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TWARDOWSKI ON TRUTH¹

1. THE IMPORTANCE OF TWARDOWSKI

Of those students of Franz Brentano who went on to become professional philosophers, Kazimierz Twardowski (1866-1938) is much less well-known than his older contemporaries Edmund Husserl and Alexius Meinong. Yet in terms of the importance of his contribution to the history of philosophy, he ranks among Brentano's students behind at most those two, possibly only behind Husserl. Notice that I did not say "the history of philosophy in Poland" but "the history of philosophy". This may seem surprising for a philosopher whose writings and even name are very little known outside his native country. The only work of Twardowski likely to be known at all is his 1894 Vienna Habilitationsschrift *Zur Lehre vom Inhalt und Gegenstand der Vorstellungen* [*On the Content and Object of Presentations*], which strongly and decisively influenced both Meinong and Husserl in their accounts of the structure of intentionality. That work was translated into English by Reinhardt Grossmann and published in 1977. I share his estimation (echoing that of Findlay²) that it is one of the most accomplished short monographs in all philosophy and deserves to be considered a classic. It disambiguates Brentano's 1874 work on intentionality, distinguishing the content of an idea from its object, supporting the distinction with examples and arguments, and cementing it terminologically. It does for content and object what Frege had done for sense and reference just two years earlier. It

is written with limpid clarity, an abiding feature of Twardowski's work. Important as it is for the immediate history however, it is not the main reason why Twardowski is so important.³ That importance rests in no small part on Twardowski's teaching and organizational activity, carried out after he took up his *Extraordinariat* in Lwów in 1895 at the age of 29 and until his retirement in the 1930s. Twardowski found philosophy in Poland in a parlous state. Up until 1918 philosophy in Poland was essentially confined to two centres, Kraków and Lwów in Austrian-administered Galicia, where instruction in Polish was allowed. In Warsaw, where some higher education was permitted in Russian, though the University had been closed then reopened as a non-university then Russified following the abortive uprisings of 1830 and 1863, Henryk Struve, the only philosopher of note, emigrated to Britain in 1903 and that, until the Germans reopened the University in 1915, was philosophically that. According to Władysław Tatarkiewicz's *Zarys dziejów filozofii w Polsce* [*A Brief History of Philosophy in Poland*], published in 1948⁴ (Tatarkiewicz was yet another former Twardowski student), Polish philosophy in the 19th century had been an eclectic mixture of Scottish common sense philosophy, Kantianism, a romantic nationalistic Messianism and after 1863 what was known as Warsaw Positivism. None of it was of international standard. Twardowski saw that to promote good academic (Brentanian) philosophy in Poland he would have to sacrifice his career as a writer for one as a teacher and organiser, and his unparalleled influence on the philosophical life of a nation bears testimony to his success. Within twenty years he had gathered a cohort of the best students round him in Lwów, who would after the war go on to people thirty chairs, including ten of philosophy, around the Second Republic, making Poland one of the chief centres of scientific-analytic philosophy in the world, and *the* world centre of mathematical logic. All this is well documented.⁵

Nevertheless, the chief contribution of Twardowski to *global* philosophy came indirectly, through the influence of his theory of truth on his students, and they on their students, and so on. The most important of these grandstudents is one whom Twardowski presumably knew but never taught, and whose adopted name is obtained by deleting four letters from his own: Tarski.

2. FROM TWARDOWSKI TO TARSKI

In 1989 Jan Woleński and I published an essay, 'De veritate', in which we traced in some detail the history of the theory of truth in Polish philosophy from Brentano to Tarski.⁶ A key role in this was played by Twardowski, but we should have begun earlier, because although Twardowski rightly regarded Brentano as his principal teacher, his supervisor in Vienna was Robert Zimmermann, whose mentor in his youth had been Bernard Bolzano. Twardowski also knew of Bolzano through his reading of Benno Kerry, and in *Inhalt und Gegenstand* Bolzano's name occurs as often as that of Brentano. Here however I want just to outline briefly the development of the theory of truth in Polish philosophy and logic between Twardowski and Tarski. I shall not be considering Tarski's theory itself. Leaving Twardowski until the next section, let's look at the intermediate links. They are principally Tarski's teachers Jan Łukasiewicz and Stanisław Leśniewski, both of whom took their doctorates under Twardowski in Lwów before the war, and both of whom became professors of logic in Warsaw after it. Clearly for anyone interested in logic, truth is a central concept, but in pre-war Polish philosophy truth became a topic of investigation in its own right. Łukasiewicz investigated the status of the logical laws of contradiction⁷ and excluded middle and concluded from his studies of Aristotle and Meinong that both principles were subsidiary and lacking in self-evidence. Already mentally prepared for the move by this groundwork, in analysing the problems of future contingents he came up with his three-valued logic, rapidly generalizing the idea to more values. In 1913 Leśniewski and another Twardowski student Tadeusz Kotarbiński debated the similar idea that propositions about future events do not have a truth-value until the events come to pass or not, Leśniewski persuading Kotarbiński that even future tense propositions have a determinate and unvarying truth-value, and that this is compatible with freedom of action.⁸ These discussions and Łukasiewicz's adoption of the Fregean term 'truth-value' conspired to keep the issue of truth in the foreground of methodological discussion, and in Kotarbiński's popular 1929 textbook *Elementy teorii poznania, logiki formalnej i metodologii nauk* [*The Elements of Epistemology, Formal Logic, and Methodology of Science*] there is a general discussion of the correspondence and pragmatist ('utilitarian') theories of truth whose terminology influenced Tarski. Another influence on

Tarski, of which I only recently became aware following investigative work by Arianna Betti, is that of Kazimierz Ajdukiewicz, whose work on satisfaction in his 1921 Habilitationsschrift *Z metodologii nauk dedukcyjnych*, [*On the Methodology of the Deductive Sciences*]⁹ paved the way for Tarski's more technical adaptation of the concept in *The Concept of Truth*. Ajdukiewicz was another of Twardowski's pre-war students, and by marrying Twardowski's youngest daughter Maria also became his son-in-law. We may then say that the philosophical status of the theory of truth was that of an area widely discussed within the Lvov-Warsaw school. Tarski's particular achievements, of finding an acceptable account of satisfaction to enable truth to be defined for a wide range of formal languages, of setting forth conditions sufficient to eliminate semantic paradoxes, and of outlining the limits of definability of truth, are in no way diminished by recognizing that he built on solid extant work by his Polish predecessors.

A final and crucial point must be emphasized which has tended to be obscured in later commentary on Tarski's work, particularly by those who view Tarski's writings of the 1930s and 1940s through the lens of his later work on model theory, most especially the joint work of 1957 with Robert Vaught.¹⁰ This is that Tarski does not define truth relative to a model, or on an interpretation, but truth *simpliciter*. In this he is following, perhaps without even reflecting about it, the methodological lead set by Twardowski in 1900. To this we now turn.

3. ON SO-CALLED RELATIVE TRUTHS

In 1364 Poland's King Kazimierz III set up an academy in his capital Kraków. In 1400 it was raised by the Pope to the status of a University following a petition by King Władysław II Jagiełło and Queen Jagdwiga, who donated all her jewelry to finance its beginnings. The half-millennium of this establishment, known since 1817 as the Jagiellonian University, was celebrated in 1900, and to mark this the University of Lwów produced a *Festschrift* for its older sister. Twardowski, who after 1895 tended to publish only in response to requests, produced a characteristically clear and trenchant essay with the title 'O tak zwanych prawdach względnych', 'On so-called relative truths'.¹¹ This was doubly inaccessible to non-Poles, being in Polish and in an obscure publica-

tion. These limitations were rectified by a translation into German (not by Twardowski himself), which appeared as ‘Über sogenannte relative Wahrheiten’ in *Archiv für systematische Philosophie* in 1902. Nevertheless I am unaware of citations by German speaking philosophers from this time, so its influence seems to have been confined to Poland. The English translation by Arthur Szylewicz appeared only in 1999.

In the essay Twardowski had but a single aim: to demolish the idea that truth is relative, which he considered was at that time the majority opinion. By ‘a relative truth’ Twardowski meant something—let’s call it for now neutrally a truth-bearer—that is true in some circumstances and false in others, so its truth is not absolute but relative to those circumstances in which it is true. As examples he gives or alludes to the following:

- (a) The scent of this flower is pleasant
- (b) It’s raining
- (c) I am married
- (d) I have received a letter from father
- (e) Cold baths are healthy
- (f) It is morally acceptable to kill defective infants

There are several reasons why these may be held to be relatively true. In the case of bald generalizations, like ‘Cold baths are healthy’, it may arise through equivocation: the particular generalization ‘Some cold baths are healthy’ is absolutely true while the universal generalization ‘All cold baths are healthy’ is absolutely false. The majoritative generalization ‘Most cold baths are healthy’ is absolutely true or absolutely false even if we don’t know which. Bald generalizations equivocate among these precise readings, and thus give the appearance of varying in truth-value. The lesson here is the logical commonplace that we should express ourselves unambiguously. Twardowski rejects the view that empirical hypotheses have a truth-value relative to our evidence, which he argues confuses truth with probability. He also argues that relativism does not follow from sceptical doubts, and in rebutting radical scepticism writes, “subjective relativism can be consistently maintained

only under one condition—denial of the Principle of Contradiction.” (163).¹² This principle and its sister, the Law of Excluded Middle, were to become matters of obsession for several of his students.

The most interesting argument however concerns those cases—the majority of Twardowski’s examples—where the sentences in question involve what we now call an indexical expression (such as tense, personal and other pronouns) and/or rely for their understanding on some other feature of the situation such as where the sentence is uttered, by whom, to whom etc. Twardowski’s argument is in all cases the same: that the sentence (Polish *zdanie*) is an incomplete or elliptical expression of the proper truth-bearer, which is a judgement (*sąd*). Because language has to perform the function of efficient communication, it relies on cues from the situation of utterance of a sentence to enable speaker and hearer to communicate without needing to put all those situational cues into words. For example, if a speaker says ‘It’s raining’, those who hear this statement can fill in the details to coordinate their judgements with that of the speaker and understand where and when it is said to be raining. In the case in question Twardowski envisages the following as an example of a possible fully adequate expression of the judgement:¹³

On 1 March 1900 according to the Gregorian calendar, at noon Central European Time, it is raining in Lwów on High Castle Hill and in its vicinity.

According to Twardowski then, the proper (adequate) expression of the judgement requires the elimination of any source of equivocation that could affect the truth-value. This solution to the problem amounts to the claim that a judgement as such is, when properly understood, wholly decontextualized. It is a position close to that adopted prior to Twardowski by Bolzano, who calls the truth-bearer that is decontextualized and considered independently of its being actually thought or spoken a *Satz an sich* or proposition-in-itself. As one of the few people around at this time to have read Bolzano’s *Wissenschaftslehre*, in which the theory is put forward with emphasis and in detail, Twardowski cannot have failed to be aware of Bolzano’s view, though he does not mention him. Husserl and Meinong were still in the process of formulating their own similar views, which had not yet been published at the time, so Twardowski’s work and theirs were convergent.

All the examples are treated in the same way, even though the sources of equivocation vary. For example, the sentence about the moral acceptability of infanticide may have expressed a true judgement in the circumstances of ancient Sparta, but in the radically different circumstances of 20th century Europe the same sentence would express a false judgement. In ‘The scent of this flower is pleasant’ there are several sources of ambiguity, e.g. whether it is the species of flower or the individual exemplar which is meant, whether the scent is pleasant to people in general or to the speaker, whether always, or at the time of speaking.

The effect of Twardowski’s adopting this position was to cement the idea of the absoluteness of truth as the default position in Polish philosophy and logic, against which the limited temporal relativism of Łukasiewicz and Kotarbiński constituted definite deviations. Nevertheless the subsequent development led away from Twardowski in one important respect. Like his teacher Brentano, Twardowski took the primary truth-bearers to be judgements, which are episodic mental acts. Though he had the distinction between object and content in hand for ideas, Twardowski in 1894 had not clearly applied the distinction to judgement-contents and special judgement-objects, as Husserl and Meinong were in the process of doing.¹⁴ So when Twardowski says that the adequate expression of a judgement requires something that is context-free, complete, and unambiguous, it is to be assumed that this context-free something may be identified with the content of the judgement rather than the judgement as a specific mental occurrence. In a word, the content of a judgement is a proposition, not an act. Twardowski however does not say this, but continues to call truths and falsehoods simply judgements. Indeed he opens the essay by saying baldly, “The term ‘a truth’ designates a true judgement.” (147) This terminology was soon to be ousted in the Lvov-Warsaw school. From Łukasiewicz onwards, the primary truth-bearers are taken to be linguistic items, sentences. This coincides with the movement away from mental items as logical tokens under the influence of Husserl’s and Frege’s anti-psychologism, which was expressly propagated in Poland by Łukasiewicz. The shift has been exhaustively documented by the late Artur Rojczak.¹⁵ A tendency to radical nominalism, most notably in Tarski’s supervisor Leśniewski, meant that Bolzanian propositions were generally unlikely to be taken as primary truth-bearers, and although

Tarski did slide some way back towards Platonism by taking the truth-bearers to be sentence-types rather than tokens, he did so apologetically. Nevertheless, Twardowski’s argument that sentences (whether type or token) fail to unambiguously express a single meaning was ignored in Tarski’s essay. Tarski could afford to leave the problem on the side because of his self-imposed restriction to the languages of deductive science—mathematics and logic—where it was generally agreed that context plays no role. That did not stop Tarski from ill-advisedly slipping in an indexical sentence, ‘It’s snowing’, as an example. I think the switch from psychological to linguistic truth-bearers by Łukasiewicz and the rest was a philosophical error, and that Twardowski was right to take judgements or something closely associated with them as primary truth-bearers.

4. APPRAISAL OF TWARDOWSKI’S THEORY

There are I think at least two reasons to think that Twardowski’s strategy for securing absolute truth will not work. The first is that judgements do not phenomenologically exhibit the completion that he requires. Indeed, if anything, judgements are *more* saturated with indexicality and contextuality than spoken or written sentences, since the subject is under no obligation to make context clear to another party. The other and not unrelated reason is that it is perfectly possible to concur in judgement with another person without either the speaker or the hearer being *able* to complete the judgement-content in the way Twardowski envisages. For example, I can happily agree with my friend that it’s raining even though neither of us knows where we are or what time or even date it is, for example if we have both been teleported to a random location, or, less exotically, have both emerged blinking from a long night’s sleep on the trans-Siberian railway. Although a completion in principle is possible, and since we are together in space and time it will be the same completion for each of us, a theory that renders the judgement-content so radically inaccessible to the subject cannot be favoured if a better alternative is available. At any rate, the resulting theory is no better off than any propositional theory, incurring the same ontological commitments to questionably accessible Platonic propositions as the theories of Frege or Bolzano. If possible a better way to

preserve the absoluteness of truth is preferable.

Fortunately a better way is available.¹⁶ It concurs with Twardowski that the primary truth-bearers are mental acts, judgings or other acts of meaning or understanding. Indeed it embraces their particularity, accepting that as events their place and time of occurrence are intrinsic to them, so their contextuality is built in to their essence. The trick is to exploit this built-in contextuality while maintaining the absoluteness of truth. Here is how we deal with a judgement that it's raining:

For all S, J, P and T: if J is a judgement made by subject S at time T and in place P to the effect that it is raining, **then** J is true if and only if it is raining in place P at time T.

I will draw attention to six things about this. Firstly, it gives truth-conditions for the unique, dated and located *judgement*, not for any type or token sentence, nor for a timeless abstract proposition. Secondly, the truth-predicate applies or fails to apply *absolutely*: even though the relevant clause is embedded within the scope of a quantifier binding several variables, any judgement itself thus specified is true *simpliciter* if its condition is satisfied and false *simpliciter* if it is not. Thirdly, the account is *conditional*: it gives the truth-condition *if* there is such a judgement. There need not be. In the middle of a rainstorm that no one experiences or finds out about, it is still raining, but there is no *truth* to the effect that it is raining there and then. Semantic ascent involving truth does not work. There are ways the world is—the majority in fact—for which there is never a corresponding truth. From a nominalistic point of view, that is correct and welcome, indeed it is little more than common sense realism. Of course in any particular case in which the world is a certain way, if we uniquely specify what that way is, we need to use a meaningful sentence to do so, and any correct meaning or understanding of this sentence *will* be a truth. There are no unexperienced truths, but there are unexperienced items capable of being truthmakers, just as there are no unexperienced perceptions but there are unexperienced things capable of being perceived. Fourthly, notice that the outer quantifiers, which deal with the contextuality, render it impossible to express context-free Tarski-biconditionals. To those accustomed to assuming that truth is necessarily characterized by Tarski biconditionals, of the form

X is true if and only if *p*

where '*X*' names a sentence that '*p*' translates (in the simplest possible case a quotation of the same sentence) this may come as a shock. But it really only makes sense to those who accept timeless propositions, or some other abstract entities, and this I am deliberately avoiding. Fifthly, for this reason, the contextual truth-conditions for given judgements will not follow a single scheme but will vary according to the contextual elements pertaining to the judgement in question. There will be various kinds of case, but not a single formula as in Tarski. This again is to be expected, once we leave the safe refuge of mathematics and logic. But notice that we also avoid commitment to ontologically questionable indices such as possible worlds, times and places, required by Tarski-inspired model-theoretic accounts of indexicality like that of Montague. The approach is compatible with nominalism.¹⁷ Finally, notice that the potentially slippery expression "to the effect that" bridges the gap between a judgement which may or may not itself be expressed in words by the subject or anyone else, and what the judgement "says" or conveys to the judge herself. That we in our metalinguistic role are constrained to use a language to put this into words is simply a feature of the fact that we have to use language to express the content of mental acts. This role and the limits of its significance were adroitly described in Peter Geach's 1957 monograph *Mental Acts*.¹⁸ In cases like this the appropriate forms of words themselves involve indexicals. Indexicality is a pervasive feature of language as well as thought. We seek not to eliminate it, but to understand how it works, and in particular, why it does not threaten the absoluteness of truth.

In accounting for the absoluteness of truths involving contextual elements, Twardowski faced a theoretical choice, one whose nature has become clear only much more recently. One path was to regard the judgement itself, as distinct from its usually skeletal linguistic expressions, as containing all the elements necessary for decontextualization and so ensuring the absoluteness of truth (or falsehood). Despite some residual unclarity, that appears to be the position he adopted. It is a form of what we would now call internalism. All the required elements are inherent in the judgement itself, even if perhaps not all are phenomenologically accessible. This is not surprising, since it was the default position in the Brentano school, and can be witnessed in similar and more transparent form in Husserl and Meinong. As I have indi-

cated, it takes Twardowski into territory already scouted by Bolzano. I think however that Twardowski's stress on the situated judgement as truth-bearer could and more importantly should have led in another direction. This is to take the indexical and contextual elements of most judgements to come not from the judgement itself but precisely from its context, so that the truth or falsehood of a judgement is jointly determined by not two but three kinds of factor: (1) the expressible content of the judgement, what it "in effect says", which we render into words, (2) the contextual elements, indicated or not, and (3) the way the world is. The contextual elements are external to the judgement's content, so this is a form of externalism. Twardowski's position comes from imagining those contextual elements being descriptively represented in the judgement content, whereas they remain on our theory external to it, being merely indicated in the case of expressed indexical parts of the content, and unexpressed in other cases. When a subject involuntarily cognitively acknowledges pain, in fact caused by stubbing his toe on a chair leg, the time, place and bearer of the subjective judgement are no part of the content, but they conspire to make the judgement one that is made true by that very pain.

5. LATER TWARDOWSKI ON TRUTH: THE EPISTEMOLOGY LECTURES

In lectures on the theory of knowledge from 1925, recently published in English translation,¹⁹ Twardowski demonstrates that the theory of truth remained an important topic for him in his later career, even though he did not publish on it. Nearly all of the lecture course is in fact about theories of truth. Twardowski discusses standard accounts such as the correspondence, coherence and pragmatist theory, mentioning in the last case James and Schiller. Most of the treatment is straightforward. However I will mention two points. Firstly, after discussing Aristotle and the Scholastic tradition on correspondence, and making the usual noises about the unclarity of the idea of correspondence, Twardowski treats the correspondence theory principally from the point of view of Russell's *Problems of Philosophy*. Apart from showing his awareness of contemporary British philosophy and some grasp of English, he makes a perceptive comparison that I do not recall finding elsewhere. In a Russellian fact, a universal and one or more particulars *are together* in

a certain way. In a judgement to this effect, the judgement and the constituents of the fact are together in another way (he is describing Russell's multiple relation theory of judging). As Twardowski points out, this is structurally very like the Aristotelian–Scholastic treatment according to which a true judgement is one which thinks together what is really together or thinks apart what is really apart. Modulo the differences made by having relations rather than always subject and predicate, Twardowski's point appears to me to be correct and interesting.

While we are considering subject and predicate, Twardowski reviews with sympathy and basically accepts what he calls the *idiogenic* theory of Brentano, according to which judgements consist in the acceptance or rejection of the object or objects intended by a simple or complex idea, and where existential and so-called impersonal (e.g. meteorological) judgements clearly lack the subject–predicate form of the tradition. So to judge that it is raining is to accept present local rain, to judge that God does not exist is to reject God. The complex accepted when we judge that $2 + 2$ is 4 is the equality of $2 + 2$ and 4. In this respect at any rate Twardowski takes a step in the direction of using something like states of affairs.

Finally it is worth noting that here, unlike in his 1900 paper, Twardowski distinguishes acts of judging from judgements as their products, following a general distinction he had come to make between actions and products.

All told however the lectures are unremarkable and since at this time the centre of gravity of research was shifting from Lwów to Warsaw, we may conclude that the lectures are important less for their own influence or interest than as a demonstration that Twardowski remained very interested in truth. On this basis we may I think plausibly assume that this continuing concern will have been transmitting itself to students through Twardowski's lectures more generally from 1895 onwards, whether or not it reached print in most cases.

6. CONCLUSION

Twardowski's concern for the topic of truth and his defence of its absoluteness decisively influenced the following generations of Polish philosophers and logicians, and through Tarski reached a much wider global

audience, almost all of whom have completely lacked awareness of this influence.

Notes

¹ This paper was given at the meeting of the Central Division of the American Philosophical Association in Chicago, on 17 April 2008. I wish to thank contributors to the discussion, especially my co-symposiasts Robin Rollinger, Ryan Hickerson and Arianna Betti, and Sandra Lapointe, who organized the successful and illuminating symposium.

² Findlay 1963, ch. 1.

³ In his contribution, Robin Rollinger showed that Brentano had already made the distinction himself around the same time.

⁴ Tatarkiewicz 1948.

⁵ Most especially by Jan Woleński: cf. Woleński 1989.

⁶ Woleński & Simons 1989.

⁷ Łukasiewicz 1910.

⁸ Leśniewski 1913.

⁹ Notice the similarity of title to Tarski's big truth paper, 'O pojęciu prawdy w językach nauk dedukcyjnych': 'On the Concept of Truth in Languages of the Deductive Sciences'.

¹⁰ Tarski & Vaught 1957.

¹¹ Twardowski 1900.

¹² Page references in the text are to the English translation.

¹³ This example may indicate where and when this part of the essay was written.

¹⁴ Arianna Betti dissents from this statement.

¹⁵ Rojczak 2005.

¹⁶ Simons 1992, 2003.

¹⁷ Simons 2008.

¹⁸ Geach 1957.

¹⁹ Theory of Knowledge: A Lecture Course, in Twardowski 1999, 181–239.

References

- Findlay, J. N. 1963. *Meinong's Theory of Objects and Values*. 2nd ed. Oxford: Clarendon.
- Geach, P. T. 1957. *Mental Acts: Their Contents and Their Objects*. London: Routledge & Kegan Paul.
- Kotarbiński, T. 1929. *Elementy teorii poznania, logiki formalnej i metodologii nauk*. Lwów: Ossolineum. English translation *Gnosiology: The scientific approach to the theory of knowledge*. Oxford: Pergamon, 1966.
- Leśniewski, S. 1913. 'Czy prawda jest wieczna, czy też wieczna i odwieczna?' *Nowe Tory* 18: 493–528. English translation, 'Is all truth only true eternally or is it also true without a beginning?' In S. Leśniewski, *Collected Works*. Dordrecht: Kluwer, 1992, 86–114.
- Łukasiewicz, J. 1910. *O zasadzie sprzeczności u Arystotelesa*. Kraków: Polska Akademia Umiejętności. Partial English translation by V. Wedlin: 'On the Principle of Contradiction in Aristotle', *Review of Metaphysics* 24: 485–509 (1971).

- Rojczak, A. 2005. *From the Act of Judging to the Sentence: The Problem of Truth Bearers from Bolzano to Tarski*, ed. J. Woleński. Dordrecht: Springer.
- Simons, P. M. 1992. 'Verità atemporale senza portatori di verità atemporali'. *Discipline filosofiche* 2: 33–47.
- . 2003. 'Absolute Truth in a Changing World'. In J. Hintikka, T. Czarniecki, K. Kijania-Placek, T. Placek & A. Rojczak (eds.) 'Philosophy and Logic. In Search of the Polish Tradition. Essays in Honour of Jan Wolenski on the Occasion of his 60th Birthday', 37–54. Dordrecht: Kluwer.
- . 2008. 'Truth on a Tight Budget: Tarski and Nominalism'. In 'New Essays on Tarski and Philosophy', 369–89. Oxford: Clarendon.
- Tarski, A. & Vaught, R. L. 1957. 'Arithmetical Extensions of Relational Systems'. *Compositio Mathematica* 13: 81–102.
- Tatarkiewicz, W. 1948. *Zarys dziejów filozofii w Polsce*. Kraków: Polska Akademia Umiejętności.
- Twardowski, K. 1900. 'O tzw. prawdach względnych'. In 'Księga Pamiątkowa Uniwersytetu Lwowskiego ku uczczeniu pięćsetnej rocznicy Fundacji Jagiellońskiej Uniwersytetu Krakowskiego', 64–93. Lwów. English translation: 'On So-Called Relative Truths', in Twardowski 1999, 147–170.
- . 1902. 'Über sogenannte relative Wahrheiten'. *Archiv für systematische Philosophie* 8: 415–447.
- . 1999. *On Actions, Products and other Topics in Philosophy*, eds. J. Brandl and J. Woleński, tr. A. Szylewicz. Amsterdam: Rodopi.
- Woleński, J. 1989. *Logic and Philosophy in the Lvov-Warsaw School*. Dordrecht: Reidel.
- Woleński, J. & Simons, P. M. 1989. 'De veritate: Austro-Polish Contributions to the Theory of Truth from Brentano to Tarski'. In K. Szaniawski (ed.) 'The Vienna Circle and the Lvov-Warsaw School', 391–442. Dordrecht: Kluwer.