński, a mathematician and logician representing the Krakow circle, belonged to the first works in Poland dealing with the mathematical logic. Nevertheless, Łukasiewicz never returned to his studies on methodology of empirical sciences.

Leśniewski commenced his scientific activity before the First World War, focusing his interests on problems of semantics of natural language and antinomy; later, however, he distanced himself from those works, stating, among others: “I am very sorry for the fact that they were published at all, and I wish to solemnly ‘renounce’ them hereby... and to declare the bankruptcy of the “philosophical”-grammatical endeavors of the first period of my activity” (Leśniewski, 1927, pp. 182-183).

5.2. The Founders of the WSL and Their Disciples Were Very Much Concerned with the Intuitiveness of the Value of the Achievements in the Field of Mathematical Logic

Leśniewski wrote about early mathematical logic as follows:

The matter of far-fetched misunderstandings as regards the sense of basic formulas of this discipline is presently a most current one, the misunderstandings being able to discourage from taking up “logistics” by a considerable number of such research workers who are not satisfied with the very delight in putting down signs and transforming patterns and who [...] wish to realize the significance of transformed formulas. (Leśniewski, 1927, pp. 180-181)

5.3. Representatives of the WSL Endeavored to Link Philosophical Questions with the Subject Matter of Mathematical Logic, Solving with its Aid Classical Philosophical Problems

As an example, Łukasiewicz was convinced that the three-valued logic he created (Łukasiewicz, 1920) casts new light on the problem of determinism, while Tarski in his famous work *Pojęcie prawdy w językach nauk dedukcyjnych* [The Concept of Truth in Languages of Deductive Sciences] (published in Polish in 1933 (Tarski, 1933) and translated into many languages) solved one of the fundamental questions of the theory of cognition in such an undisputable way that, probably, no other approach towards the classical problem of truth can undermine Tarski's solution.

One can also note the way in which the founders of the School classified themselves regarding the domains they practiced: Łukasiewicz considered himself to be a philosopher, although he also dealt with purely formal problems, whereas Leśniewski called himself "philosopher-apostate" and built his well-known logical systems: protothetic, ontology and mereology in the most exact and formally perfect manner.

5.4. Another Characteristic of the WSL Was Endeavoring to Find Full, Precise and the Simplest Solutions to Problems

The logicians of the School perfected formally created logical systems or ones presented earlier, repeatedly simplifying axioms, diminishing the number of primitive terms, decreasing the number of axioms themselves. The crowning achievement was reduction of axioms to one only and possibly the shortest. The most significant results in this sphere were achieved by Łukasiewicz (propositional calculus) and Sobociński (Leśniewski's ontology and protothetic).

A consequence of this 'perfectionism', however, was publishing the results with some delay, which brought about a risk of losing the priority as regards the achievement of the results.

The logicians of the School also defined precisely a good number of metalogical terms such as: logical matrix, consequence operation, deduction system, model theory.

5.5. The WSL Made itself Distinctive by Features Connecting All the Members: a Friendly Scholarly Atmosphere and Interpersonal Contacts

The statement below, which was included by Łukasiewicz in his book *Elementy logiki matematycznej* [Elements of Mathematical Logic] (Łukasiewicz, 1929, p. 9), also translated into English, illustrates what cooperation at Warsaw University looked like:

I owe the most to the scientific atmosphere created at Warsaw University in the field of mathematical logic. It is in discussions with my colleagues, mainly Professor Leśniewski and Assistant Professor Tarski, and often also with students of theirs and mine, that I had a chance to comprehend many a notion, absorb new ways of expressing myself, and learning many a new result, regardless of what their authors were.

That supportive atmosphere and constant discussions, exchanging thoughts between the members of the School, consolidated them greatly and was additionally complemented by their very friendly interpersonal contacts outside the university.

As my teacher Jerzy Słupecki told me, members of the WSL would meet at the café "Lours" located then in Krakowskie Przedmieście in Warsaw and led lively discussions, not only on scientific topics. It is also there where they met with some Warsaw mathematicians. The contacts were void of any prejudice as to the difference in age, social position, political or religious beliefs.

Similarly, as Jan Woleński writes in his books on the Lviv-Warsaw School (Woleński, 1985) and in the article entitled "Tajemnica warszawskiej szkoły logicznej" [The Secret of the Warsaw School of Logic] (Woleński, 1985), we can learn that the School did not recognize any divisions into "the old" and "the young," "beginners" and "advanced". Instead, a strong emphasis was laid on cooperation, regardless of social positions, represented views, characters and personalities of the members. That was a uniting element able to bring closer scientists who were publicly active (Łukasiewicz held the post of Minister for Religious Denominations and Public

Enlightenment in Jan Ignacy Paderewski's Government, the Vice-Rector and twice the Rector of Warsaw University) with modest teachers of comprehensive schools (Wajsberg, Słupecki), the well-to-do (like Lindenbaum) with rather less affluent (Tarski), members who differed regarding their social, political or religious backgrounds: Łukasiewicz and Sobociński were conservatives, Lindenbaum and Presburger inclined towards communism, some who were devout Catholics and others who were followers of Judaism or declared themselves atheists. Apart from Leśniewski, who remained reserved and withdrawn, the majority were persons of kind heart. Irrespective of the natural differences between them, all the members of the WSL were united by a common scholarly idea, charisma of their teachers, the awareness of their exceptionality and the role in the development of logic in the world.

6. The Greatest Achievements of the WSL

The fundamental methods of formal logic attained full maturity in the Warsaw School.

6.1. *The Rise and Research Into Propositional Logics*

There were many logical systems that were founded and formally investigated in the WSL. It is also here where a series of tools and techniques were created and developed to investigate the properties of the systems.

Łukasiewicz gave a new axiomatics for two-valued propositional logic and the completeness proof of this classical logical system. Inspired by the problem of logical value of sentences describing future contingent events, already formulated by Aristotle, he created the first many-valued systems of logic (1918-1920) (Jadacki, 2009). The discovery of these logics, chronologically preceding slightly that made by American logician Emil Post, should be regarded as one of the greatest achievements of Łukasiewicz. He also introduced a very convenient parenthesis-free notation, later called 'Polish symbolism', which is most useful in theoretical considerations.

The achievements of the WSL include also various technical results connected with seeking the easiest axiomatics of the propositional calculus. In 1935, Wajsberg discovered the criterion of finite axiomatizability of such logics. With regard to axiomatization of many-valued logics, historical results were also achieved by Sobociński (in 1936) and Słupecki (in 1939). The latter gave the criterion of definitional fullness of many-valued systems of propositional logic (in 1939).

The WSL gave rise to the idea of construing propositional calculi by the matrix method. It is here where the concept of adequate matrix was born and the theory of matrices was developed. The idea-givers behind this were Łukasiewicz, Tarski and Lindenbaum, who proved the theorem of existence of adequate matrices for any closed wrt substitution logics. Jaśkowski gave the criterion of construction of adequate matrix characteristic of intuitionistic logic (in 1936).

6.2. *Leśniewski's Systems*

Taking into consideration his own nominalistic views, Leśniewski created three original systems: protothetic (1929), ontology (1920) and mereology (1927-31) (Leśniewski, 1929; Leśniewski, 1930), which – in the researcher's intention – were to make a full logical system for the whole science, including mathematics. In the construction of these systems, in the reference to Husserl's idea of semantic category and the theory of logical types, and also in order to increase precision of his research, Leśniewski commenced studies on the theory of semantic/syntactic categories (developed later on by Ajdukiewicz). It made the foundation to formulate the concept of categorial grammar. Leśniewski introduced the distinction between object language and metalanguage, as well.

Significant outcome of the work on simplifying the axiomatics of Leśniewski's systems of ontology and protothetic were obtained by Sobociński. Tarski, under the influence of Leśniewski's mereology, dealt with geometry of solids and jointly with Woodger (in 1937) found an application

of mereology in the axiomatic framework of biology. Mereology is still applied in geometry, biology and linguistics, while Leśniewski's systems themselves offer an attractive object of interest on the part of logicians and philosophers not only in Poland.

6.3. Tarski's Achievements in the Field of Semantics and Methodology of Deductive Sciences

Tarski, inspired by Aristotelian tradition in philosophy and non-constructive manner of practicing foundations of mathematics in Poland, published in 1933 (first in Polish) his renown fundamental work on the notion of truth in languages of formalized sciences. This work was translated into German (1936), then English (1956), and next into many other languages (Tarski, 1933; Tarski, 1956). In it, Tarski formulated the semantic theory of truth constituting correct and substantively apt framework of the classical concept of truth.

Tarski proved as well, independently of Gödel, that a set of true expressions of consistent and sufficiently rich mathematical theory cannot be defined in the language of this theory. He introduced the notion of satisfaction by sequence of objects, which made the basic concept of theory of models. By that he laid the foundations of the model theory – one of the central parts of mathematical logic. Making reference to Bernard Bolzano, Tarski gave also the fundamental definition of logical consequence (expression A follows logically from the expressions of the set X if and only if each model of the set X is also a model of the expression A).

As a member of the WSL, Tarski significantly contributed to working out the foundations of syntax and semantics of formalized languages of deductive theories.

In 1930, based on two primitive notions: a well-formed expression and the consequence operation, Tarski built two axiomatic theories of deductive systems (general and a richer one for systems based on classical propositional logic). Within the two theories, he defined the conceptual apparatus relating to basic properties of deductive systems. Lindenbaum also took part in those studies and was the author of the so-called theorem of maximalization, which later in the 20th century became one of the most important tools of research on properties of logical systems.

6.4. Pioneering Studies on Alternative Forms of Formalization of Deductive System

Thanks to S. Jaśkowski's works, independent of G. Genzen, beside the purely axiomatic method of formalization of logical system, a new non-axiomatic method of characterizing such systems was introduced. It is called the natural deduction method and refers to the common natural practice of conducting proofs by mathematicians, but not only mathematicians. The method turns out to be very intuitive and useful in teaching. Later, it became helpful in computer-based testing of correctness of theorems proofs. Jaśkowski applied it not only to classical logic, but also to the intuitionistic one. A version of this method is the well-known method of semantic tables.

The axiomatic method can be complemented by the axiomatic method of rejecting non-acceptable or false expressions of a system. It leads to two-level formalization of the deductive system, on the one hand, as a system due to acceptance, *assertion system*, and, on the other hand, as a system with respect to rejection, *rejection/refutation system*. This dual form of formalization of the deductive system was introduced by Łukasiewicz and Śłupecki (1939). It was they who also initiated research dealing with saturation of the logical system, later called by Śłupecki its \perp -decidability. The two-level characterization of the logical system became with time a popularly applied method of its formalization and examination of its saturation.

6.5. History of Logic

Łukasiewicz revolutionized the history of logic, establishing the paradigm of studying it from the point of view of mathematical logic. His innovatory logical studies led to the statement that logic of the Stoics was the logic of sentences preceding Aristotle's logic and that it was a logic of "non-provable" forms treated as primitive rules of proving.

Another of Łukasiewicz's findings was the statement that Aristotle's logic was the first axiomatic system (even though a non-formalized one). Łukasiewicz formalized the assertoric logic of Aristotle and, together with Słupecki, characterized it also on the second level as a system wrt rejection/refutation (Łukasiewicz, 1939; Łukasiewicz, 1951). At the same time, he introduced into science the very notion of rejection of expressions itself and a new axiomatic rejection/refutation method.

6.6. A Mention of Other Achievements of The WSL

The above-mentioned outcomes achieved under the auspices of the WSL do not exhaust the repertoire of other significant ones, in particular those relating to relations arising between the very logical calculi and the relation of the calculi to different mathematical, algebraic, geometrical and topological structures.

Earlier, certain results connected with the foundations of mathematics and set theory were not mentioned. Still, some important results connected with elimination of quantifiers, with reference to the problem area of decidability of certain theories were obtained by members of the WSL (Tarski, Presburger, Mostowski). Also, studies were successfully conducted there, among others, on the strength and independence of the choice axiom (Tarski, Lindenbaum, Mostowski).

7. The Significance of the WSL in The History of Logic of the 20th Century

The WSL invested Polish logic of the interwar period with its unique tone. Warsaw was not the only center of logical research in Poland, though. Another important research institute in the field of mathematical logic and history of logic was based in Krakow. Nevertheless, the Krakow center never attained the rank comparable with that of the Warsaw School.

The WSL functioned until the outbreak of the Second World War in 1939. Thus, the development of Polish logic was broken at its peak moment. Shortly before the War, Leśniewski died. Also before the War, Tarski left Poland, emigrating to the United States. A few representatives of the WSL died as a result of wartime actions (Lindenbaum, Wajsberg, Presburger). After the War, Łukasiewicz settled in Dublin, Ireland, Lejewski in England, Sobociński in Notre Dame in the USA. Those who remained in Poland were Mostowski (Warsaw), Słupecki (first in Lublin, then Wrocław) and Jaśkowski (Toruń); they endeavored to cultivate the traditions of the WSL in the post-war Poland and in the new reality, yet were not able to achieve successes similar to those worked out by the WSL or ones which were obtained later in the renown California School founded by Tarski living in exile. Indeed, after the War, there was a new logical center established in Warsaw, managed by Andrzej Mostowski (his results concerning generalization of quantifiers are known especially well (Mostowski, 1957)). Continuing Tarski's work, Mostowski's centre studied set theory, model theory, decidability, algebraic and topological methods in logic; however, this research center differed considerably from the School which was founded by Łukasiewicz and Leśniewski and which was also almost as close to philosophy as it was to mathematics. Polish logic never regained the stature that it could boast of in pre-war days.

By 'Polish logic', I meant logic in the narrower sense of the word 'logic', i.e. mathematical logic. The term 'Polish logic' was coined by S. McCall (1967) to underline the great contribution of Polish logicians of the interwar period, in particular members of the WSL, to the development of world logic.

The WSL went down in the history of the 20th century, and its achievements, significance and influence on the world logic were and still are vitally valid.

The achievements of the logicians belonging to the WSL, in the days of the School's development and flourishing, attracted a great number of young people to study logic in Warsaw. It was at the level of master's theses that unprecedented results were achieved there (Wajsberg, Słupecki). Heinrich Scholz of Münster, in his *Geschichte der Logik* (published in 1931; (Scholz,

1931, p. 87) stated long before the outbreak of the War that “Warsaw became the main center of logical studies.”

In the lifetime of a generation, Polish logic grew from zero to top of international recognition. The significance of Polish logic of the interwar period was acknowledged already after the war by the authors of the well-known book *Foundations of Set Theory*, published in 1958 by A. Fraenkel, Y. Bar-Hillel and A. Levy (Fraenkel, Bar-Hillel, & Levy, 1958, p. 200). We can read in it, among others, that “Probably no other country, taking into account the size of its population, has contributed so greatly to the development of mathematical logic and foundations of mathematics as Poland” and that “this curious fact should be explained sociologically.”

The achievements of the WSL logicians have survived. They were specifically mentioned in the 400-page volume entitled *Polish Logic 1920-1939*, published by S. McCall (1967) It contains 17 articles by Polish logicians and with the exception of two of them, all were written by authors connected with the WSL. At more or less the same time, there came out Łukasiewicz’s *Selected Letters* (Łukasiewicz, 1961), edited and compiled by J. Śłupecki, in the Polish language (in 1961), and then in English (in 1970) – Łukasiewicz’s *Selected Works* (1970), edited by L. Borkowski. Half of them were Łukasiewicz’s letters from the interwar period.

In 1962, the well-known monograph *The Logical Systems of Leśniewski* was published by E.C. Luschei (Luschei, 1962). All the works by Leśniewski were translated into English and collected in (Leśniewski, 1992). It is worth noting here that although all the original works written by Leśniewski (their reprints) were collected and edited in two volumes by J.J. Jadacki (2015).

An extensive selection of Tarski’s works from the period of his activity in the WSL (the years 1923-1938) appeared in English under the title *Logic, Semantics, Metamathematics* (translated by J.H. Woodger) already in 1956; the year 1983 saw the second edition prepared by J. Corcoran enter the market (Tarski, 1956). Let us add that Tarski’s logical-philosophical letters “Prawda” [The Truth] and “Metalogika” [Metalogic] were published by J. Zygmunt in Polish in 1955 (Volume 1) and 2001 (Volume 2) (Tarski, 1995).

Thus, works by the creators of the WSL: J. Łukasiewicz and S. Leśniewski and their outstanding disciple A. Tarski, as well as those by other disciples of the founders of the School, are now widely available. Owing to this, reaching for the works of representatives of the WSL, one can discover and appreciate anew the significance of the School of Polish logic in the 20th century, as well as find stimulation not only to solidify this significance, but also to work out solutions to new logical problems that arise.

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Notes

1. For the needs of this the study I made use of materials dealing with the Lviv-Warsaw School of Logic, the Warsaw School of Logic and Polish logic found in the following: (Słupecki, 1972), (Tkaczyk, Wybraniec-Skardowska, 2011), (Woleński, 1985), (Woleński,1985), (Woleński, 2015), (Woleński, 2009), (Jadacki, 2009), (Jadacki, Paśniczek, 2006), (Burdman Feferman, Feferman, 2004), (Wybraniec-Skardowska, 2009), (Wybraniec-Skardowska, 2018), (Zygmunt, 1998).