Stanisław SCHAYER's Method of Research on Nyāya

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Abstract

Stanisław SCHAYER, founder of the Warsaw Indological school in the 1930's, published some papers on Indian logic which were heavily influenced by Jan ŁUKASIEWICZ, a prominent member of the school of "Polish logic". In his work, SCHAYER tried to establish that ARISTOTLE's logic was not the correct instrument for research into the formal structure of Indian logic. In addition, he presented an interpretation of the "five-membered-syllogism" of the Nyāya in terms of modern predicate logic. We will discuss both of his accomplishments in detail, showing how his research depended on the historical situation of European logic around 1900 which had just undergone a radical transformation. It was the time of complete abandonment of Aristotelian logic in favour of modern predicate logic. Stanisław SCHAYER's method of research reflects his tight relation to Jan ŁUKASIEWICZ, who, together with Bertrand RUSSELL, was one of the leading figures trying to push modern mathematical logic into the area of philosophy. A detailed understanding of this process will help us to revaluate the interesting as well as the irritating and outdated aspects of Stanisław SCHAYER's view of Indian logic. It may also give rise to reflections on the role of formal methods in the study of Indian logic in general and thus, hopefully, may help to prevent us from reiterating the mistakes committed by early modern interpreters of ancient Greek and Indian logic.

Contents

1 Introduction

During the years 1932/33, the Polish indologist Stanisław SCHAYER[1] published two papers[2] on the formal interpretation of ancient Indian logic (Nyāya), based on the modern calculus of predicate logic. Whilst, up to then, the sole formal framework for research on Indian logic had been the traditional Aristotelian syllogistic, SCHAYER was the first scientist to apply modern concepts of mathematical logic to the "Indian syllogism"[3].

Stanisław SCHAYER, who had studied both Indian philology and Western philosophy in Germany, seems to have come into contact with formal logics only when, after his habilitation in Łwow 1924, he met Jan ŁUKASIEWICZ[4], one of the most prominent representatives of 'Polish logic'[5]. ŁUKASIEWICZ was the first "modern" logician who used the newly invented methods of symbolic, mathematical logic in order to interpret ancient Greek logical texts[6].

Though SCHAYER's main fields of interest were at a relative large distance from logic, his aforementioned papers indicate a remarkable knowledge of modern concepts of formal logic. He was deeply convinced of the necessity of shaping Indian logic by means of the mathematical symbolism of predicate logic. This formalistic attitude, rendering the access to his texts almost impossible for most of his fellow indologists, may have led to what KUNST described on behalf of the impact of SCHAYER's logical research:

> The repercussion of his theories cannot be claimed to be vigorous or enthusiastic, nor can the opposite be stated. ([Kunst, 1957], p.23).

Nevertheless, SCHAYER's logical work did have some influence on modern interpretation of Indian logic[7], and, in connection with a recent revival of the

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[1]Bibliographical data on Stanisław SCHAYER (1899 – 1941) may be found in [Kunst, 1957]. C.f. also [Mejor, 2003].

[2]The original German texts of [Schayer, 1932] and [Schayer, 1933]were reprinted in [Schayer, 1988]. We will only quote the English translation, by Joerg Tuske, in [Ganeri, 2001].

[3]SCHAYER continued to use this term in spite of his efforts to show that the five–membered Nyāya–scheme should not be considered as an instance of an Aristotelian syllogism. We will also make use this term which seems to have become a standard notation within the field of Indian logic.

[4]ŁUKASIEWICZ (1878 - 1956) was a student of Kazmierz TWARDOWSKI, who founded the "Lwov – Warsaw – School" in 1895. (cf. [Adjukiewicz, 1935]).

[5]St. SCHAYER was "much influenced" and "inspired" by J. ŁUKASIEWICZ. This is a quotation from [Mejor, 2003]. I do not know of any details about Schayer's personal connection to the school of Polish logic.

[6]' main work on this topic is his book [Lukasiewicz, 1951] in which he published the results of his research from more than three decades.

[7]Cf. [Oetke, 1994, Ganeri, 2001].

scientific and historical appreciation of Stanisław SCHAYER's work in Poland, there may be some interest in an reassessment of SCHAYER's logical methods and results, which we will give in this paper.

In our reappraisal, we will step into the details of SCHAYER's logical work, trying to understand the motives for his harsh and, by hindsight, unjust statements on certain aspects of the history of European logic. We will realise that Stanisław SCHAYER's pointed and scathing criticism of the traditional way of interpretation of the Indian syllogism as well as his enthusiastically presented proposal for a better formulation of the Nyāya – scheme can only be comprehended by taking into account the historical situation in European formal logic during the beginning of the 20th century.

We start this paper by elucidating the importance which Jan ' work had for SCHAYER's research on Indian logic.

2   In the footsteps of Jan ŁUKASIEWICZ

SCHAYER's starting-point is his firm conviction that Indian logic can only be understood by the employment of modern symbolic logic. His diagnosis of the state of research in the area of Indian logic at the beginning of the 1930's is as follows.

> We do not have a satisfactory account of Indian syllogistics, and what can be found about them in the literature is partly unclear and vague and partly false and misleading. There is no doubt about the causes of this predicament. They have to do with the fact that those indologists who have written about formal-logical aspects of Nyāya so far are not familiar with European logic. ([Schayer, 1933], p. 102)

> ... it is time to approach the Nyāya texts with logical, not just with philological or philosophical competence. ([Schayer, 1933], p.103)

Like ŁUKASIEWICZ, Stanisław SCHAYER had studied Western philosophy scrupulously, and just as ŁUKASIEWICZ was convinced of the value of modern formal methods for the interpretation of ancient Greek logic, SCHAYER seemed to have maintained a similar view concerning the general value of Western philosophical concepts for the study of Indian philosophy: Western philosophy

> ....was to help him in the formulation of Indian philosophical principles which, he believed, were to a high degree translatable into Western conceptions without loosing their intrinsic originality. ([Kunst, 1957], p. 18).

Thus it is understandable that ŁUKASIEWICZ' successful research on Aristotelian logic, employing modern formal methods, exercised great attraction on Stanisław SCHAYER. ŁUKASIEWICZ taught at Warsaw University from 1915 to 1939, and Stanisław SCHAYER started his teaching at Warsaw in 1926. We do not

know exactly, when and how both men met, but probably SCHAYER attended ŁUKASIEWICZ' introductory lectures delivered at Warsaw University in the autumn trimester of the academic year 1928/29[8]. In 1928, ŁUKASIEWICZ was 50 years of age and at the highest point of his scientific and University career whilst Stanisław SCHAYER was a young, recently habilitated docent of barely 30 years of age.

Due to the influence of ŁUKASIEWICZ' work, SCHAYER became involved in the revolution of European logic which started about the middle of the 19th century and which – within some fifty years – led to a complete abolishment of the Aristotelian tradition from the western universities and to its replacement by modern predicate logic. Together with RUSSELL, ŁUKASIEWICZ was one of the most committed fighters against any form of earlier "philosophical logic" which these men considered to be quite worthless[9]. As a fellow junior combatant in a fight in which both sides were engaged with much determination and emotions, SCHAYER's role was to introduce the new reign of formal logic into the land of indology:

> .... obviously following ŁUKASIEWICZ' successful application of formal logic to the study of the ancient Greek logicians, he (SCHAYER, K.G.) did the same with regard to ancient Indian logic. ([Mejor, 2003], p. 10).

SCHAYER pursues a twofold aim with his papers on Indian logic: *First*, he tries to convince his readers that Aristotelian logic is not the correct instrument for research on Nyāya and *second*, he presents a modern formulation of the five-membered Nyāya–"syllogism" in terms of predicate calculus:

> We can only do justice to the meaning and possible developments of the Indian syllogistic by seeing it as a prescientific anticipation of some forms of inference which we know from modern logic (e.g. RUSSELL's 'theory of apparent variables' or HILBERT's 'narrower functional calculus'). Indology has to rid itself from the false suggestion that the Aristotelian or the traditional syllogistic provide a suitable basis for the interpretation of the problems of Nyāya philosophy. ([Schayer, 1932], p. 96).

He defines precisely the 'positive value' of the knowledge of modern logic for research into Nyāya ([Schayer, 1933], p.105):

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[8]The notes from these lectures are entitled *Elements of Mathematical Logic* (English translation of the second edition:[Lukasiewicz, 1963]). They cover the two simplest logical systems, namely the sentential calculus and Aristotle's syllogistic. Probably SCHAYER participated also in other courses on logic.

[9]Łukasiewicz was very straight in his rigorous judgements on many philosophers of the past. Here is one of his typical comments: "When we approach the great philosophical systems of Plato or Aristotle, Descartes or Spinoza, Kant or Hegel, with the criteria of precision set up with mathematical logic, these systems fall to pieces as if they were houses of cards. Their basic concepts are not clear, their most important theses are incomprehensible, their reasoning and proofs are inexact, and the logical theories which often underly them are practically all erroneous[Lukasiewicz, 1970], p.111."

This is

(i) that we liberate ourselves from the false suggestions of traditional philosophical logic

(ii) that we gain an objective, strictly scientific measure for a critical appreciation of the Indian achievements.

Apparently, he is not only going to present a new, alternative interpretation of the Indian syllogism in terms of modern formal logic, but he zealously combats the views of other indologists[10] who adhere to the traditional utilization of Aristotelian logic, caused by "false suggestions" of traditional philosophical logic. His absolutist attitude ("objective, strictly scientific measure") affects large parts of his papers on logic, and he arouses a flavour of bitter dispute between "philosophical" logicians and their adherents on the one side and the pioneers of symbolic logic on the other. Again and again he stresses the difference between (authentic) Aristotelian and traditional syllogistic:

> Indeed, what KANT and his successors understood to be Aristotelian logic is simply a misrepresented pseudo-Aristotle. ([Schayer, 1933], p. 105)[11]

This corresponds indubitably to ŁUKASIEWICZ low respect for the logic of KANT and his successors, the "philosophical logicians". In contrast to these misinterpretations, as SCHAYER calls it, for him there is one correct modern formalization of the authentic Aristotelian logic:

> "However, one ought to use the authentic Aristotle, as first shown and taught by J. ŁUKASIEWICZ, not the traditional interpretation that rests on misunderstandings. ([Schayer, 1932], p. 94).

Therefore, for the purpose of a formal interpretation of Indian logic, SCHAYER recognises three different sets of "instruments":

- Traditional Aristotelian syllogistic of the 'philosophical' logicians: This had been the traditional tool in Indology, used by VIDYAABHŪṢAṆA, STCHERBATSKY and others.

- The 'authentic','real' Aristotelian theory as formalized by ŁUKASIEWICZ.

- Modern predicate logic, directly applied to Indian logic without utilising the 'indirect' route via Aristotelian logic.

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[10]In particular, he mentions Stcherbatsky.

[11]Maybe that SCHAYER's pronounced negative appreciation of "KANT and his successors" is explainable by his open quarrel with STCHERBATSKY on behalf of his Kantian approach to Buddhism ([Kunst, 1957], p. 22). This disagreement on philosophical matters has nothing to do with logic but may have had also an impact on SCHAYER's negative judgement on Stcherbatsky's knowledge of European logic ([Schayer, 1933], p.102). It is exactly in connection with STCHERBATSKY that the "successors" of KANT, the "philosophical" logicians ERDMANN, LOTZE, COHEN, SIGWART and later PRANTL are mentioned.

In the following sections of this paper we will discuss Stanisław Schayer's views on these different tools. We begin with his opinion on the "authentic" Aristotelian logic which takes up a central role within his papers.

3   The 'authentic' Aristotle

4   Schayer on Nyāya

4.1   The Nyāya-scheme

4.2   Anticipation of modern logic

5   Conclusion

In our paper, we first have elucidated the scientific relation between the indologist Stanisław Schayer and the logician Jan Łukasiewicz. It seems that Schayer was a close pupil of Łukasiewicz in many a respect:

- He adopted Łukasiewicz' concept and formalisation of the 'authentic' Aristotelean logic.

- He agreed with Łukasiewicz in the estimation of Stoic propositional logic.

- He shared Łukasiewicz devaluating criticism of the "philosophical logicians" since Kant.

- He regarded ancient Indian logic as "anticipation" of modern predicate logic in the way Łukasiewicz considered Greek logic.

- Both men were convinced that only "modern, scientific logic" was the "objective" instrument for research into the history of logic.

- Schayer's stinging and pointed diction resembles very much Łukasiewicz' notorously polemical way of writing[12].

As most of Stanisław Schayer's arguments on the subject of Western logic are completely based on Łukasiewicz, the fate of Schayer's respective assertions is closely tied to the evolution of Łukasiewicz' ideas which rose to the zenith of its global scientific acceptance during the 50's and 60's of the past century. Today's wisdom shows us that almost none of Schayer's statements on "authentic" Aristotelian logic had passed the test of time.

Most scholars of Aristotelian logic agree today that Łukasiewicz' work on Aristotelian logic, while having been the first valuable modern contribution to this subject, is outdated. More recent formalizations of Aristotelian logic appear

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[12]In the foreword of the "Selected Works" of Jan Łukasiewicz[Borkowski, 1971], his pupil Slupecki writes: "This paper provides a very fine example of Łukasiewicz's polemic talent."

to be much nearer to what "philosophical logicians" from LEIBNIZ and KANT on tried to establish. Thus, the gap between the "authentic" and the "traditional" Aristotelian syllogism detected by ŁUKASIEWICZ and vehemently insisted on by SCHAYER is by far not as wide as these men imagined. Today there are interpretations of Aristotelian formal logic in terms of a modern correct and sound formalism which catches all the important aspect of Aristotelian syllogistic and stands in the continuity of the traditional approach. Thus Stanisław SCHAYER's damning review of the traditional philosophical logic and its application in Indian syllogistic was not only immanently unconvincing but has even to be rejected because of more recent research on Aristotelian logic.

Concerning the *second* of his aims, namely, to present a new interpretation of the Nyāya–"syllogism" in the framework of modern logic, this has certainly to be considered as an act of "modernization" for which SCHAYER deserves merit even today. In the present paper, however, we have adduced reasons for the assertion that SCHAYER's interpretation is not convincing and that it rises more question than it settles. One main point of our criticism is the ahistoric approach of his remarks on Nyāya: at no place he does state clearly which stage of the Nyāya he refers to at all. Thus it is almost impossible to find out which sources lead him to his farreaching assertions on the similarity of ancient Nyāya texts with concepts of modern symbolic logic.

The other point is Stanisław SCHAYER's firm belief that the history of logic should and can be

> measured more objectively and be represented as the history of discoveries and positive progress. ... The fact that this 'reliable point of reference' can only be found in modern symbolic or mathematical logic is impossible to doubt these days([Schayer, 1933], p.106).

Thus he assigns a role to modern symbolic logic which is not adequate, as in fact modern mathematical logic is only one very special "variety" (BOCHENSKI, 1956) of formal logic which, as we know today, covers only a limited area of the vast field of formal reasoning. This mistaken view led SCHAYER to consider parts of Indian logic as

> .... 'preformation' of some forms of inference which we know from modern logic ([Schayer, 1933], p.108).

which led him to formulate "the" Indian five-membered syllogism as a proof scheme of predicate logic. This interpretation is neither convincing nor well funded in ancient texts, accordingly, seems to have found not much acceptance among indologists[13].

Although all this may sound very critical, one has to take into account some biographical and historical facts in order to do justice to Stanisław Schayer concerning his logical works. SCHAYER's view of the Nyāya can only be understood

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[13]Even though Bochenski, in his book [Bochenski, 1956], p. 121, refers positively to the work of SCHAYER, he does not reproduce SCHAYER's interpretation of the five-membered Indian scheme.

if one takes into account the influence which the very strong and productive Polish School of Logic exerted on him. When SCHAYER, presumably on the occasion of ŁUKASIEWICZ' introductory lecture on logic in 1929, came in contact with Jan ŁUKASIEWICZ, he was a young indologist and philosopher who obviously was being influenced by the euphoric mood of ŁUKASIEWICZ and his pupils, who were very actively taking part in one of the most fundamental revolutions of Western logic. In addition, ŁUKASIEWICZ' objections against KANT and the German idealism may have attracted SCHAYER who was then quarreling with the well known indologist STCHERBATSKY on behalf of certain aspects of Buddhist philosophy.

Stanisław SCHAYER cannot be blamed for the fact that, today, major parts of ŁUKASIEWICZ' assertions on Aristotelian logic are not well accepted by the scientific community any more. Neither can he be made responsible for the vanishing of the euphoria about the power and objectivity of modern logic which took place since the 30's of the last century until now. Therefore, our detailled criticism of his views should not be regarded as an attempt of depreciating a renowned indologist. It is, however, intended for promoting a more sophisticated view on the relation of formal logic and ancient texts than ŁUKASIEWICZ and his school had practised during the first half of the past century - a view, which, unfortunately, has not disappeared completely even today.

6   Appendices

6.1   Semantics of Aristotelian logic

6.2   Axiomatics versus Natural Deduction

6.3   Formalities of the Nyāya

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