

# Content

Andrew Schumann

*Introduction* .....1

Roman Murawski

*Proof vs Truth in Mathematics*.....13

Jean-Yves Beziau

*The Mystery of the Fifth Logical Notion (Alice in the Wonderful Land of Logical Notions)*.....27

Kazimierz Trzęsicki

*Idea of Artificial Intelligence*.....53

Alexandre Costa-Leite & Edalcio G. de Souza

*Conjunctive and Disjunctive Limits: Abstract Logics and Modal Operators*.....99

Fabien Schang

*A Judgmental Reconstruction of Some of Professor Woleński's Logical and Philosophical Writings*.....109

Jens Lemanski & Michał Dobrzański

*Reism, Concretism and Schopenhauer Diagrams*.....163

Tomasz Jarmużek & Mateusz Klonowski & Rafał Palczewski

*Deontic Relationship in the Context of Jan Woleński's Metaethical Naturalism*.....191

Jerzy Pogonowski	
<i>A Note on Intended and Standard Models</i> .....	211
Janusz Kaczmarek	
<i>About Some New Methods of Analytical Philosophy. Formalization, De-formalization and Topological Hermeneutics</i> .....	227
Stanisław Krajewski	
<i>Anti-foundationalist Philosophy of Mathematics and Mathematical Proofs</i> .....	251
Marcin Trepczyński	
<i>Necessity and Determinism in Robert Grosseteste's De libero arbitrio</i> .....	269
Wojciech Krysztofiak	
<i>Logical Consequence Operators and Etatism</i> .....	289
Marek Zirk-Sadowski	
<i>The Normative Permission and Legal Utterances</i> .....	319

# Introduction

*Andrew Schumann*

University of Information Technology and  
Management in Rzeszow,  
Sucharskiego 2  
35-225 Rzeszow  
Poland

*e-mail:* [aschumann@wsiz.edu.pl](mailto:aschumann@wsiz.edu.pl)

“Abraham begat Isaac; and Isaac begat Jacob; and Jacob begat Judas and his brethren; and Judas begat Phares and Zara of Thamar; and Phares begat Esrom; and Esrom begat Aram...” (*Matthew* 1:2–3). It is the beginning of the Gospel according to Matthew. It is a known sample of sacral genealogy in Christianity. Georg Wilhelm Friedrich Hegel (1770 – 1831) showed that philosophical ideas have their own genealogy, too. Moreover, each actual philosophical idea is nothing more than its true genealogy in the retrospective view or its long history in the perspective view, i.e. each idea is a development and transition from the state *an sich* (in itself) to the state *für sich* (for itself) [2] and it can be revealed only genealogically from the end of transition process or historically from the beginning of transition process.

Later Paul-Michel Foucault (1926 – 1984) presented genealogy as necessary method of philosophical analysis as such. According to him, each cultural or social phenomenon can be philosophically investigated only through its genealogical reconstruction. He started to distinguish between the epistemological level of knowledge presenting what is now and the genealogical reconstruction of existences. The genealogical reconstruction was called by him the “archaeological level of knowledge”. It is one of the core objectives of philosophy:

(...) archaeology, addressing itself to the general space of knowledge, to its configurations, and to the mode of being

of the things that appear in it, defines systems of simultaneity, as well as the series of mutations necessary and sufficient to circumscribe the threshold of a new positivity [1, p. xxv].

A genealogical reconstruction of ideas or looking for an archaeological level of knowledge can be found in logic, too. It means that logical ideas might be explicated through their genealogical analysis as well. Each significant logical theorem has some preliminary steps established by some proved propositions and these propositions constitute an inner history of the given theorem. Furthermore, we can focus on some philosophical intuitions and metatheoretical frameworks needed for formulating and proving this theorem. They also are a part of genealogical reconstruction within this theorem. Hence, a thorough understanding of logical statements implies an archaeological level of logic.

Jan Woleński (also known as Jan Hertrich-Woleński) was born 21 September 1940, in the same year as my father. From 1958 to 1963 he studied law at the Jagiellonian University and then from 1960 to 1964 philosophy at the same university. From the outset, his interest to logic was accompanied by analyzing the archaeological level of Polish logical tradition. Perhaps, it can be explained by his first law background – he tried to understand a copyright status of logical ideas through a reconstruction of genealogical trees of logical statements and concepts. He assembles a unique home library of logical works all his life and he remembers the names of all Polish logicians in the history of Poland. He became the grand master in explicating the archaeological level of Polish logic.

In the beginning of 20<sup>th</sup> century, the tradition of Polish logic was accumulated by the Lviv-Warsaw School (its former name was the Lvov-Warsaw School, its current name in Polish: *Szkoła Lwowsko-Warszawska*). Its most famous members are presented by Kazimierz Ajdukiewicz, Tadeusz Kotarbiński, Stanisław Leśniewski, Jan Łukasiewicz, and Alfred Tarski. Woleński showed that the Lviv-Warsaw School was an analytical school similar to the Vienna Circle in many respects [17]. In numerous papers, he reconstructed the archaeological level of logic for this school [11], [12], [13]. In his edited volumes [8], [9], [21], he popularized the history of this school among logicians. And in his monographs [14], [16], he presented an exhaustive review of the school. It is worth noting that in his recent

project ‘*Lexicon of Polish Logicians 1900 – 1939*’ (*Leksykon polskich logików 1900-1939*) supported by the grant from the Ministry of Science and Higher Education of Poland (0411/NPRH7/H30/86/2019 on the day of 02.10.2019), he is going to give a complete genealogical analysis of Polish logical ideas from 1900 to 1939. It will be a wonderful pearl of his many-years efforts in studying the history of Polish logic.

Woleński proved that within the archaeological level of Polish logic, Alfred Tarski (1901 – 1983) [10] is the most important logician. His semantic theory of truth [7], [19], [20], on the one hand, was “inspired by the Aristotelian tradition in philosophy, as well as the non-constructive style of working on the foundations of mathematics that was prevailed in Poland” [17], i.e. this theory has a reach genealogy in fact, and, on the other hand, this theory has a reach history after Tarski, too – many logicians follow this approach until now. An appropriate genealogy and history, as well as a complete explication, of Tarskian epistemological ideas are given in the following fundamental book of Jan Woleński: [18].

Tarski paid attention that the concept of truth must be defined for a definite formalized language  $L$ , but the definition itself should be formulated in the metalanguage  $ML$  [17], [20]. In the meanwhile, the definition should be formally correct, materially adequate, and satisfy a maximality of the set of truths in a given language  $L$ :

A sentence  $A$  of a language  $L$  is true if and only if it is satisfied by all infinite sequences of objects taken from the universe of discourse [17].

The Tarskian semantic theory of truth is explicated by Woleński in many papers and books [15], [21], [22].

I have to confess that Woleński's approach to genealogical analysis of logic inspired me to formulate my own research program of archaeology of logic. In this program we focus on studies of the history of early symbolic logic and its origin. According to these studies, symbolic logic was established in Babylonia [3], [4], [5]. Then it was developed in two concurrent branches: (1) within the Aramaic-Hebrew culture continued by the Talmud and Talmudic *middot* (logical inference rules for the Talmudic hermeneutics); (2) within the Greek logic presenting the Aristotelian syllogistic and the Stoic propositional logic. Then the Stoic logic had many impacts on

establishing Nyāya logic [6]. The point is that Nyāya appeared in Gandhāra in the 2nd century A.D. at the time of Kaṇiṣka the Great. At this time the political elite remained Hellenized and the Greek language was official for more than 400 years before.

In this volume, there are collected new research papers devoted to judgments and truth. These papers take measure of the scope and impact of Woleński's views on truth conceptions, and present new contributions to the field of philosophy and logic. In *'Proof vs Truth in Mathematics'*, by Roman Murawski, relations between proofs and truth are analyzed. In *'The Mystery of the Fifth Logical Notion (Alice in the Wonderful Land of Logical Notions)'*, Jean-Yves Beziau discusses a theory presented in a posthumous paper by Alfred Tarski entitled *'What are logical notions?'*. In *'Idea of Artificial Intelligence'*, Kazimierz Trzęsicki gets the trace back on the development of Lullus's art, *ars combinatoria*, i.e. the author demonstrates a genealogical analysis of abstract machines. The paper *'Conjunctive and Disjunctive Limits: Abstract Logics and Modal Operators'*, by Alexandre Costa-Leite and Edelcio G. de Souza, introduces two concepts: conjunctive and disjunctive limits, to formalize levels of modal operators. In *'A Judgmental Reconstruction of Some of Professor Wolenski's Logical and Philosophical Writings'*, Fabien Schang concentrates on the nature of truth-values and their multiple uses in philosophy to genealogically explicate different means of using truth concepts. In *'Reism, Concretism and Schopenhauer Diagrams'*, Jens Lemanski and Michał Dobrzański showed that, according to Kazimierz Ajdukiewicz and Jan Woleński, there are two dimensions with which the abstract expression of reism can be made concrete: the ontological dimension and the semantic dimension. In *'Deontic Relationship in the Context of Jan Woleński's Metaethical Naturalism'*, Tomasz Jarmużek, Mateusz Klonowski, and Rafał Palczewski indicate how Jan Woleński's non-linguistic concept of norm allows us to clarify the deontic relationship between sentences and the given normative system. In *'A Note on Intended and Standard Models'* Jerzy Pogonowski discusses some problems concerning intended, standard, and non-standard models of mathematical theories with Woleński's views on these issues. In *'About Some New Methods of Analytical Philosophy. Formalization, De-formalization and Topological Hermeneutics'*, Janusz Kaczmarek continues the characteristics of philosophical methods specific to analytical philosophy, which were and are important for Jan

Woleński. In *'Anti-foundationalist Philosophy of Mathematics and Mathematical Proofs'*, Stanisław Krajewski shows some main features of real proofs, such as being convincing, understandable, and explanatory. In *'Necessity and Determinism in Robert Grosseteste's De libero arbitrio'* Marcin Trepczyński follows the genealogical approach of Woleński and demonstrates that Robert Grosseteste's theory is still relevant and useful in contemporary debates, as it can provide strong arguments and enrich discussions, thanks to the two-perspectives approach, which generates some positions on the spectrum of determinism and indeterminism. In *'Logical Consequence Operators and Etatism'*, by Wojciech Krysztofiak, there is presented the theory of logical consequence operators indexed with taboo functions to describe logical inferences in the environment of forbidden sentences. In *'The Normative Permission and Legal Utterances'* Marek Zirk-Sadowski proves that rejecting the existence of permissive norms and limitation of norms to prohibitions and commands alone is possible only with reducing the idea of function.

### **Acknowledgements**

I am thankful to Jan Woleński for our fruitful friendship and I wish him many congratulations on the occasion of the 80th anniversary of his birth.

This volume was first published as an issue of *Studia Humana* (9, 3/4, 2020).

### **References**

1. Foucault, M. *The Order of Things. An archaeology of the human sciences*, Taylor and Francis e-Library, 2005.
2. Hegel, G. W. F. *Vorlesungen über die Geschichte der Philosophie*, Erster Teil, Berlin: CreateSpace Independent Publishing Platform, 2013.
3. Schumann, A. Did the Neo-Babylonians Construct a Symbolic Logic for Legal Proceedings? *Journal of Applied Logics* 6(1), 2019, pp. 31-81.
4. Schumann, A. Legal Argumentation in Mesopotamia since Ur III, *Journal of Argumentation in Context* 9(2), 2020, pp. 243-282.
5. Schumann, A. On the Babylonian Origin of Symbolic Logic, *Studia Humana* 6(2), 2017, pp. 126-154.

6. Schumann, A. On the Origin of Indian Logic from the Viewpoint of the Pāli Canon, *Logica Universalis* 13(3), 2019, pp. 347-393.
7. Tarski, A., J. Tarski, and J. Woleński. Some Current Problems in Metamathematics, *History and Philosophy of Logic* 16, 1995, pp. 159-168.
8. Woleński, J. (ed.). *Kotarbinski: Logic, Semantics and Ontology*, Dordrecht, Boston: Kluwer Academic Publishers, 1990.
9. Woleński, J. (ed.). *Philosophical Logic in Poland*, Dordrecht, Boston: Kluwer Academic Publishers, 1994.
10. Woleński, J. Alfred Tarski (1901-1983), In A. Garrido and U. Wybraniec-Skardowska (eds.), *The Lvov-Warsaw School. Past and Present*, Basel: Birkhäuser, 2018, pp. 361-371.
11. Woleński, J. *Essays in the History of Logic and Logical Philosophy*, Cracov: Jagiellonian University Press, 1999.
12. Woleński, J. *Essays on Logic and Its Applications in Philosophy*, Frankfurt am Main: Peter Lang GmbH, Internationaler Verlag der Wissenschaften, 2011.
13. Woleński, J. *Historico-Philosophical Essays*, vol. 1, Kraków: Copernicus Center Press, 2013.
14. Woleński, J. *L'école de Lvov-Varsovie: Philosophie et logique en Pologne (1895-1939)*, Paris: Vrin, 2012.
15. Woleński, J. *Logic and Its Philosophy*, Berlin: Peter Lang, 2018.
16. Woleński, J. *Logic and Philosophy in the Lvov-Warsaw School*, Dordrecht, Boston: Kluwer Academic Publishers, 1989.
17. Woleński, J. Lvov-Warsaw School, *Stanford Encyclopedia of Philosophy*, <https://plato.stanford.edu/entries/lvov-warsaw/>, 2020.
18. Woleński, J. *Semantics and Truth*, Heidelberg: Springer Nature, 2019.
19. Woleński, J. Some Philosophical Aspects of Semantic Theory of Truth, In A. Garrido and U. Wybraniec-Skardowska (eds.), *The Lvov-Warsaw School. Past and Present*, Basel: Birkhäuser, 2018, pp. 373-389.
20. Woleński, J. The Semantic Theory of Truth, *The Internet Encyclopedia of Philosophy*, <https://www.iep.utm.edu/s-truth/>, 2020.
21. Woleński, J., E. Köhler (eds.). *Alfred Tarski and the Vienna circle: Austro-Polish Connections in Logical Empiricism*, Dordrecht, Boston: Kluwer Academic Publishers, 1999.



22. Woleński, J., I. Niiniluoto, M. Sintonen (eds.). *Handbook of Epistemology*, Dordrecht, Boston: Kluwer Academic Publishers, 2004.



Prof. Jan Woleński at the Award of the Foundation for Polish Science (2013),  
© <https://www.fnp.org.pl/>



Prof. Jan Woleński at awarding the title of Doctor Honoris Causa of Lodz University (2020),  
© <https://www.uni.lodz.pl/>



Prof. Jan Woleński meets Prof. Saul Kripke (2017),  
© Jan Woleński



Prof. Jan Woleński visits the monument 'Broken Hearth' installed on a former Jewish cemetery in Minsk (Belarus) as a memorial tribute to the victims of Nazism who died in a ghetto during the World War II (2016),  
© Andrew Schumann

