Using Formulas for the Interpretation of Ancient Indian Logic

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1 Introduction

It is almost impossible for us to talk about Indian Logic without referring to western logic, be it only metaphorically. This begins with the notion "Indian Syllogism" which some scholars name "five membered syllogism", and it continues with the usual comparison of *vyāpti* with material implication. One also employs genuine western concepts like "deduction" and "induction" in order to be able to use a classification system which one is accustomed to.

Utilizing western concepts and formalisms in a naive manner is not without risks. Wilhelm HALB-FASS, in his book "Being and what there is", pointed to this fact when he remarked:

> „Is there a common ground for a comparison of different traditions of thought and a neutral, universal medium through which they can communicate? One important recent suggestion is that such a common basis is provided by logical and linguistic analysis and exemplified by the modern analytical philosophy of the Anglo-Saxon type. As a matter of fact, the claim has been made that these methods, in particular the use of symbolic logic, are separated from the restrictions of the various existing languages as well as the traditions by which they are used, and conducive to a truly universal understanding of different philosophical traditions...... We have to see the merits as well as the inherit limits of this approach."

In this paper I will go into the details of some of these in-built limits of modern formal logic. This logic has its own history, its special preconditions and its problematic features which one should know in advance in order not to commit gross errors in its applications. *Modern western logic is not the "natural instrument", suitable for the understanding of any logical matter whatsoever. While employing it, one always is in danger of making mistakes and producing unwanted side effects.*

There have been two revolutionary developments in the recent history of western logic during the period from about 1800 until 2000. This includes exactly the period of time when some of the famous scriptures on Indian Logic were discovered, translated and interpreted for the first time.

1. Beginning in the middle of the 19th century, traditional Aristotelian logic has been completely abandoned in favour of mathematical logic (now called "classical logic[1]"as invented by FREGE and RUSSELL. Thus the notion of "western logic" has radically changed its meaning.

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[1] "It is a clear symptom of the hyperactivity that characterized mathematical logic in the 20th century, that we now view such a recent product as a classical theory" (J. FERREIROS, *The road to modern logic - an interpretation.* The Bull. of Symbolic Logic Vol. 7, Number 4, Dec. 2001, p. 441).

2. From about the middle of the 20th century onwards, "classical" logic split into numerous different logical systems with different goals, each of them representing different generalizations, restrictions or even completely incompatible alternatives to FREGE's and RUSSELL's "classical" (mathematical) logic.

Thus, speaking about today's modern logic we have to make precise to which of the many existing varieties of logic we are really referring:

classical predicate logic	deontic logic	relevant logic	partial logic
higher order logic	many valued logic	paraconsistent logic	fuzzy logic
modal logic	intuitionistic logic	free logic	quantum logic
tense logic	epistemic logic	non-monotone logic	erotetic logic

All these systems - and many more of them - have been designed for different special applications (Mathematics, Philosophy, Linguistics, Computer Science and so on). They are all based on their inventor's vastly differing world views, ontologies and epistemologies – and classical predicate logic is no exeption.

In the following discussion, I will concentrate on the impact of the two abovementioned aspects of the history of western logic on our methods of understanding Indian logic by formal methods.

2 The abolition of traditional logic

2.1 Stanislaw Schayer

In 1933, the Polish indologist Stanislaw SCHAYER published an influential paper in which he proposed to completely do away with Aristotelian logic as a means of interpretating Indian Logic. SCHAYER was a pupil of the famous logician ŁUKASIEWICZ and he took on his teacher's almost fanatical attitude towards traditional "philosophical" logic.

ŁUKASIEWICZ, in his own words, led a "spiritual war" [2] against the old logic, and SCHAYER joined him, repeating many of his master's arguments:

> „Aristotelian logic is not a universal and complete theory but - without questioning its historical value - a meagre fragment."
> „It took modern mathematical logic (logicism) to create the 'reliable position' from which not only Aristotle's achievement but the whole history of European and Oriental logic could be judged."

Today we know that almost all of SCHAYERS assertions on Aristotelian formal logic are plainly wrong (s. GLASHOFF, 2004[3]). No expert in Aristotelian logic would subscribe to RUSSELL's

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[2] Selected Works, ed. by L. Borkowski. Amsterdam: North Holland, 1970

[3] On Stanislaw Schayer's Research on Nyāya. To appear in : Journal of Indian Philosophy.

SCHAYER reproduced the view of Aristotelian logic as presented by RUSSELL and his group of modern logicians. They maintained that the logic of the *Analytica* is a logic of classes, a kind of precursor of modern class or set logic. Although in this respect ŁUKASIEWICZ, famous for his book on Aristotelian logic, contradicted RUSSELL vehemently, the faulty interpretation found its way into almost all textbooks (and, into SCHAYER'S papers). The pionering work of CORCORAN and (independently) SMILEY in 1973 showed that there is a consistent and complete formalisation of Aristotelian logic which does not have to rely on the assumption of mistakes within Aristotle's theory.

and SCHAYER's view – which does not imply that university textbooks will soon be corrected... SCHAYER's paper is an excellent example of the fact that modern "classical" predicate logic, at the very first go, failed completely in its attempt to give a consistent interpretation of a main subject of its own tradition. So what can we expect of modern logic for the task of interpreting Indian logic?

2.2   A different Aristotle

The adherents of modern logic did not only oust traditional formal logic but also consigned other large parts of European logic to the rubbish dump, affecting almost all European authors from KANT on[4].

ŁUKASIEWICZ declared[5]:

> "Modern 'philosophical logic' is in its whole infected by the epidemic of psychology and epistemology. This logic has neither understanding nor interest in formal matters .... Modern logic or logistics experiences its resurrection out of the spirit of mathematics" [6]

But Indian logic has never been purely formalistic. It has always been connected to psychology and epistemology. Thus, maybe, the suppressed and almost forgotten theories of the "philosophical" logicians ERDMANN, LOTZE, PFÄNDER and WUNDT might turn out to be of much more value for the study of ancient Indian logic than our dominating sterile "classical" logic.

Technics and rhetorics

One of the philosophers most affected by the "mathematical turn" of logic is ARISTOTLE, whose logical work did not consist solely of the syllogistic theory but of other parts too which had come to light earlier and independently of the syllogistics, and which deserve to find recognition also as a means of interpretation of Indian logic. Modern logic did not only throw away the Aristotelian "technical" formal logic of the *Analytica Pri*ora and *Posteriora* but also the "rhetorical" parts of his works, the *Topica* and *Rhetorica*. It took many decades until philosophers had recovered from the shock exerted by the invention and dominance of modern formal predicate logic. As late as in the 1960's / 70's TOULMIN and PERELMAN referred again to the rhetorical works of ARISTOTLE, starting the now flourishing project of "New Rhetorics", argumentation theory, and informal logics. It took some other decades until these works were discovered in the context of research on Indian logic (TILLEMANS: 2002).

The reception of traditional rhetorics has been impeded because ARISTOTLE'S theory of enthymeme of his *Rhetorica* has been classically misinterpreted since the time of the schoolmen (vgl. M.F. BURNYEAT[7]). According to ARISTOTLE, the following is a typical enthymeme:

- This man is ill because he has fever.

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[4] SCHAYER, p. 109: "Kants attempt to explain the syllogism by the basic thesis *nota notae est nota rei ipsius* is particularly misguided. Unfortunately, Stcherbatsky... took this interpretation seriously."

[5] Zur Geschichte der Aussagenlogik. Erkenntnis, Bd. 5, 1935: 111-131

[6] „Die 'philosophische' Logik der Neuzeit ist von Psychologie und Erkenntnistheorie durch und durch verseucht. Für formallogische Fragen hat sie kein Verständnis noch Interesse. ....Ihre Wiedergeburt erfährt die neuzeitliche Logik oder Logistik aus dem Geiste der Mathematik".

[7] Enthymeme: Aristotle on the Logic of persuasion. In: Aristotle's Rhetoric, J. Furley and A. Nehamas (eds.). Princeton, 1994, pp.3–56

In a rhetorical situation, the *major* premise, "whoever has a fever is ill" is not explicitly mentioned because it is known to the listeners of the speech. Already Max MÜLLER realized that an enthymeme is very similar to the first two members *pratijña* and *hetu* of the Nyāya- scheme. – Let us note that there is much more in an enthymeme than being just an incomplete syllogism! The corresponding Aristotelian theory in his *Rhetorica* centers around his theory of signs (James ALLEN[8]). There are interesting parallels between the Greek distinction of *aition* and *tekmērion*, and the Indian notions *hetu* and *liṅga*, respectively, which would deserve to be put under closer scrutiny.

If one writes the prototype of "Buddhist syllogism" in the following form (TILLEMANS[9]):

- All that which is conditioned is impermanent (like a vase), now sound is conditioned

– then this is absolutely unrelated to Aristotle's *enthymeme,* because it is a kind of *Barbara* - syllogism with missing conclusion (*sound is impermanent*). In some western textbook they call this "enthymeme of third kind", but there is absolutely nothing of that kind in Aristotle's works!

The hunt for the middle term

Aristotle was not only concerned with deduction in which one asks "Which *conclusion* follows from given premises?". His main interest was to present methods which allows one, given a certain assertion, to find out the *premises* by which this assertion may be elicited[10].

> „A deduction proves something of something through a middle term."(An. Post. B 4, 91a, 15).
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> „It is plain, then, that whatever is sought, it is a search for the middle term." (B 3, 35)

The problem is always to search for a middle term *B* (*meson*) which uncovers the reason (*aition*) for *A* to be of a kind *C:* If one finds the middle term B, then it is possible to perform a deduction via the *Barbara* - syllogism: All *A* is *B*, all *B* is *C*; therefore, all *A* is *C*. Let me repeat: the main problem in a concrete situation of argumentation or rhetorics is to *find* a middle term *B* - the deduction qua syllogism is a somewhat trivial task performed afterwards, often without explicitly being mentioned.

> "According to Aristotle, knowledge means realization of that which *is* by means of its *Meson*, which mediates it into being. In this way it (the *Meson*) is destined to be *Aition*. The notion of *Meson* and *Aition* are totally convertible into each other."(I. SCHÜSSLER[11]).

Today we find the same procedure of repeated "hunting for middle terms" in computer programs for automatic reasoning, where a mathematical theorem is given as well as a set of axioms, and where a chain of middle terms is sought leading from axioms to the theorem to be proven. It is completely misleading to regard "deduction" as a simple linear process which leads straightforwardly from premises to conclusions by formal rules. Searching for middle terms is a much more sophisticated process than just applying deduction rules – one cannot find *any* such "proof by middle terms" by simply applying *any* of the rules built into the logical system. Of course, whenever one has found middle terms, the deduction rules *afterwards* serve in proving the correctness of the deduction. But, again, this is not the main part of the job!

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[8] Inference from Signs: Ancient debates about the nature of evidence. Oxford: Clarendon Press, 2001

[9] Scripture, Logic, Language. Boston: Wisdom Publ., 1999

[10] Ernst Kapp: Ausgewählte Schriften. Berlin, 1968.

[11] „Wissen ist - gemäß Aristoteles - Erkenntnis des Seienden aus seinem ins Sein vermittelndem *Meson*. Dieses ist dadurch bestimmt, *Aition* zu zu sein. Denn der Begriff des Meson und des Aition sind vollständig konvertibel."
Aristoteles. Philosophie und Wissenschaft. Frankfurt am Main, 1982.

Misinterpretation

Modern logicians committed two faults: They neglected the "rhetorical" Aristotle and misinterpreted his "technical" works. H. B. VEATCH very precisely described this process of misinterpretation[12] :

> "What would appear to have happened is that most modern logicians and philosophers have tended pretty much to forget the distinctive kind of instrument that Aristotle's logic was supposed to be, as well as what is was supposed to be an instrument for. Instead having made a number of assumptions of their own as to exactly what logic might be and what it might be for, they then found it easy to condemn Aristotle's logic as scarcely meeting these somewhat fallacious standards which they themselves have set up."

There exist papers of the kind VEATCH criticises on ancient Indian logic, too – which is not astonishing given that there are scientists who consider classical logic as a reliable position from which all varieties of logic can be judged. – In the next part of our paper we are going to show how weak this position really is.

3 The new calculus

3.1 Modernization of the Nyāya

SCHAYER presented the following table containing his new formalisation of the five-membered Nyāya-scheme in terms of modern formal logic:

1) *pratijñā*	$\psi(a)$	There is fire on a (= on this mountain)
2) *hetu*	$\varphi(a)$	There is smoke on a (= on this mountain).
3) Statement of vyāpti	$(x).\varphi(x) \supset \psi(x)$	For every locus x: if there is smoke in x then there is fire in x
4) *upanaya* = statement of the *pakṣadharmatā*	$\varphi(a) \supset \psi(a)$	This rule also applies to $x = a$ (for the pakṣa)
5) *nigamana* = statement of s*ādhya*	$\psi(a)$	Because the rule applies to x = a and the statement $\varphi(a)$ is true, the statement $\psi(a)$ is true

I don't think that today many scholars would agree with this kind of formalisation[13]. In particular, items 3) and 4) are problematic, because it is impossible to find any ancient text fitting these formulas (OETKE (1994)[14] reformulated these items and tried to show their connection to ancient texts). I discussed this point in (GLASHOFF: 2004), and I do not want to go into repeating it here.

But there is a something much more problematic in SCHAYER'S arguments: he contends that the

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[12] Aristotle: A contemporary appreciation. Bloomington, 1974

[13] By the way, SCHAYERs "proof" is *not* an example of a natural deduction proof, as most people would like to see it. Natural deduction was invented after the publication of SCHAYER'S paper by GENTZEN and, independently, JASKOWSKY in 1934. (The whole story is a bit more complicated (GLASHOFF: 2004)).

[14] Vier Studien zum altindischen Syllogismus. Reinbek: Wezler, 1994

Nyāya-scheme is a 'preformation' of an inference scheme of modern predicate logic:

> "The Indian syllogistic is a 'preformation' of some forms of inference which we know from modern logic.[15]"

This doesn't sounds very convincing, because the notion of a *formal proof* is a genuine European concept which is, historically, inseparably connected with mathematics and the striving for a foundation of mathematical reasoning by ARISTOTLE, EUKLID , DESCARTES, LEIBNIZ, FREGE, PEANO and RUSSELL, to name only some of the most important contributors to this task of more than 2000 years. This task came to a certain end with WHITEHEAD and RUSSELL's *Principia Mathematica* in 1910. I do not know of any source of ancient Indian Logic which deals with problems of formalisation, symbolisation or even mathematisation of logical theories. Thus, however useful it may be for us to employ formal methods, we should not pretend that these methods are "in" the ancient texts.

3.2 The limits of classical logic.

"Rotten logic"

Since the beginning of its victorious battle against traditional logic, modern predicate logic has been the subject of many critical arguments.

> „ ... the new mathematical logic is in itself an amazing achievement. The only question is, what is it an achievement in?"(H. B. VEATCH[16])

Today many a logician would subscribe to the following judgement:

> „To be blunt and quite specific about it, the canonical structure, embodying classical logic, is incorrect. It is rotten to the core."(J. NORMAN,R. SYLVAN[17]).

Alternative systems of formal logic have been invented by MCCOLL, PEIRCE und C. I. LEWIS even before modern predicate logic got its canonical shape and was throned as unique standard by QUINE. Some of these alternative systems are generalizations or restricted versions of classical predicate logic, others are so called *deviant logics* which differ considerably from the classical system.
As early as in 1923, C.I. LEWIS wrote that

> „... those who would suppose that there is *a* logic which everyone would agree to if he understood it ..... are more optimistic than those versed in the history of logic have a right to be."(Susan HAACK, 1996[18]).

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[15] SCHAYER (p. 108) explains how he uses the word 'preformation' or 'anticipation' by continuing: "It is not an 'analogy' because this would presuppose a similarity or at least a comparability of the level of historical development which does not exist. We do not compare Indian and modern logic in order to find individual differences together with similarities. Instead we judge Indian logic from the standpoint of modern scientific logic in order to find out what is logical in our sense." This method of imposing "scientific" concepts on ancient texts and then "judging" may be useful for our understanding in certain circumstances, but it is not exactly what one would expect of the result of a philological research project. We recall that Schayer believed modern logic to be *the* solid and universal basis for research into whatever logical works of the past.

[16] Intentional Logic. Yale, 1952

[17] Directions in Relevant Logics. Dordrecht: Kluwer, 1989.

[18] Deviant Logic, Fuzzy Logic. Chicago and London: The University of Chicago Press, 1996

The problems of classical logic arise because the world outside of mathematics is far more complex than FREGE and RUSSELL could imagine. As a tool for mathematical matters, first order predicate logic serves reasonably well (most mathematicians are not interested in logic at all: they simply do not need formal logic as didn't NEWTON nor LEIBNIZ, the inventors of differential calculus, for their mathematics...). Outside of mathematics, however, in the "real world", inadequacies and defiencies of classical logic become evident much more easily. This will happen in particular when situations or objects are complex and involve more than material objects and their relations (dependence on time, perception, etc.).

"To make" and "to see"

Jack KAMINSKY[19] gave a simple example. He tries to formalise the sentence "John is making a table" by means of classical logic. A first guess is the formula

$$(\exists x)(Tx \wedge Mjx),$$

(there is an x which is a table and which John makes). This is problematic, because in predicate logic, terms like *x* in *Tx* have to *denote* something - but here the table which John intends to make is not yet existent and thus cannot be referred to.

Kaminsky proposes a whole sequence of improvements of the formula with growing complexity which we shall not comment on. We will just present his fifth attempt to catch the meaning of his simple sentence:

$$(\exists y)(\exists z)((ty \cdot Mz \cdot Cjzt_{1 \to 2}) \cdot (zt_2 = z_1) \cdot (Cjz_1t_{2 \to 3}) \cdot (zt_3 = z_2 \cdot ...(Cjz_{n-1}t_{(1-n) \to n}) \cdot (z_{n-1}t_n = z_n) \cdot (Des'T'z_{n-1}t_n = z_n)) \cdot (z)(y)(z = z_n \cdot ty \supset \sim Cjzt).$$

This forbidding formula is not yet the end of the story! In the end it turns out that it is impossible to construct *any* formula within the world of predicate calculus expressing exactly what the simple sentence "John is making a table" says.

Our second example is due to the logician and computer scientist John BARWISE[20]. While it is straightforward to symbolize the sentence "Dick sees Jane" by

$$dSj,$$

it is impossible to formalise the sentence "Whitehead saw Russell wink" which seems to be only slightly more complicated than the first one. So let us try

$$wSr \wedge Wr.$$

Retranslating it into colloquial English we obtain the sentence "Whitehead saw Russell and Russell winked" – which signifies something quite different from the original sentence, „.... since we can well imagine a situation where Russell winked at someone, in Whiteheads presence, in such a way that Whitehead did'nt see him wink."(J. BARWISE)

There are dozens of examples like these which point to more or less subtle deficits of classical logic. Some of these deficits have pushed forward the developement of new systems of logic.

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[19] Language and Ontology. Carbondale and Edwardsville: Southern Illinois University Press, 1969

[20] The Situation in Logic. CSLI Lecture Notes, No. 17, 1989

3.3 Implication and Existence

The process of formalisation of any topic of philosophical logic, rhetoric or argumentation is a delicate process. Susan HAACK describes part of this activity as follows:

> „Some informal arguments are intuitively judged to be valid, others invalid. One then constructs a formal language in which the relevant structural features of these arguments can be schematically represented, and axioms/rules which allow the intuitively approved, and disallow the intuitively disapproved."

The choice of a suitable language or the construction of a new one is crucial to the success of the formalisation process. One has constantly to be aware of "unwanted consequences" of one's own formulas which always indicate that something has gone totally wrong. And a lot of things actually went wrong in the history of interpretation of Indian logic by western formalism as anyone who has ever looked into papers on this subject, beginning with SCHAYER, has certainly realized. Up to now, no one has ever performed serious research on the question of adequateness, intuitive correctness and unwanted consequences of formulas and formal systems utilized for the formalization of Indian logic.

vyāpti und dṛṣṭānta

For some hundreds of years a quarrel has existed among logicians about the correct way of defining such an innocent looking concept as "implication". FREGE chose the truth – functional material implication (invented by the Stoics), and this was the right choice in relation to his aims in the realm of mathematics. But very soon there appeared a lot of paradoxical consequences of this implication within the context of philosophical applications. One of the most striking of these is the fact that the following formula is a theorem of the modern calculus of propositions:

$$(p \rightarrow q) \vee (q \rightarrow p).$$

Given any two propositions p and q, either q is implied by p or p is implied by q (or both). An example: *Either*, if today is Monday, then my name is Bertrand, *or*, if it my name is Bertrand, then today is Monday.

Problems with material implications are notorious. They arise also frequently in the context of the formalization of Indian logic.

Often one defines *vyāpti* , the pervasion of the proving thing *H*, *hetu,* by the thing *S* to be proven, *sādhya,* as follows

$$(x)(Hx \rightarrow Sx),$$

where, for the moment, we neglect the question of existential import of this notion.

Now *dṛṣṭānta* , for example, is an exemplification of this relation between *hetu* and *sādhya* which may tempt us into formulating it as

$$Ha \rightarrow Sa$$

But, this is not suitable, because the last proposition holds even in case the premise *Ha* is *not* true (*ex falso quodlibet*). Thus, the correct formalisation of *dṛṣṭānta* is

$$Ha \wedge Sa$$

which says that there is concomitance of *hetu* and *sādhya* in a.

Existence

Quantors are the notorious troublemakers in predicate logic. If one wants to express the fact that *vyāpti* should be understood with existential import, one employs, in addition to

$$(x)(Hx \rightarrow Sx)$$

the formula

$$(\exists x)(Hx \wedge Sx).$$

Translation of this formula into colloquial English renders "There is a thing which exemplifies *H* as well as *S*". Now it is one of the subtle peculiarities of predicate logic, that this does *not* imply that there exists a constant *a*, such that

$$Ha \wedge Sa$$

holds true. The reason for this is the fact that

$$Fa \vdash \exists x(Fx)$$

is a valid theorem of predicate logic, but the following is *not*:

$$\exists x(Fx) \vdash Fa.$$

Another problem: There is a "built-in" somewhat hidden existence assumption in predicate logic which makes it impossible to state theorems about an empty universe (which European as well as Indian logicians sometimes like to do). This may be recognized by means of the formula

$$\vdash \exists x(Px \vee \sim Px)$$

which is valid for any predicate P.

What I want to show by these small examples[21] is that problems with formulas may arise at any corner, possibly rendering useless or even invalid any conclusion which one would like to deduct from one's carefully designed premises. The chance of failure grows exponentially with the complexity of one's formal models. Thus it is advisable not to use technically too sophisticated concepts as well as definitions, the consequences of which are difficult to control.

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[21] Answering a question raised by Tom TILLEMANS during the discussion of my talk, I admit that I did not find exactly this type of faulty application of the existence quantor in any paper on Indian logic. However, the faults I usually find are as serious as these ones but are not as easy to isolate for discussion. I do not exaggerate in maintaining that any paper on Indian logic I know of contains either an incorrect formula or no formula at all. This may apply to my own papers as well, and it is not my intention to put somebody on the pillary for not being as scrupulous with formal correctnes as I am. The purpose of these two examples on the existence quantor is to create awareness for the subtilities and dangers of "simply" talking the language of predicate logic!

3.4   The presuppositions of modern logic

Each formal system has inbuilt ontological presuppositions which arise as soon as the structure of its well-formed-formulas has been designed.

> „There is, then, a sense in which ontology arises in a formal system even before the system obtains an interpretation of its variables. The ontology becomes, so to speak, built into the system as soon as we decide to differentiate one type of variable from another for that already tells us what restrictions must be placed on all possible interpretations." (Jack KAMINSKI: Language and Ontology).

There is an inseparable connection between classical logic and the ontology of Analytic Philosophy:

> „By changing one's model structure, i.e. by changing one's ideas about what constitute the most basic features of any part of the nonlinguistic world, one changes the logic – the class of valid arguments – too. The model structure corresponding to the FREGE - RUSSELL first - order predicate logic was seen to correspond to the assumption of the existence of truth values, of individuals, of properties of individuals, and of relations between them, and of nothing else." (BARTH u. KRABBE[22]).

I am not sure whether one should recommend the translation of classical texts into the world of Analytic philosophy. There have been bad experiences with this method when philosophers of the Analytical tradition misread as well as appropriated large parts of the European tradition. Floy E. ANDREWS[23] gave a detailed description about what happend to the philosophies of ARISTOTLE, PLATO, BERKELEY, SPINOZA, and KANT when processed by the apparatus of Analytic Philosophy:

> „Older philosophie was not ignored, but all was grist for the mill. Subsequently, some of the Ordinary Language analysts reread those older texts and can be described as expropriating older philosophy, putting it under the knife to cut and pare, transforming Spinoza or Kant and whoever else fell into their hands into unrecognizable forms of themselves..... The operation of expropriation and mutilation gave to linguistic philosophy that vital connection to the former history of philosophy...".

After dominating western philosophy for decades, Analytic Philosophy now seems to be slowly fading away[24], even if this is not explicitly acknowledged within the philosophy and philology departments of our universities. The claim of modern formal logic of being the universal, cultural-independent 'reliable position' which RUSSELL, ŁUKASIEWICZ and some indologists, too, dreamt of, will hopefully disappear much earlier than Analytic Philosphy.

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[22] From Axioms to Dialogue. A philosophical study of logics and argumentation. Berlin und Ney York: De Gruyter, 1982.

[23] On Reading Philosophy After Analytic Philosophy. Animus, Vol. 1, 1997

[24] „Analytic Philosophy is not dead, it just smells funny." (Freely adapted from Frank ZAPPA: "Make a Jazz Noise here", Pumpkin Records, 1991).

4   Final remarks

I will close my talk by continuing with Wilhelm HALBFASS' remarks on the risks of employing western concepts for the research into Indian philosophy and I hope that I can make clear that any of the risks he mentions fully applys to the tools of modern formal logic:

> "Conceptual devices that have been developed by Western philosophical thought will be indispensable tools of translation, interpretation, and analysis; but we will have to use them cautiously. We have to be constantly aware that our own ontological concepts and premises are problematic."

What are the concrete implications of this view within the field of interpretation of ancient texts on oriental logic? After the experience of chaos caused by modern logic within the field of ancient European logic, and after the failure of SCHAYER and some of his successors, I cannot but strongly recommend to be cautious. Modern logic does not appear to be capable of becoming the *New Organon* - considering that its philosophical basis is on shakey grounds and its apparatus is too fragmented. As there are many other philological tasks awaiting work to be done one should, for the moment, avoid utilizing tools which are immature and technically oversubtle at the same time. While it is totally suitable and useful to employ moderate metaphors from Aristotelian as well as modern logic, one should not try to press historically critical notions and distinctions like *formal proof, calculus, deduction/induction, syntax/semantic, monotonic/nonmonotonic* with all their historically grown connotations into ancient oriental texts.