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**THE PRINCIPLE OF *REDUCTIO AD
ABSURDUM* AGAINST A COMPARATIVE
BACKGROUND**

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The subject of this discussion is the peculiar applications of the logical principle that states that if any sentence implies its own negation, the sentence is false and thus its negation is true. Symbolically, the law is expressed by the formula ' $(p \rightarrow \sim p) \rightarrow \sim p$ ' which can be read "if (if p is not- p), then not- p ." In PM this very law *2.01 is called the principle of the *reductio ad absurdum* and is paraphrased as follows "if p implies its own falsehood, then p is false" (Whitehead and B. Russell 1910: 104). For the record, there is a reverse law called the law of Clavius devised by the logician Jan Łukasiewicz: ' $(\sim p \rightarrow p) \rightarrow p$ ' which is not substantially different from the previous one, but which we will not deal with here.

The limitation to the law of reduction ' $(p \rightarrow \sim p) \rightarrow \sim p$ ' is not accidental because it is this law rather than its reverse equivalent that can provide a starting point to extensive comparative and historical inquiry. Of the issues that merit particular attention in comparative terms, three groups ought to be mentioned that could be summed up in the following initial propositions:

1. firstly, the principle of the *reductio ad absurdum* was first devised independently (in the sense of being applied in peculiar reasonings) in all three ancient cultural circles that had created their own philosophical speculation: European (Greek), Chinese and Indian (Buddhist Indian);
2. secondly, relevant reasonings, testified to in these otherwise different philosophies using different languages, are not only similar in form but

concern similar if not identical issues and serve similar goals, with the Buddhist Indian circle differing uniquely from the others,

3. thirdly, the reductive reasonings, which were revelatory in their day, in the light of modern semantics, prove to be covert paralogsms, which in practice do not so much constitute examples of the application of the principle of the *reductio ad absurdum* but, rather, illustrations of unconscious overuse of the principle.

The first two propositions will be illustrated in chapters I-III, where I will present and discuss the respective examples, testified to in Greek, Chinese and Indian sources. The third proposition, much more elusive for philologists but rather obvious for the historians of logic, will be discussed at length in chapter IV, which is also an attempt at summing up the whole subject matter.

I

The Old Greek exemplification of our issue is fairly easy as the basic sources are well-known to the historians of logic. And the very sources are easily available, also with Polish translations. However, since the topic of the material part of this study is an introduction into the complicated and practically unknown subject of oriental exemplification, which must take considerable space, I limit the Greek documentation to the very minimum out of necessity. In particular, to avoid misunderstandings, I need to explain that the Aristotelian approach to the subject, deliberately restricted to one point that is most important to us, is not so unambiguously simple as the only quotation from *Metaphysics* presented here would suggest, though. This issue, meriting separate discussion, will be skipped here with a hope of being resumed on another occasion.

The earliest of the extant Greek examples of using *reductio ad absurdum* is found in Plato.¹ It is a passage in *Theaetetus* (XXII, 169 D — 171 C), where, using this particular principle, the Platonic Socrates proves Protagoras false in the latter's statement that things are the way they appear to one. The

¹The example in question was only detected by G. Vailati 1904; see H. Scholz 1936: 1-8. Scholz attaches great importance to the discovery in Plato's writings of the rule of arguing that corresponds to the law of reduction ' $(p \rightarrow \sim p) \rightarrow \sim p$ ' and proposes the name "Platonic criterion of falsity" for the law. See also Bocheński 1962: 38-39. The extra references to Plato's *Euthydemus* XV, 280 B-C seems less relevant for our problem.

reasoning is, however, rather confusing, clouded by contextual complications (implication in dialogue and colloquial style), which undoubtedly contributed to this vital historical and logical aspect of this text by Plato still turning heads as late as the beginning of our century. For the same reasons, this text of historical significance renders itself rather unsuitable to be quoted *in extenso*, and therefore I limit myself here to mentioning it and making the necessary references.

Another crucial illustration to the issue is provided by another, later message in Aristotle's *Metaphysics* I' 8 (Aristotle 1989, 1020 b, 15-18). The text is as follows:

for he who says that everything is true makes the opposite theory true too, and therefore his own untrue (for the opposite theory says that his is not true); and he who says that everything is false makes himself a liar.

In the passage just quoted, the word "everything" renders the original Greek *πάντα*. However, it seems obvious that Aristotle meant "all utterances" or, more precisely, "all statements" (i.e. also those statements that state something and thus are subject to judgment as true/false).² With this clarification, the text cited seems particularly valuable as, despite its brevity (or reductive nature), it makes a dual appeal to *reductio ad absurdum*. At one go, Aristotle refutes two opposing propositions: "All [=all sentences] is [are] true" (to which proposition the position held by Protagoras essentially comes down) and "All sentences are false," where it can be taken for granted that in both cases an implication rule based on the law of reduction ' $(p \rightarrow \sim p) \rightarrow \sim p$ ' is used. Note that if "All sentences are true" (p), then also true is — as belonging to the range of ALL sentences — the sentence "It is untrue that all sentences are true" ($\sim p$) and thus: $(p \rightarrow \sim p)$, ergo $\sim p$. So is the case with the proposition (which Aristotle treats with a big simplification) about the falsity of all sentences,³ which leads to itself being false, too (ergo: "It is untrue that all sentences are false").

The brevity of the passage quoted from *Metaphysics* seems to testify to Aristotle considering this kind of reasoning very obvious and requiring no

²It was as early as Bolzano who made a note that that in contexts like these a Greek author should have been more precise and said . . . meaning 'all statements'. This remark is about the passage from Sextus, quoted later (see below note 7), but it has indirect relevance to the passage from *Metaphysics*, too.

³According to a relatively late source (Sextus Empiricus), *Adversus logices* I 53, the proposition about the falsity of everything was embraced by Xenias of Corinth (5th century BC).

additional explanation. From our point of view, though, a brief analysis of the text quoted was necessary so as to emphasize the similarity of the argumentation structure in our examples (also other than European). We will also see later (chapter IV) that the structure of this kind of reasonings will have to be presented in much more detail than is now needed.

The following example is marked by a particular clarity of reasoning taken from a late stage of Greek philosophy *Against Logicians* (Πρὸς λογικούς usually cited under the Latin counterpart of the title *Adversus Logicos*) by Sextus Empiricus. Below is the passage in question from *Adv. Log.* II 55:

For if everything is false, "everything is false" will be also false, since it belongs to "everything." And if "everything is false" will be also false, its opposite, "not everything is false," will be true. Therefore if everything is false, not everything is false. (Sextus Empiricus 2005: 99)

Despite the clarity of this text, it will be useful to supplement it with several remarks. Let the last sentence be emphasized; it reads "If all is false (p), then not all is false ($\sim p$)" directly corresponds to the implication that forms the antecedent of the *reductio ad absurdum* ($p \rightarrow \sim p$).⁴ An expression thus formulated (as a conditional as an equivalent of implication) is not to be found either in the previously quoted text by Plato or the Aristotelian *Metaphysics* just discussed. At the same time the words by Sextus contain an unambiguous indication that in case implication ($p \rightarrow \sim p$) obtains, its negated consequent is in fact a conclusion. In the text by Sextus, what we are dealing with is not only an example of a completely deliberate use of the reduction principle, but also with a nearly explicit formulation of this principle.⁵

Some worthwhile facts in this context include other texts whose documentation lies outside the passage quoted. First, Sextus refers a number of times to such reasonings. Of the other cases (on account of the parallel with the above quotation) is the passage from *Adv. Log.* I 390,⁶ but his *Outlines*

⁴It is worth quoting the Greek original of this expression: *εἰ ἄρα πάντ' ἐστὶ ψευδῆ, οὐ πάντ' ἐστὶ ψευδῆ.*

⁵To be precise, what matters is the implication scheme ($p \rightarrow \sim p$), *ergo* $\sim p$ as corresponding to the logical law ' $(p \rightarrow \sim p) \rightarrow \sim p$ ' rather than the law itself.

⁶A passage from it reads: "For if every appearance is true, than even not every appearance's being true, since it takes the form of an appearance, will be true, and thus every appearance being true will become false" (Sextus Empiricus 2005: 77). As in Theaetetus, it is about being polemical with the views held by Protagoras. See also *Adv. Log.* I 395 II 466-467.

of *Pyrrhonism* (Πυρρώνειοι ὑποτυπώσεις) II 76 ought to be mentioned at this point, as well. Second, it is only Sextus who introduced a special technical term for such reasonings — περιτροπή — lit. "reversal," usually translated as "self-refutation" (*Adv. Log.* I 389-390). Third, Sextus mentions Democritus and Plato as those who had used such argumentation before him but fails to mention Aristotle (*Adv. Log.* I 389). It would follow that the discoverer proper of the principle of *reductio ad absurdum* was Democritus, for which there is no direct evidence in the extant Democritean passages, though.

This is where we end the brief review of the subject at the Greek stage. The subject matter, inherited from the ancients, does have a continuation in modern times and examples can be provided that go as late as the 20th century. Rather than take up such a large task, I will just mention that in the scholastic philosophy of the Late Middle Ages, it appears in a peculiar context that binds it with the closing discussion in chapter IV. This is where we will return to the issue. The modern period can be illustrated with one example coming from the 19th century, which merits the reader's attention or the mere reason of the personage of the author.

Bernard Bolzano (1781-1848) devoted much space to his discussion setting out to prove that true sentences exist. This is a quotation that is most closely linked with the Ancient Greek example given before, which (on top of *Theaetetus*) was known to him, incidentally.

Satz Wahrheit habe, widerlegt sich selbst, weil es doch auch ein Satz ist und weil wir es also, indem wir es für wahr erklären wollten, zugleich für falsch erklären müssten. Wenn nämlich jeder Satz falsch wäre, so wäre auch dieser Satz selbst, dass jeder Satz falsch sei, falsch. Und also ist nicht jeder Satz falsch, sondern es gibt auch wahre Sätze; [...] (Bolzano 1837: 148).⁷

The only reference to the quotation that I know of in Polish is to be found in Śleszyński (1923: 180-181).⁸ Of source the text quoted is a mere echo of Bolzano's ancient precursors (which he himself stresses) and requires no additional explanations. To be precise, it is worth mentioning that Bolzano's logic saw a monograph, where the issue in question is addressed (Berg 1962:

⁷*Ibidem* a reference to predecessors including Sextus Empiricus, with the remark mentioned before (see above note 2).

⁸The author attempts to present Bolzano's reasoning as barbara syllogism, adding that the absolute skeptic against whom the argumentation is directed could answer that they do not recognize barbara mode.

chap. 7, 61-63).⁹

II

The Old Chinese example of our subject is extremely scarce and is derived from one source only. It might seem a fairly simple business, but in fact it is associated with serious difficulty, which I can only touch upon here. For a reader for whom the Chinese material is completely foreign, two initial explanations are necessary.

The only source is Mo Tsy (Master Mo), attributed to the philosopher Mo Ti, living in 5th and 4th century BC (most probably deceased around 380 BC), which is a posthumous record (done over a longer time) of the master's school (Chinese: Mo Kia, the master's school). More specifically, the part of the work of interest to us is the one on Mohist dialectics (chapters 40-45), and the four canonical chapters 40-43 in particular. The dialectical part of Mo Tsy is a unique extant document of Old Chinese scientific reflection done in a later period of the Mohist School by one of its factions, very commonly dubbed "dialecticians," which is in fact imprecise as initially their interests included exact sciences such as geometry, mechanic, optics, etc. Also, most importantly, they were into the very beginnings of methodology, argumentation technique and logic. According to a common belief, the respective chapters come from approx. 300 BC.

The historical significance of the Mohist dialecticians' investigations as the forerunners of the Chinese scientific thought is unquestionable, and in the opinion of some of today's researchers, the results they had achieved could have formed the basis for the further development of empirical disciplines. The whole current of thought, however, remained a short-term and solitary phenomenon without any further continuation and the passages from Mo Tsy that document this current are among the most distorted Chinese documents that have survived to date, which also makes their interpretation particularly difficult. The usual contributors that added up to distort Chinese documents in the course of many centuries' of transmission¹⁰ were expanded by some other peculiar factors.

⁹It discusses Bolzano's proof of true sentences. However, it is unclear why Berg limits himself to emphasizing that Bolzano was entirely aware of the law ' $(\sim p \rightarrow p) \rightarrow p$ ' (If (if $\sim S$, then S) then S , p. 63) not to mention that he was at least equally aware of the law ' $(p \rightarrow \sim p) \rightarrow p$ '.

¹⁰We touch upon one of the biggest problems of Sinology, whose presentation, even if brief, is impossible here. Suffice to say that the most obvious (and abundant) factors that fostered the distortion of texts were the very structure of the Chinese script and the peculiar system of writing. It is a notorious fact that almost all Old Chinese texts

First and foremost, one needs to count the hermetic nature of the texts themselves as the drivers of the distortion, meant for the disciples of the school for mnemonic purposes, which made these texts barely understood by those from outside the group. The tangled, non-linear and "entry-based" nature of the chapters were the other key issues. The canonical part, of most interest to us, is a loose collection of several hundred entries, with chapters 40-41 containing sequences of the so-called canons, often very brief, several lines' or characters' long formulas of definitions or propositions and chapters 42-43 filled with equally loose sequences of somewhat longer (several sentences) explanations to these canons. In all, each canonical item (about 180 in all) is made up of a canon proper and a corresponding explication, with both corresponding parts to be found in different chapters.¹¹

The other unique factor is of a very different character. As previously mentioned, Mohist dialecticians' investigations remained episodic and discontinued, but the issue is broader and concerns the school of Mohists as a whole. The once influential and probably best organized philosophical school disappeared at a time preceding the emergence of the Han empire towards the end of the 3rd century BC and its written output soon fell into oblivion for centuries.¹² Suffice to say that official Chinese science only "discovered" the Mo Tsy text and took interpretative interest in it at the beginning of the modern era, in the 18th century when the work was already incomplete (a dozen or so chapters had perished) and the extant work contained a number of errors and distortions.¹³ This pertains to the whole of the *textus recepti*, but the dialectical parts proved particularly vulnerable to the centuries' long,

(as well as Middle Chinese and some later ones, too) have reached our time in a repair that calls for emendation. Hence the vast significance of the philological text criticism, which in the Chinese humanities and in Sinology in general constitutes a basic sub-discipline. Sure enough, the whole issue has wide-ranging semiotic aspects, too, which probably no one has tried to tackle in any systematic manner so far. Incidentally, those readers who are interested in the subject matter raised here in very general terms can find an exemplification of the applications of the technique of critical philology as an indispensable condition of the interpretation of an Old Chinese text (here: *Tchung-tsy*) in my review article (Chmielewski 1977).

¹¹On account of the mere lack of punctuation in traditional Chinese texts and a lack of unambiguous criteria of syntactic division (incl. inter-sentential boundaries) it is easy to imagine the problem posed by the division into separate entries and the attribution of explanations to the canons.

¹²A contributing factor was that Mohism was a heterodox orientation in relation to Confucianism, which had become a state doctrine in the Chinese polity.

¹³We owe the salvaging of the incomplete text to copyists, who included Mo Tsy to the Taoist canon in the 15th century (which was purely artificial).

random and uncritical transmission as those were among the least (if at all) comprehensible for the copyists.

In all, the dialectical parts have been the most difficult problem for the Mo Tsy textual criticism and interpretation. It was only at the beginning of the 20th century that the great erudite and philologist Sun I Zhang (1848-1908) who came out with a critical edition of the Mo Tsy text, which truly merits the term "groundbreaking" as it ordered the whole of the vast text even if a number of textual problems remained unresolved. In this sense the Sun I Zhang edition proved a breakthrough for the dialectical parts as well, particularly for the canonical chapters. The text of the dialectical parts edited by Sun I Zhang, supplied with abundant commentary, conjectures and emendations became the basis for the 20th century Chinese studies on Mohist dialectics. However much these most modern and specialist studies may have contributed to making the analysis of these chapters ever more in-depth and broadening the extra-philological aspects of the subject matter, one must say that in the interpretation of those oft-elaborated on materials, we more commonly deal with serious differences in interpretation than with findings that all (or most) would agree on as settled.

As a quintessence of the above description of the state of affairs, two fundamental remarks come to mind. Firstly, it is sure or at least very likely that in some (but rather few) cases, for all the apparatus at our disposal, neither an adequate reconstruction of the original text nor a compelling interpretation are or will ever be possible. Secondly, there are cases that go to the contrary, where the matter was unnecessarily made too complicated or obscured where it otherwise seemed simple. In particular, I mean cases where new scholars endeavor to replace Sun I Zhang's emendations and conjectures that were sufficiently justified and led to coherent and convincing interpretations with their own, much less fortunate, expositions of the texts.¹⁴ In my opinion, the two Mohist canons — the Chinese exemplification of our subject matter — belong to the latter category, particularly as regards the shape of the Chinese text, which is the basis of interpretation.

This lengthy introduction, even if significantly simplified, seemed necessary not only as the justification of the fact that the Chinese exemplification of the subject is rather hard but also for emphasizing that in the Sinological part of the study I must provide the examples only at my own responsibility. It means that neither the exposition of the Chinese text I adopt (including

¹⁴Note that particularly for the interpretation of those canonical readings that are interesting in terms of logic, Sun I Zhang's text proves sufficient overall or at least constitutes the best starting point (Chmielewski 1966, particularly p. 40).

the punctuation, dismemberment of the text) nor the interpretations which the expositions entail as expressed in the Polish translation, correspond to any of the interpretation attempts of the canonical texts that I know of; conversely, they differ from any such attempts. This is not to say that my interpretations are completely independent from the literature available so far. On the contrary, behind them (or some of their elements) is a vast corpus of bibliographic documentation, Chinese and Western, whose detailed discussion is impossible here and is not really necessary. The most indispensable references, given in the footnotes, are supposed to make it possible for those interested to identify the Chinese text in the form I adopt,¹⁵ and make a note of some interpretations that are closest (but not identical) to mine.

Here is the canonical Mohist text that is key for this discussion:¹⁶

Can. It is false to believe that all statements are false. The explanation lies in the speaker's (i.e. the one who states) own utterance.

Expl. Falsity is illegitimate. If the person's statement is acceptable, it means that it is not false; thus there are acceptable statements. The person's statement is illegitimate: if (it) were to be considered true (*i lang*), then of necessity it proves false (*pi pu lang*).

Undoubtedly, the purpose here is to refute the proposition, that says "all statements are false," as a rebuttal by way of an appeal to the fact that the proposition, and thus a statement belonging to the set of all statements, entails its own falsity. Particularly interesting is the ending of the explanation "if (it) were to be considered true (p), then of necessity it proves false ($\sim p$),"¹⁷

¹⁵It is all the more important that on the basis of the mere translation even an expert Sinologist would have a problem with an exact reconstruction of the logic of the text being the basis of interpretation. A direct quotation of the text I consider correct is impossible for typographical considerations.

¹⁶The text exposition adopted is in line with Sun I Zhang's emendatory suggestions, which are also embraced by Chen Kien Feng (1957: 117). See: the most important text in the Western literature, A. C. Graham 1959, I-II: 95n. Graham points to the self-contradiction of the proposition about the falsity of all statements, but given the unfortunate exposition of the so-called explanation that skips Sun I Zhang's emendation, it provides an interpretation that blurs the logically relevant sense of the whole.

¹⁷In *textus receptus*, the ending of the explanation had been distorted, but as early as Sun I Zhang a philologically justified and logically relevant emendation was suggested that held that the *shan* sign was wrong substitution of the original *tang* (these are graphically similar and we know that such a similarity often led to erroneous substitutions). My translation renders this particular exposition, *I lang pi pu lang*, which is also acceptable to Chan Kien-Feng. For the record, it needs to be mentioned that this exposition is ignored by most interpreters.

which corresponds to the antecedent of the principle of reduction ($p \rightarrow \sim p$). Considering that the Chinese author realized the fact of such an implication obtaining, it ought to be implied that "p is false, that is, $\sim p$ is true." It can be said that Mohists had by themselves discovered the *reductio ad absurdum* and formulated it almost explicitly. Strictly speaking, what is meant here is the scheme of implication that corresponds to *reductio ad absurdum*, not about this very principle, which at an early stage of thought seems to be a distinction of little significance.

The reader will easily notice that the canon quoted constitutes a striking parallel to *Adversus Logicos*, referred to previously. In terms of content there is no difference, and in terms of logical formulation the Mohist example is at least as clear as that of Sextus. And perhaps even more logically explicit. What is meant here is the mutually parallel endings of both texts that refer to the implication ($p \rightarrow \sim p$) of which the Mohist *pi lang pi pu lang* seems a more abstract and general expression than the parallel by Sextus (see the Greek text in note 4). At any rate, the Chinese example quoted is more precisely formulated than the earliest Greek testimonies (Plato, Aristotle) and it ought to be borne in mind that it is half a millennium older than the text by Sextus Empiricus. All that explains why in the scarce Chinese exemplification, this particular example must be ascribed a key role.

The canon in question has an equivalent in another canonical text, which concerns an opposite proposition, that is, one about an alleged truthfulness of all sentences. However, the matter here is much more complicated on various counts, *inter alia* and above all on account of its circularity in the formulation of the starting proposition and the respective counter-argumentation. It would doubtless be easiest to formulate a proposition such as "All sentences are true (p)" and refuting it as before, that is, by making another proposition that, hence, the proposition that "It is untrue that all sentences are true" is true too; thus ($p \rightarrow \sim p$), with a conclusion that $\sim p$. Instead of this, Mohists resolved to use a double negation ($\sim \sim p$ rather than equivalent p), which in itself seriously complicated the whole argument by making it necessary to constantly repeat negations (in the explanation there are a dozen or so of these). Such an aggregation of negations in an abstract and brief text of the canon was another obstacle in its comprehension for outsiders and could have contributed to the distortion of the text at an early stage of transmission.

The peculiarities of the Chinese text will be returned to after the respective canonical text has been quoted. I interpret it in this way:¹⁸

¹⁸The starting point of the example is on this occasion, too, Sun I Zhang's text (but

Can. It is a falsity to negate (all) negations. The explanation lies in non-negation.

Expl. A negation of all negation is (=entails) a negation of its own negation [all negation] and is thus a non-negation of [all] negation. [By contrast] what is illegitimate is a negation that (some) negations can be negated, but this is not a negation of (all) negation.

As can be seen from the example, together with the bracketed suppliants we are dealing with a text of a high degree of complication and at the same time formulated in a nutshell (which is, of course, an added complication), and thus a text must have been incomprehensible to anyone except Mohist dialectical initiates from the very beginning. It is only the observation that the canon is a commentary on one discussed before (in the *textus receptus* the king and *shuo* parts of the canon do not follow each other but are separated by several other canons) makes its interpretation possible. To be more precise, this is about several different though interconnected points which must be listed in sequence.

First, as I have already said, the canon basically goes against the proposition of an alleged veracity of all sentences, that is, one opposed to the proposition which the Mohist author refuted in the canon discussed previously. In this sense both propositions are mutually complementary. Second, the starting proposition being rebutted was formulated using a double negation. Third — an obvious consequence of remark two — the argumentation against such a proposition, contained in the explanation, is by necessity formulated using a double negation. Noticing the three above points has undoubtedly been owed too A. C. Graham (see n. 16) and in this sense we also owe him for the decoding of the entangled and partially incomprehensible canon. This, however, is more about the short comment Graham gives than his own interpretation of the very text of the canon, which I consider wrong (*cf.* Graham 1959: 95).¹⁹ Leaving the purely philological aspects of the issue aside, suffice it to say that the inadequacies of Graham's translation

not his interpretation). See Chan Kien-Feng 1957: 118 (with punctuation that differs from mine). However, admittedly, there is another exposition of the beginning of the so-called explanation, which leads to an alternative translation of the first sentence. If one does not negate one's own negation [all negation], one does not negate (all) negation (the rest of the explanation being kept as before). Suffice to note with no additional comments that even such a version does not change the logical sense of the whole canonical text.

¹⁹The point is not that Graham accepts the exposition of the beginning of the explanation discussed in the previous note but the totality of his (quantifier-free) interpretation.

can be explained above all in his overlooking of another point — point 4 — implicit in his own right assumptions. The thing is that the points made previously assume the need for supplementing the logical (sic!) interpretation of the superficially quantifier-free accumulation of negations that occur in the Chinese text by introducing certain "implied" quantifying expressions. In this sense the novelty of the interpretation boils down to drawing final implications from Graham's correct and revealing observations, which he himself did not use properly. In stressing this interdependence I must also state that in this case, more than in the previous one, my translation of the canon differs from all the previous attempts. Unable to provide a detailed rationale for my own interpretation here, and its philosophical aspects in particular, I must discuss two issues, though, which are the most shocking for a European reader.

Firstly, I will discuss the issue of double negation, which in our view unnecessarily complicates the Chinese formulations as early as the level of the basic proposition. In this specific case the Mohist rendition of the proposition that is then refuted corresponds to a statement as follows: "All negations are negated" instead of the simpler equivalent "[It is considered that] any statement is true."²⁰ Such an artificial formulation of the basic proposition is, in our opinion, quite understandable on account of the tendency to construct affirmative statements by *duplex negatio affirmat* — ' $\sim \sim p = p$ ', universally applied in Chinese. Stylistically, such structures are usually emphatic (and, most probably, so is the case here, too), which does not affect the truth-value of the sentences, of course. What is striking is the exceptionally high frequency of the occurrence of double negation in Chinese texts (starting from the early *Chou* period at the turn of the first millennium BC) as well as the great diversity of the types of structures that use the law of double negation, from the simplest to the most complicated.²¹ The concentration of negations in arguing against the starting proposition is, unusual to us and anyone who is not a Mohist initiate, just a consequence of the formulation

²⁰Please note that the proposition "All negation is negated" can be represented with the formula $(p) \sim \sim p$ (For any sentence p , it is untrue that $\sim p$), which along the lines with the principle of double negation is equivalent to $(p) p$ (For any sentence p (it is true that) p).

²¹One can't help making a remark that the complicated matter of double negation in Chinese, which any Sinologist encounters in the day-to-day practice, has not given rise to a monograph yet, and it even tends to be disregarded in grammar books of Chinese. To the best of my knowledge, the only attempt at showing the role of double negation in Old Chinese syntactic structures (with an analysis of selected examples), which is systematic even if a little sketchy, is my paper Chmielewski 1965: 117, 29n.

of the proposition itself.

The second thing that begs for comment is the issue of quantification, and to be more precise, the need to complete the interpretation of the canon with the introduction of the suitable quantifiers, which the Mohist author skipped in their text completely. This needs to be emphasized all the more so that the issue has largely gone unnoticed (I have mentioned Graham already, but this is equally true of other interpreters, too).

One should begin by being reminded of a little-known fact that the Old Chinese language not only has an array of logical quantifying expressions but, what is more, the grammatical rules of using these natural quantifiers in Chinese exactly reflect the tautologies of the modern two-value quantifier calculus. This is not only true of the De Morgan laws, fundamental for this calculus and particularly clearly reflected in the Chinese syntax, but also some more complex derivative tautologies where quantification co-occurs with double negation and binary functors of propositional calculus. The earliest examples of such complicated syntactic structures are to be found in inscriptions coming from the early *Chou* period, with later text freely using such constructions and always doing so in agreement with the propositional calculus. In other words, Chinese grammar simply precludes any superficial quantification anomalies, which occur (especially at the junction of quantification and negation) in natural languages, particularly Indo-European (Jespersen 1956: 331f²²). Notably, there is a clear tendency in Chinese to use more complicated structures (those at the surface-structure correspond to formulas containing more logical operations, usually negations) rather than comparable simpler structures (corresponding to the operations that contain fewer operations). This tendency is undoubtedly related to the propensity in Chinese to use double negation, which it probably is derived from.²³

²²Of course the work is obsolete (first edition in 1924) but apparently despite half a century since its first publication linguistics has not proposed much more.

²³It is about such facts as these that Chinese grammar and style prefer syntactic structures that correspond to the formula $\sim(\exists x) (\varphi x, \sim\psi x)$ instead of a simpler formula $(x) (\varphi x \rightarrow \psi x)$, which is logically equivalent to the former. Here again we must say that the issue of quantification in Chinese, which is a unique and important issue in the language, is not only without a systematic monograph but has largely gone unnoticed by most Sinologists, still satisfied with *ad hoc*, intuitive and not always right interpretation of cases encountered in the texts. The heart of the matter is that the grammar of quantification in Chinese is (even superficially) so close to the natural counterparts of the logical quantifier calculus that the mere noticing and isolation of the suitable subject matter (let alone a systematic study of it) seems outright impossible without the assistance of logic, and its analytical techniques. See the examples and

The comments, seen as an introduction to the supplementation of the translation of a non-quantifier Chinese text with suitable quantification expressions may seem spiteful and even paradoxical since they set the reader's mind in expectation of a precise quantification in the text rather than a complete omission of quantifiers by the Chinese author. The paradox will prove spurious, though. The intention was to use the occasion to present in a little more detail — and to the Polish reader for the first time ever — an issue that is little known even among Sinologists but which might be of interests to scholars from other fields, too. What is most important, though, is that the state of affairs presented above, as opposed to what appears to the contrary, is a relevant backdrop of the issue in question: a backdrop that is vital in the sense that it highlights the legitimacy of the insertion of quantifiers in a translation which is supposed to unambiguously render the semantic intentions of semantically shortened formulations of the Chinese original.

All that has been said before about the grammar of quantifiers in Old Chinese concerns explicit quantification, that is, of such very numerous cases where the Chinese author was willing to use an appropriate procedure. This is not to say, however, that they should do so at any opportunity. As in any other natural language, in Chinese too non-quantifier expressions are widely used; these are ambiguous at the surface-structure but do have implicit quantification, left to the guesswork of the reader. Sure enough, an unambiguous interpretation of such constructs can be impossible at times, but apparently such cases are rather rare and they also tend to be intended by the author as vague or deprived of quantification intention at all.²⁴ As in other languages, in Chinese, too, the surface-structure sense of the sentence against its context may be enough to reconstruct implicit quantification, but especially in Chinese, there is an overarching factor which I have just exposed. Since there was a precise mechanism of logical quantification built

comments in the previous paper as well as my own communication Chmielewski 1979.

²⁴The issue would merit a study that could made the last remark more clear. Perhaps sentences deprived of a quantification intention (quantification-neutral) should be isolated as simply quantifier-free form ones with implied quantification, that is, ones where quantifiers may not exist at the surface-structure but can be reconstructed in line with an obvious (or at least highly probable) intention of the author of the utterance. Apparently, it is possible to precisely determine the criteria allowing such a division. The canon obviously belongs to the latter category since, first, it cannot be quantification-neutral without a loss of sense (this is the core of the hapless interpretation by Graham) and, second, it yields a logically appropriate sense with an arrangement of quantifiers that is relatively easy to reconstruct.

into the Chinese grammar, and thus the Chinese language sense, too, and operating by default, it can be presumed that such a mechanism is also active in the discursive thinking of individuals using the Chinese language. This must in turn have facilitated the addressee's right interpretation of quantificative intention in shortened utterances, quantifier-free at the surface-structure and, on the other hand, may have encouraged the sender (author) to a shortened non-quantifier sentences, whose quantification intention was sufficiently clear and rendered itself to an unambiguous interpretation. It seems that all the factors mentioned ought to be reckoned with in the case under consideration.

A presumption that the author of the canon in question might not have been aware of the quantification aspects of the issue they were dealing with or regarded their expression as quantifier-neutral (under which assumptions the whole canon loses its logical sense) is out of the question on other counts as well. It was Mohist dialecticians (and actually only them in the history of the native Chinese thought) who pursued logical-linguistic reflection and must have been particularly sensitive to quantification for the mere reason of their probably being the world's first to try and define quantifiers.²⁵ Overall, most probably we have to make do with a deliberately shortened expression but at the same time with an obvious quantification intention, on the interpretation of which the author of the formulation could count, at least within their school. Bear in mind that a canon was a two-part mnemonic (hence the desirable brevity), on one of a range of issues being considered by the Mohists, one that signaled a broader interpretation or discussion, and one on which initiates were probably given to comment. If so, the exercise was not too difficult let alone for the fact that the interpretation of the canon's quantification intention was nearly always merely about general quantification with one important exception, though.²⁶

Giving these explanations as sufficient (at least in my understanding) justification of the translation, it needs to be stressed that it is in this particular translation, where the canon is a coherent and interesting whole. The basic idea of the canon is of course the fact that anyone's proposition

²⁵One of the canons in chapter 40 of Mo Tsy is a logically correct definition of a great quantifier as an equivalent of the zero quantifier (Oz) . . . which, in logic, is equivalently replaced by the negation of an existential quantifier with a negation directly following (Graham 1971: 84). Note that this Mohist definition reflects a common procedure in the grammar of Chinese of expressing general quantification in the latter manner, that is, (Oz) ~ . . . rather than the later (z) . . .

²⁶The multiple general quantifications characteristic for the canon could also have contributed to its *quantifier-free* formulation.

that "I negate ALL negation (p)" is a negation and in itself belongs to the range of ALL negations referred to in itself. It thus entails its own negation: "I negate that I negate all negation," which, in other words means "It is not true that I negate all negation ($\sim p$)."²⁷ In the end, a negation ($p \rightarrow \sim p$) is ascertained to obtain here. In agreement with the *reductio ad absurdum*, this leads to the conclusion $\sim p$. However, let us notice that the canon is not limited to refuting in this circular manner an equally circular proposition that allegedly all propositions (sentences) are true.²⁷ Its author also states that some negations are subjected to negation (which is an obvious truth which Mohists must have realized),²⁸ but a difference is also emphasized between this statement and the starting proposition that has been refuted. In other words, the canon not only refutes the inconsistent starting proposition, but it also corrects it, with the correction being about a quantification that is not directly expressed in the text but which is implicit in it.²⁹ This logical coherence, which can be seen in the translation of the canon, also testifies *ex post* to the relevance of the interpretative principles adopted.

The two examples may indeed constitute the whole of the subject matter as per Chinese philosophy, but this provides us with sufficient proof that Mohists were able to discover the principle of the *reductio ad absurdum* on their own and were capable of using it to at least the same degree as the little earlier Ancient Greek thinkers. This is corroborated in the third example which is so close logically to the issue discussed here that it could constitute the third (and last) component to the extended Chinese exemplification. What we have to do with it here, however, is not a direct application of the *reductio ad absurdum* itself but, rather, a reverse law of reduction, expressed by the ' $(\sim p \rightarrow p) \rightarrow p$ '. Clearly, the example means above all that Mohists also discovered this reverse variant of the reduction principle even if they

²⁷As noted above (note 20) a proposition such as "I negate all negation" is in fact a circular way of formulating a proposition "I recognize all sentences to be true." The conclusion of the Mohist reasoning "It is not true that I negate all negation" is to say that "It is not true that I recognize all sentences as true."

²⁸The point is that some (and only some) negative sentences are false and thus are in need of another negation, which along the lines of the law of double negation abrogates the previous (falsifying) negation and turns the whole into a true statement. At the same time, Mohists ascertain here the existence of true statements along with the respective equivalent formula ' $(\exists p) \sim \sim p = (\exists p) p$ '

²⁹Using symbols, we can put it this way that Mohists not only refute the false proposition $(p) \sim \sim p$, which as we know is equivalent to $(p) p$, that is, "All sentences are true;" what is more, they turn it into a true proposition by way of changing a general quantification into an existential one $(\exists p) \sim \sim p$ (equivalent to $(\exists p) p$, that is, "Some sentences are true").

did not realize the difference between the two (which is of little significance, anyway), but it provides an indirect confirmation of Mohists freely using reductionist reasonings. In this sense, the example is important for our subject, too, but as stated at the beginning, as a reverse reduction, this will be excluded from the discussion. I will thus limit myself to the general comment above and append a note on the canon.³⁰

The scarcity of the Chinese documentation is notable. It comprises of up to three examples coming from the same Mohist source. Compared to the Greek examples (not to mention its Western continuation), this scarcity of Chinese exemplification may seem so unlikely that a skeptical reader could even suspect a misunderstanding or the author's sheer ignorance. It thus needs to be stated in no unclear terms that indeed the Chinese examples provided before constitute the complete exemplification of the Chinese philosophical literature on the subject.

For a Sinologist, this state of affairs is no surprise. More than that; one could rather be surprised that there exists a sufficient documentation at all of the phenomenon in question rather than it being so scarce and limited to one Mohist source. As said before, the Mohist School, and its branch known as dialecticians in particular, was an important, if isolated, Chinese phenomenon that was discontinued and it was rather fortunate that a coincidence of factors helped it survive at all despite having been forgotten for centuries. This needs to be supplemented by stressing that the Mohist theoretical reflection — particularly logical, semiotic and epistemological — was so different from the type (or, rather, a stereotype) that dominated Chinese philosophy that it simply had no chance of rebirth after the fall of the heterodox school and with its output having been lost. It is highly probable that it was the heterodox nature that contributed to the extinction of the school (even though the main reasons were political), but surely the lack of interest in the work of Mohist dialecticians was a major factor why

³⁰The canon in question being a Mohist proof of the usefulness of acquiring knowledge. Here too the text is formulated quantifier-free, with the reasoning implicated in a rather complicated context. However we have to make do here with an unquestionable fact of using a reverse (sic!) reduction principle ' $(\sim p \rightarrow p) \rightarrow p$ '. An orderly reasoning can be presented as follows: somebody's negated proposition "It is not true that (all) acquisition of knowledge is useful ($\sim p$)" contains in itself a knowledge (even if just the knowledge that the acquisition of knowledge is useless), which this somebody presents as useful to those who do not possess this knowledge and ought to acquire it. So, the proposition that negates the usefulness of acquiring knowledge is supposed to imply *per se* that still "(some) acquisition of knowledge is useful (p)," with the consequent being a conclusion at the same time.

their legacy was lost.³¹ We have to stop at this brief sketching of the subject matter.

The description of the intellectual climate that did not foster this kind of reflection — something opposite, in fact, to what dominated Old Greek and Indian Buddhist thinking — may explain why documentation in Chinese is scarce, but makes no proof that the whole of the Chinese exemplification boils down to the illustrations provided before. It thus ought to be added that this conviction also has empirical grounds in that so far nothing has been found to the contrary. We mean a peculiar argument *ex silencio* from Chinese scholars, whose knowledge of the sources usually exceeds the capabilities of Western Sinologists and who have not recorded examples of such a kind. This requires some more explanation.

In extra-sinologist circles it is little known that philology has been the basic field for all disciplines of Chinese humanities, with all textual research having an extensive philological context in China. In practice it means that making constant references to other texts is an integral part of any critique and interpretation of each text studied if the scholar has found the other texts analogous or relevant in some important terms to the text being investigated and has thus recognized those as capable of contributing to making the interpretation of the text investigated broader or deeper. This is a procedure used by Chinese scholars to this day, and given the encyclopedic erudition of each competent scholar, which needs to be multiplied by the number of researchers who (as in the case of the Mohist chapters) dealt with the editions of the text, the probability of all of them overlooking some references or parallels that are important for the text they investigate is extremely low. Thus a conviction of the completeness of the exemplification provided as one that appeals to the fact that those numerous editors and interpreters employing the procedure of the dialectical chapters of Mo Tsy have not noticed anything that could supplant this exemplification seems fairly justified.

To be precise, it needs to be added that there is one peculiar exception

³¹The impervious nature of the traditional Chinese thought to inspiration pushing towards theoretical logical reflection, epitomized by dialectical Mohist inquiry, confirms very modest results of external Indian Buddhist inspiration in the Middle Ages. As we will soon see, some Sanskrit texts in Buddhist logic were indeed translated at the time, and Chinese monks even wrote their comments to the texts, but the interest in the subject was rather low and, like in the case of the domestic Mohist inspiration, made no lasting contribution to the development of Chinese philosophy. The limited reception makes the significance of the respective Chinese-language materials no less important, though, for the study of Indian Buddhist logic, to which they in fact belong.

in the existing Chinese literature, which does not undermine the rationale, though, but on the contrary, reinforces it indirectly as testifying to having indeed been a search for substantial equivalents to the texts of our interest in the source material. A counterpart of sorts has been found of the first of the canons discussed in a lengthy comment by the monk K'uei-Ki (AD 7th c.) to a Chinese version of a textbook of Buddhist logic written in India.³² The thing is that the relevant passage of K'uei Ki's comment, noticed and quoted by contemporary Chinese researchers of Mohist dialectics does belong to Chinese-language literature, but does not constitute part of the native Chinese thought. In line with what the mention on the nature of text the passage comes from suggests, it belongs (like the whole text where it is found) to Indian Buddhist logic and that why it will only be presented in the chapter devoted to the Indian Buddhist documentation of the subject.

These remarks close the rationale for my conviction that the Chinese exemplification of the subject of this study is thus complete. At the same time it was found that the documentation does not overlap the whole Chinese-language documentation. Moreover, the explanation might imply to the reader that the role of Sinological materials (in the linguistic sense) is not restricted to the native Chinese milieu but that it also pertains to the Indian Buddhist circles.

This right conclusion, indicating a fact that is new to us and at the same time important in the context of the further discussion needs more explanation as it fails to give one an idea about the significance of the issue, which has only been signaled here. In brief, Chinese-language Buddhist literature is indispensable (and in some cases irreplaceable) source material for the many branches of Buddhist studies including Indian Buddhist logic which is of utmost interest to us here, and for which the significance of Chinese sources is much greater than would otherwise appear upon the mention in passing of the K'uei-Ki comment. As regards the subject matter studied here, this will be corroborated in the next chapter.

III

The issue of the Indian Buddhist exemplification is much more complex than the Chinese examples, with the difficulties it poses being of a completely different nature. This calls for some more general explanations all the more

³²The most recent edition of a detailed analysis of Mohist dialectics: T'an Kie-Fu 1977: 335. A reference to be found in an earlier work of the same author, T'an Kie-Fu 1935. See also Chan Ki-Feng 1957: 118.

so that the matter is not restricted to our narrow specialization and is much more extensive, concerning the whole of Buddhist studies as a strictly interdisciplinary field. Also, the issues involved are less known or virtually unknown to the potential readership and this is another reason why these should not be overlooked. Regardless of the point of supplying a broader and relevant backdrop of a broader discussion, what will be done is broken down in proportion to my own competency here, which is very modest.

What we should start with is a fact that is well-known to both Sinologists and Buddhist scholars alike that the art of dialectics has a rich tradition in Indian Buddhism. The first attempt at the codification of the rules of this art anticipates the subsequent Indian logic (*nyāya*), both orthodox (in the sense of being pursued within Brahminism) and Indian Buddhist. Scholars pursuing Indian studies note that these doctrinal disputes and discussions were usually about refuting the opponents proposition in which reductionist reasoning played a vital part. To be precise it ought to be added that the examples cited in the literature of the subject indicate that the authors do not really mean the applications of the *reductio ad absurdum* in a formulation that attracts our interest here, but a broadly understood reduction to a contradiction and the *modus tollendo tollens* ' $(p \rightarrow q). \sim q] \rightarrow \sim p$ ' in particular (Jaystilleke 1963: 105f, 409f).³³ At any rate, the tendency to use reductionist reasonings (however strictly we determine their structure) is beyond doubt and is one of the aspects of characteristic Indian Buddhist love for dialectical-logic subtleties. One can thus expect to find an exemplification of our issue in Indian Buddhism but that this illustration will be richer than in China and Old Greek, too, perhaps, and as such perhaps richer in terms of the variety of applications. It seems all the more likely as in this case both the quantity and diversity of potential sources of documentation are exceptionally large, even when compared to European antiquity.³⁴ The latter point also leads to the main cause of the difficulties mentioned before, with some added serious complications.

³³Not all logicians will recognize such reasonings as examples of the applications of *reductio ad absurdum*. This is an extension of the concept of reduction, probably justified by that the antecedent of the *modus tollendo tollens* formula $(p \rightarrow q). \sim$ implies the antecedent of the $(p \rightarrow \sim p)$ reduction. It is a marginal issue as we are here interested in the principle or reduction *sensu stricto*.

³⁴I gave my own heuristic assumptions by which I was directed on a quest for examples in the sources and literature available. The findings presented further justify the relevance of the assumptions and making a note of these. However, the exemplification given subsequently is in a way random and may be expanded on by competent scholars.

The mere quantitative abundance of Buddhist literature poses no small problem even for the most competent scholars of Buddhism and is in itself enough of a challenge for those who seek documentation of numerous issues in the abundance of source texts. The matter is not that easy even if not that complicated, but it is compounded by a linguistic complication. The original Indian Buddhist literature is bilingual: Pali and Sanskrit, similar and yet different languages and thus requiring a separate study. Also, the Buddhist Sanskrit is sufficiently different from its classical variety to make it difficult for a fluent reader of the latter to read texts in the former without proper preparation. Also, the Pali-Sanskrit language differentiation within the native Indian Buddhist literature is reflected in the nature of the sets of texts that correspond to the language difference. First, Pali is the language of the basic sources on early Indian Buddhism, referred to as Hinayana, especially the so-called Pali Canon, but there are also some Pali texts that do not belong to this canon. Sanskrit is the language of an impressive body of Indian Buddhist literature called *mahāyāna*, particularly the corpus of texts by the so-called Madhianics (*mādhyaṃika*: followers of the middle path) and the yogins (*yogācāra*: followers of yoga), being those who created a very rich philosophical literature, including treatises and manuals on logic or otherwise related to logic.

However, at around the beginning of the second millennium, that is, around the time of the disappearance of Buddhism in its cradle — India — a vast majority of the Sanskrit Buddhist text had been lost.³⁵ Some original manuscripts may have been preserved to date — almost all outside India, incidentally — and the recent decades revealed some new finds, but it only slightly diminishes the scale of the catastrophe that was inflicted on the Sanskrit Buddhist literature. The extant manuscripts are indeed extremely valuable, but they are but a fraction of what had been lost, but if the effects of the losses can be considerably averted, then we owe that to some other circumstances.

There has already been an opportunity to mention the unique significance of Chinese-language materials for the study of Indian Buddhist logic, but this is just a part of a much more important phenomenon. As a result of work on the domestication of the Indian Buddhist thought for the sake of the Chinese Buddhists, which was begun in the early Middle Ages and lasted for ages, we now have very rich Chinese Buddhist literature. It may be above

³⁵This was not the fate of the Pali literature, which was preserved and indeed created in Ceylon, where the Hinayana Buddhism took root and has remained to this date.

all the source material for the reception and development of Buddhism in China, but it is also a precious, even if secondary collection of sources for the Sanskrit Buddhist literature as the commentaries and treatises written by the Chinese Buddhists for their own use, the Chinese Buddhist canon also contains a number of translations from Sanskrit, including the Chinese-language copies of a number of works that have been lost. Notably, reading the Chinese Buddhist texts requires some specialist preparation that goes way beyond the conventional Sinological curriculum.

What is more, almost exactly the same can be said about the other vast collection of Buddhist literature — the Tibetan Canon. The origins of Buddhism in Tibet came several centuries later than in China,³⁶ but a vast effort was made in the Tibetan monasteries to translate Sanskrit Buddhist literature, with the Tibetan versions having a particular value being more faithful renditions of the original thus allowing whole parts of the lost Sanskrit original copies to be reconstructed. This also testifies to a much higher flexibility of the Tibetan language as compared to Chinese (the two being related, albeit remotely, thus making the similarity insignificant) but what was also very important was the fact that the Tibetan translators were unrestricted by their own literary tradition (they did not have one) and worked out their own style adapted to the translation from Sanskrit that was as faithful as possible. Also, they reconstructed in their own language the very rich technical terminology of Indian Buddhism.³⁷

Both canons — each constituting a large collection — are a major proxy source for Buddhist studies, largely compensating for the loss of original Sanskrit Buddhist copies. Importantly, too, both canons are mutually complementary. Of course, there are texts that are doubled and we thus have

³⁶The Tibetan language began to be written down as late as the 7th century AD and this occurred precisely for the purpose of domesticating Indian Buddhist literature. The Tibetan script is modeled on Indian but uses extra means of a precise transcription of Sanskrit, which are unnecessary for Tibetan.

³⁷Here two important remarks come to mind. First, it is a semiotically interesting language of an isolated and rather primitive Tibetan community, which had just learned to write and had not had any literary tradition of its own, should have so quickly become a tool for a very precise reconstruction of a highly speculative and abstract Indian tradition. Second, given that translation is a par excellence semiotic issue, a systematic action of translating Sanskrit Buddhist texts into Chinese and Tibetan is a universal semiotic experiment that is unique in kind and size. Also, it is a vast field for semiotic (empirical-semiotic) research that is the more promising as the language systems involved are very (or even diametrically) different structurally and representing various cultural traditions with a literary tradition (and in the case of Tibetan — a lack of one). It seems proper to at least signal the issue in a semiotic periodical.

parallel Chinese and Tibetan versions of the same lost original. Such cases are very useful let alone because they allow a mutual verification of translation. Even more useful is a situation where lack of a Chinese version is compensated by the existence of a Tibetan one or the other way round so that we have at least one translation of the lost copy. The most fortunate, but at the same time rarest, cases when we have both the Sanskrit original as well as the Chinese and/or Tibetan translation are particularly valuable as these very texts provide us with an empirical basis for the investigation of the translation technique, fidelity of the translations and the like.

It follows that the plentiful research within this very Indian Buddhism (while disregarding the reception of Buddhism outside of India, in itself a different set of issues) cannot be limited to the mere Indian source base but must largely (and in many cases, solely) appeal to the linguistically secondary Chinese or Tibetan material. We will soon be convinced of the truth of that observation as illustrated in the subsequent sections of the paper. Now, though, we need to realize the scientific difficulty posed by the state of affairs. In brief, a scholar in Buddhist studies ought to possess Sinological and Tibetan philological skills on top of their philological Sanskrit-Pali competences and the knowledge of the Indian culture. All these combined in one individual in their single lifetime seems an unattainable ideal, with a merely approximate competency that allows sufficient research skills being found only in a very few. Also, considering that the ideal competency assumes being extremely well-versed in a vast corpus of various texts in multiple languages, we have discovered from within the main and complex reason why Buddhist studies are so difficult.

Now onto how this overall situation affects the study of Buddhist logic, under which the subject matter being discussed falls. It might seem that at least in this specialist field the situation is less complicated, for the mere reason that we should be dealing with rather scant sources as compared to the totality of Buddhist literature. This is so in a way, but not as much so as would seem.

In the first place, the limited source base expected does not require any lesser qualifications in philology and language. The significance of the Indian languages for Buddhist logic is related to something more than the fact that this logic hailed from India and was worked on there, but it also constitutes a part of Indian logic and cannot be separated from its natural context. Suffice to say that these ties are documented by native Indian materials not only Buddhist. On the other hand, most (including those most vital) source material for Buddhist logic is to be found in Chinese or Tibetan versions as

the Indian originals had perished. Second, the selection criteria that limit the source base cannot be precisely constrained. The basic texts including logical treatises (in the Indian understanding of logic, of course, which is different from the modern understanding of formal logic and closer to a peculiar perception of "philosophical logic") are not very numerous, but they are not all the texts involved. Information on logic can be provided by various texts other than logical treatises of a philosophical and philosophical-polemical nature, though. This is especially true of concrete examples of reasonings, including ones that are not reflected in a logical theory.³⁸ In the end, the collection of the potential multilingual source material cannot be identified with precision. It is much broader than the mere set of logical treatises, anyway.

To conclude this part of explanations, we need to note a peculiar complication of a different, extra-philological nature, which poses a serious problem in research into Buddhist logic (excluding other fields of Buddhist study) and may well be the most difficult obstacle to overcome by those who must, above all, have a comprehensive philological formation. Of course, the knowledge of formal logic, necessary in Buddhist studies, without which any sensible research in history and logic, is impossible nowadays either in Indian Buddhism or anything else.

All I have said before is just to emphasize the merits of the accomplishments of Indian Buddhism researchers, particularly those few who combined philological competency with the contemporary knowledge in formal logic and analytical techniques.³⁹ This is also explained by the fact that most achievements in Buddhist logic today are confined to the philological level at best, which is to say still in its early stages, and require more specialist research (or even verification); another reason is that there are still serious gaps in studies on important texts. The scant and fragmented plight of the knowledge of Indian Buddhist (and Indian in general) logic results from this state of affairs, for a radical improvement in which we will need to wait a long time.⁴⁰

³⁸This is very important just for being related to the exemplification of the subject matter of the study. The implications are not properly appreciated. In the Indian theory of logic there is no counterpart of the basic segment — propositional calculus — even though there are reasonings that correspond to it in the Indian practice. See the note 33 on *modus tollendo tollens* as well as note 24 on reasoning practice).

³⁹Interestingly, it was a Polish scholar in Buddhist and Indian studies, Stanisław Schayer (1899—1941), who played a pioneering role there.

⁴⁰The only one attempt so far at an existential presentation of the present state of the art in Indian logic, made by a skilled historian of logic is the part *Die indis-*

All the above comments ought to be treated as a background emphasizing my own limitations in the discussion of the complicated and little researched field, where I have never done my own research. This is to say that the exemplification presented further is as it must be — rather random. If, despite that, it proves to be a sufficient and logically interesting illustration of our issue, it will mean that my quest on the little known path was accompanied by good luck.

We know from the previous chapter that there is a Buddhist example, discovered by Chinese scholars as a *sui generis* counterpart of a Mohist canon. It is, however, a rather late example. Also, on another count it is suitable for quoting only at the end of the review. Of course, what would be most desirable is chronological documentation, and this is what I am going to do. However, in the case of Old Indian texts chronology is difficult and has long-ranging reverberations. Old Indian texts (not only Buddhist and not only those on logic) do not render themselves to dating (rough estimates can vary by centuries) and even the establishment of their relative chronology can pose a challenge. In the case of Buddhist texts translated into Chinese,⁴¹ the only sure chronological information tends to be *terminus ante quem* that the Chinese version provides (this one can be dated, sometimes quite precisely). Of course, in these conditions the intended chronological arrangement of the documentation can only be chronological in an arbitrary sense.

Bearing this qualification in mind, we should start from an example that may not render itself to dating, but which is among the oldest of those that will be supplied. This example is also an illustration of the part Chinese-language materials play in the Indian Buddhist exemplification of the subject matter, as coming from a Chinese version of an unidentifiable

che Gestalt der Logik in Bocheński 1962: 481-517. The very modest size of this part, as contrasted with the size of the whole work, speaks for itself and nothing points to it possibly being capable of expansion despite the passage of a quarter of a century. There is another comment to be made concerning the position held by Schayer, questioned by Bocheński (1962: 488-489) on the anticipation of the propositional logic in the *Pali Kathilvalthu*. See also the counter-critique by Jaystilleke (1963: 412-415), who proves Schayer right on the basis of Pali original. The issue is interesting not only because it is related to propositional logic (Jaystilleke 1963: 44n) but because it apparently exemplifies in its subject area a broad issue in Oriental philology: the adequacy of logical analysis can be (and sometimes is) dependent on the linguistic-philological aspects of the original, which translated into a modern European language can easily be blurred or distorted.

⁴¹The Tibetan translations, being much older than Chinese, are irrelevant here, particularly that the Indian Buddhist texts represent an early stratum of literature.

Sanskrit original, the latter being the only extant source. It is a text that no doubt belongs to the early stratum of Buddhist logical treatises, whose translation (rather obscurely) titled *Zhu Shi Lan* is to be found in the Chinese Canon.⁴² What is known about this text beyond doubt is that the translation into Chinese was done in AD 550 by the well-known non-Chinese missionary monk Paramartha (Ch. Chen-Ti) and that the extant text of the Chinese version is incomplete.⁴³

The first chapter of *Zhu Shi Lan* is about "illogical charges" (Ch. *wu tao-li nan*, Sanskr. *anyāya-khaṇḍana*). In the last paragraph of the original, the author refutes the charge by an opponent that he "rejects [*pu hu*, lit. 'does not recognize/allow'] all statements." Below is a rather literal translation of the passage from the Chinese version:

When you say that you reject everything, is this [your statement] included in the number of EVERYTHING or is it not included in the number of EVERYTHING? If it is included in EVERYTHING, then you yourself refute what you are saying [...] If, however, [this statement of yours] is not included in the number of EVERYTHING, then there is no EVERYTHING [in your EVERYTHING].⁴⁴

⁴²In the newest Japanese edition of the Canon, *Taishō Shinshū Daizokyo* (abbr. *Taishō*), vol. XXXII, item no. 1633, pp. 28-36. An edition of the text which is clear in its layout is one published in Hu Ti-Shan 1931.

⁴³We do not even know the original title of the treatise. The commonly used restitution of the title as *Tarka Iotra* (Treatise on the [art of] polemics) is just a handy convention for which it is hard to find justification in the Chinese original, which roughly means "Treatise on How Things Really Are" [*Zhu Shi* ≠ *Tarka*]. Ch. *Zhu-shi* seems to be a loan translation of the *yathā-bhūta* expression well-known in the Pali Canon. Also, it looks like the text preserved is an artificial compilation of a number of different Sanskrit treatises that can hardly be identified. Chinese scholars tend to attribute the authorship of *Zhu Shi Lan* to the great philosopher Vasubandhu, which is questionable. The text has not been translated into any European language, but the great Italian scholar of Buddhism Giuseppe Tucci, perhaps the only scholar who had actually studied the text, published his own "retranslation" of *Ahu-Shi Lan* into Sanskrit in his "Pre-Dinnāga Buddhist texts on Logic from Chinese Sources" (Tucci 1929, part I *Tarkaiostam*, pp. 1-40 of the Sanskrit pagination).

⁴⁴The Chinese *Taishō* text, vol. XXXII, no. 1633, p. 30 (2), verses 18-22 (Hu Ti Shan 1931: 1850-1851). My translation where I have tried to render the Chinese version literally is not significantly different from the Sanskrit retranslation offered by Tucci: *servaṃ nānujñāyata iti yad uktaṃ bhavatā, etad vacanaṃ sarvasmīn antarbhavati na vā? yadi tāvat sarvasmīn antarbhavati tadā bhavān svayaṃ svoktaṃ nānujñānāti. [...] atha sarvasmīn nāntarbhavati tadā tasya sarvatvam eva na syāt* (Tucci 1929: *Tarkaiostam*, p. 11). The translator's note referring to this passage (part II, *Notes on TŚ*, p. 3) means that Tucci did not notice the logical aspects of the treatise of interest to us (which was practically impossible in work published half a century ago).

A direct application of the principle of reduction is to be found in the first part of the quoted text. If a statement "I reject everything" itself counts within the range of EVERYTHING, then the one who states that should refute this, too. An analogy with the formula ' $(p \rightarrow \sim p) \rightarrow \sim p$ ' will obtain clearly if we assume that in this case "I reject" (I do not allow) means the same as "I negate:" If I "negate EVERYTHING ($\sim p$)," then "I negate (also that) that I negate EVERYTHING ($\sim p$)" and thus, finally, "it is not true that I negate EVERYTHING ($\sim p$)."¹ Regardless of the difference in verbal formulations, it is in fact the same reasoning as in the Mohist canon discussed before. We may even wonder why the contemporary researchers of Mohist dialectics, who, as we see, also reached for Chinese Buddhist literature, did not find this parallel or, which seems more plausible, deliberately omitted it for one reason or other.

What is much more important is that in the text there is something novel, which we have not only encountered in the analysis of the Chinese examples but also in the Greek texts; not even in the 19th century example (Bolzano): posing the very question of whether a statement such as "I reject everything" counts as EVERYTHING itself or not; in the latter part of the passage the author apparently allows for the possibility of excluding this statement from the range of EVERYTHING it itself discusses; it is also emphasized that the EVERYTHING the statement refers to, then, is not EVERYTHING in the end. Note that such a position at least puts to question the legitimacy of the basic implication assumed by all the reasonings discussed so far and is rather obvious. In other words, in the short passage quoted from an unknown Old Buddhist passage of an unknown origin, we deal with one of the oldest explicit formulations of a reservation about the semantically unlimited applicability of the *reductio ad absurdum* that have surfaced in the history of human thought. As we will see further in chapter IV, we have the right to take such a formulation as pioneering with regard to the modern views on the issue.

The issue is all the more important as this very position of an unknown author of the Indian original of the text being quoted is not a rare case in Old Indian literature. A similar tendency can be traced in the Pali Canon, where it is to an extent sanctioned by the authority of the very canonical Buddha. This would require some more thorough study of sources, which is beyond my capacity and this is why I am unable to present this point as a separate example and neither do I know if it would suit such presentation. In the context of present and further discussion, it is necessary to shed more light

on this, but I can do it solely on the basis of second-hand information.⁴⁵

In a text from the Pali Canon — *Dīkhanakha-sutta* — found in a collection of medium-length texts, *Majjhima Nikoya*, three positions are identified in relation to "views" (Pali *diṭṭhi*; Sanskrit *dṛṣṭi*: I "I recognize everything (i.e. all views)," "I do not recognize anything (i.e. any views)," and finally "I recognize some (views) and do not recognize others." Let me remark that the first position is comparable to the one held by Protagoras, with the second corresponding to that of Xenias and add that from our point of view, we would deem the third position right. The canonical Buddha is in disagreement with that, though, and he only endorses the second position — "I do not recognize any view" (Pali *sabbam me na khamati*; more literally: "I do not recognize everything") — as the only one of the three that would foster freeing man from numerous forms of complicity. Buddha recommends a non-dogmatic attitude, here, too, though. This is to say that this position should not be something to cling to; conversely, an abandonment of this (best of all) "view" is recommended, albeit without granting a possibility of exchanging it for either of the other two. All that is congruent with an otherwise well-known fact that Buddhism was skeptic-friendly.

Buddha's interlocutor is a Dighanakha, a wandering skeptic who embraces the position of "not recognizing any view," except he treats his stance dogmatically. Asked by Buddha whether he recognizes his own view, he says that even if he does recognize this view of his, it is all the same. It is supposed to mean that he — Dighanakha — does not recognize any view other than this very one he holds. Buddha stops at this and does not try to prove to the interlocutor that the latter errs logically and does not point to him that in the proposition he makes *sabbam me na khamati* "I do not recognize everything" he uses the word "everything" wrongly.

The convergences between the canonical text just quoted and the ones in *Zhu Shi Lan* are clear and it is hard to imagine these to be accidental. Given the relative early chronology represented by the Pali text, and the part where *Dighanakha Sutta* belongs in particular, it is almost certain that it is in this text that we have to make do with the earliest traceable documentation of the subject matter in question — a starting point to the further evolution in the Buddhist context. As we will be making further references to this role of the text in this study, it is worth outlining the main points of this earliest position.

⁴⁵I owe all the data on the discussion contained in *Dīkhanakha-sutta*, which constitute (secondarily) a source base of my study, to the book by Jaystilleke (1963: 213-217).

First, the canonical Buddha only addresses the position expressed in the statement *sabbam me na khamati* ["I do not recognize everything"] in a friendly manner, with the preference being pragmatic rather than epistemological (the elimination of complicities). Second, the qualification that this position cannot be treated dogmatically also has a pragmatic nature, but apparently, inherent in it is an intuitive awareness of the logical difficulties associated with the proposition. This appears to be reflected in the tricky question that Buddha asks: the possibility of self-refutation of the proposition. Third, in responding to Buddha's question, Dighanakha confirms "dogmatically" his position and invalidates the charge of self-refutation generated in the question by implying that he excludes the proposition from the range of EVERYTHING which the proposition talks about. Fourthly, Buddha, who with his question meant to get his interlocutor to declare that he will not cling to his position and is ready to give it up (which would testify to a non-dogmatic treatment of the position and thus, as it were, circumvent the logical difficulty inherent in the proposition that expresses this position), acknowledges the answer without any further comments. Fifth, he does not question the exclusion made by the interlocutor of the proposition from the range of the *sabbam* inherent in it. Buddha seems to sanction or at least allow such an exclusion.

A more detailed investigation might make the above more precise or correct it. However, it remains a fact that a tendency, marked in the Hinayana Pali Canon to undermine the type of reasonings of interest to us, is not limited to *Zhu Shi Lan* but can be ascertained on a number of occasions in the Mahayana writings. This is particularly true of the literature of the Madhianics, from which another example comes. This requires a prior analysis of the treaty *Vigraha-vyāvartanī*, from which I took the passage analyzed further.

The title *Vigraha-vyāvartanī* roughly means "polemic reversal," which can bring up associations with the term *peritropé* which we encountered in Sextus Empiricus. The treatise is authored by the great philosopher Nāgārjuna, the main founder of the school of Madhianics. As in many other similar cases, his life can hardly render itself to dating and what we can say is that he may have lived in 2nd to 3rd century. Still half a century ago, when Giuseppe Tucci and Yamaguchi Susuniu were publishing the first translations of *Vigraha-vyāvartanī* into European languages (simultaneously but independently), the text was only available in the Chinese and Tibetan version.⁴⁶ The Sanskrit original was only found later (in Tibet) and the

⁴⁶G. Tucci 1929, part I, pp. 1-77 of Arabic pagination and the notes there, part II,

critical edition of the Sanskrit text came out relatively late, with a translation based on that original being very recent.⁴⁷

The skillful and additionally complicated composition of the text is remarkable. Like a number of Sanskrit-Buddhist treatises, the text is made up of two intertwined strata: of verse and prose. It means that every point of deliberation is first presented in a metric two-verse (*kārikā*), after which there is a prose self-comment (*vr̥tti*) that discusses in detail the sense of the preceding stanza. Foreign translations keep this layout, too. The text is so composed that when leaving out the prose comment one can carve out the verses as a whole that briefly presents the contents of the treatise. Also, the treatise is thus divided into two separate parts in a unique correspondence. In the first part, *Nāgārjuna* adopts an attitude of a spurious opponent of Madhianics and formulates a series of potential charges against his own doctrine. In the other, he refutes the charges one after another.

The very beginning of the first part of the treatise is the model for our subject matter; they both add up to create the first criticism from *Nāgārjuna* as a fictitious opponent. Of course, in such an exceptional case as this, where on top of the Chinese and Tibetan version of the treatise there is also its Sanskrit original, an idea comes to mind of making a detailed comparison of all the versions of the text. This would be interesting in semiotic terms. I do not intend to do that, though; I believe it will be better to give a Polish translation, prepared from the Tibetan version rather than the Sanskrit original. When years ago I was translating verses of *Vigraha-vyāvartanī* into Polish, I only had the Chinese and Tibetan versions at my disposal, of which I chose the latter as the basis. Now that I also have the Sanskrit original, I can also say that the Tibetan version of the stanzas is in absolute agreement with the original. The differences are virtually in word order only, which is conditioned by the differences in syntax and metrics.⁴⁸ Therefore,

23-42. To his English translation, done directly from the Chinese version of the treatise *Hui-cheng lun* made at the end of the first half of the 6th century, Tucci appended a transcribed text of the Tibetan version. The French translation is better. It was made from the more precise Tibetan version by the Japanese Buddhist scholar Yamaguci (1920). Both these translations were made a little obsolete when the Sanskrit original was discovered later (see next note), but the translation of the Chinese and Tibetan versions, which was at the time a considerable accomplishment, with the translations having to this date retained a comparative value.

⁴⁷The critical edition of the Sanskrit text Johnston and Kunst (1951). The English translation from this edition Bhattacharya (1971).

⁴⁸Of course, the Tibetan translation of the versed parts is also versed albeit along the lines of different metric principles. Conditioned by the difference between the language. In particular, the single verses of the Sanskrit correspond to two short verses,

eventually the Polish translation from Tibetan can pass for one made from the original language, making this example of the subject at the same time an illustration of the precision of the Tibetan translations I have mentioned before.

For the sake of the Orientalist reader, allow me to quote a passage from the Tibetan text that forms the basis of the Polish translation. In our conditions, reaching the Tibetan version on the mere basis of references might prove impossible, and the Tibetan text (like in Sanskrit and unlike in Chinese) can be unambiguously presented by transcription. Quoting the version that the Polish translation is based on alongside the corresponding passage from the Sanskrit original⁴⁹ will facilitate the formulation of the required explanation of terms and content, without which the translation would be rather unintelligible. Below are both stanzas in the Tibetan version:

gal-te dños-po thame-čad-kyi /
rañ-bźin kun-la yod-min na //
khyod-kyi chig kyañ rañ-bźin med /
rañ-bźin bzlog-par mi nus-so //
'on-te chig de rañ-bźin bčas /
khyod-kyi dam-bčas śna-ma ñams //
mi-'dra-ñid de-de yin na /
*gtan-chigs khyad-par brjod-par byos //*⁵⁰

The translation below faithfully renders verse after verse and it even tries to keep the word order where it does not violate the Polish syntax.⁵¹

If all things'

so in the end the two-verse stanza of the original is rendered by a four-verse Tibetan *kārikā*. We will see that some more difficulties for the translator, resulting from the need to use verse metrics did not affect the translation.

⁴⁹For the sake of comparison, this is the Sanskrit text of both stanzas: *sarveśāṃ bhāvānāṃ sarvatra na vidyate svabhāvaś cet / tvadvacanam asvabhāvaṃ na nivar-tayaituṃ svabhāvam alam // atha sasvabhāvam etad vākyāṃ pūrvā hatā pratiñā te / vaiśamikatvaṃ tasmīn viśeṣahetuś ca vaktavyaḥ* (Johnston, Kunst 1951: 108-109, cf. the English translation (Bhattacharya 1971: 220-221).

⁵⁰The Tibetan version of the stanzas is here presented after Tucci (1929: 3, 5 — his translation of the stanzas *ibid.*, p. 2 and 4). I use a transcription that is more modern than Tucci's, though, where aspiration is consistently transcribed "h." For the translation of both stanzas from Tibetan, cf. Yamaguchi (1920: 5, 7). The Chinese text of both stanzas as used by Tucci, *Hui-cheng lun*, *Taishō* (no. 1631, p. 13 (2)).

⁵¹Below a retranslation into English, as literal as possible — trans. note.

Self-being does not at all exist,
Your words are also devoid of self-being,
And refute self-being they cannot.
If, however, the words have self-being,
Your previous proposition becomes violated.
If such disagreement occurs,
You ought to state a special rationale.

Note that above all we have to make do with a more sophisticated application of the principle of the *reductio ad absurdum* than previously, which is caused both by the peculiarities of the Madhianics' philosophy and the dialectic method becoming more sublime in the treatise.⁵² We need to start with explaining the basic terminological issue related both to the essential point of the doctrine. The rather artificial word "self-being" used in the translation seems a right equivalent of the Tib. *ran-bzin* which here renders the Sanskrit *svebhāva* because even in terms of word formation it resembles the Indian original and with its artificiality stresses the fact that a special philosophical term is meant here.⁵³ The self-being, *svebhāva*, is for Madhianics being in itself and of itself, conditioned by nothing, non-transient and unchangeable. However, since Madhianics embrace the belief in "conditioned emergence" of everything (pratītya-samutpāda), they consistently deny all things of the world of phenomena, this kind of self-being. Also, for Madhianics "devoid of self-being," *asvabhāva* (= *ran-bzin med* in our text) is practically tantamount to "empty," *śūnya* (that is empty for the sake of self-being, *svabhāvena śūnya*); hence the unique role of the concept of "emptiness," *śūnyatā* in this philosophy, which also calls itself the "doctrine of emptiness," *śūnyatā-vāda*. This has caused a number of misunderstandings. In reality, the thing is more complex and discussing it would go beyond this study and is unnecessary.

⁵²The ascertainment of that fact, just as the ascertainment of the peculiar nature of *Vigraha-vyāvartanī* in the history of Buddhist philosophy by no means justifies the exaggerated opinions by some Buddhism scholars as one that we have to do here with "unerbittliche Logik" and that the treatise presents the author, Nāgārjuna "von allem in einer unbeirraren Folgerichtigkeit" (Frauwallner 1956: 190). Undoubtedly, the "dialectical" mastery of Nāgārjuna otherwise leaves much to be desired in the logical sense, the statements like these contribute to the matter becoming blurred. It also seems that despite the already abundant literature on this treatise available, precise analysis of all the reasonings it contains is yet to be carried out.

⁵³At any rate it seems that the "self-being" is better than "essence" (Tucci), "nature essentielle" (Yamaguchi) or "intrinsic nature" (Bhattacharya).

It now becomes clear why Nagrayana as a fictitious opponent of his own doctrine begins the treatise with a criticism concerning the on-existence of the "self-being of all things" — an essential thing for the doctrine. This point must have been particularly exposed to attacks from thinkers embracing more realist outlooks, who quite rightly saw in it a denial of the world of phenomena, with Nāgārjuna's words echoing criticisms he must have encountered.

The first stanza contains a peculiar application of the principle of reduction, with the point being to prove the invalidity of the proposition rather than negating it. It is ascertained that a statement such as "All is devoid of self-being" (a paraphrase of the first two verses) as counting among EVERYTHING implies that it is devoid of self-being itself. In symbolizing the function "(it is) devoid of self-being" with the abbreviation *asv* (= *asvabhāva*), we can present it in the following formulation:

$$\{(x) \text{ asv}(x)\} \rightarrow \text{asv} \{(x) \text{ asv}(x)\}.$$

In line with the principle of reduction, the consequent of the formula, *asv* $\{(x) \text{ asv}(x)\}$ (*khyod-kyi chig kyañ ran-bžin med = tvadvacanam asvabhāvam*) is adopted, which is supposed to prove that assuming the truthfulness of the starting proposition $\{(x) \text{ asv}(x)\}$, it is itself devoid of self-being; it is also stated that the starting proposition — as devoid of self-being — is unable to (*mī nus = na... alam*) refute self-being; it is simply invalid. There is a silent assumption that only something that has self-being could "rebuff" self-being, which is revealed as the basis of the next stanza.

The second stanza is based upon a conviction that the starting proposition "All is devoid of self-being" $\{(x) \text{ asv}(x)\}$ itself has self-being (*ran-bžin bčas = sasvabhāva*), that is it fulfills the necessary condition of its validity in the sense of being at all able to refute self-being. This leads to another application of the reduction, which is supposed to prove the violation of the basic proposition with this assumption. If this proposition (*dam-bčas = pratijñā*) fulfills the condition of being *sasvabhāva*, which is necessary for it to possibly be valid, then as one excluded from the range of ALL things about which it speaks, it entails its own falsity (if all is devoid of self-being then it is not true that all is devoid of self-being). Symbolically:

$$\{(x) \text{ asv}(x)\} \rightarrow \sim\{(x) \text{ asv}(x)\}.$$

Both stanzas together introduce the whole criticism to the alternative: (1) the starting proposition, in line with what it claims by itself, is devoid of self-being *asv* $\{(x) \text{ asv}(x)\}$, and thus simply devoid of validity; in particular, it is unable to rebuff self-being or (2) the proposition itself is *sasvabhāva* and it thus fulfills the necessary (but only necessary) condition that qualifies

it for validity, but it then becomes violated itself ($\tilde{n}ams = hatā$) by that it entails its own negation $\sim\{(x) asv(x)\}$.

Against the backdrop of these formulations appears what we encountered in *Zhu Shi Lan* — the issue of excluding the proposition from the range of "all [the] things" that proposition talks about. This proposition is suggested by the last verses of the second stanza, where the opponent calls upon the presentation of some overarching "special rationale" (*gtan-chigs khyad-par = viśeṣahetu*),⁵⁴ which could dispense with the demonstrated "inconsistency" (*mi-'dra-ñid = vaiśamikatva*). The whole context, including the self-comment, we have omitted here indicates that the fictitious' opponent can see no possibility of granting an "empty proposition" (*asvabhāva* means as much as *śūnya*) the capacity of negating the "self-being of all things," but it seems to not preclude the possibility of excluding the very proposition as one that has self-being of the range of "all things" which it talks about. This would indeed call for some ultimate rationale, to the presentation of which the opponent trickily summons and given that Nāgārjuna himself is the author, we can even assume that he does not treat the call seriously. None the less it remains a fact that Nāgārjuna — even if only as a spurious opponent of Madhianics — allows for the potential possibility of excluding the proposition that talks about EVERYTHING from the range of EVERYTHING, and this is very important from the standpoint of our discussion. It must be stressed that the totality of the above interpretation and the analysis of the two stanzas finds an exact confirmation in the self-comment, which we need not delve into really.

We might stop at that in the discussion of the example, but to complete the picture and satisfy the readers' justifiable curiosity, it must be explained how the author becomes polemical with these criticisms in the further part of the treatise as a spokesman for his own doctrine.⁵⁵ This polemic is disappointing and chaotic and much less interesting in logical terms than the formulation of the criticisms. As could be expected, as a consistent follower of the idea of the "emptiness of the phenomenal world," adopts a position that is reverse as compared to that which he presented as the opponent, which was shown as one that promised a hope of defense. It is

⁵⁴A foreign version (particularly the Chinese one) suggests a *viśiṣṭahetu* variant in the Sanskrit original (lit. ultimate, superior rationale) as restituted by Yamaguchi, who had no access to the Sanskrit original.

⁵⁵Nāgārjuna disputes the arguments at great length in stanzas 21-24 and the related self-comment (Yamaguchi 1920: 23-27; Bhattacharya 1971: 251-256). It is obvious that the Indian author formulated criticisms more precisely than he could answer them.

categorically stated that his proposition that denies everything self-being is in itself deprived of self-being. In terms of our analysis, it means that Nāgārjuna adopts the first formula of reduction and its outcome $asv \{(x) asv(x)\}$ and thus what corresponds to the first stanza without its last line. It has two obvious consequences. First, the author omits the irrelevant issue of possibly excluding the proposition from the range of the great quantifier inherent in it and this refutes the criticism, which is expressed in the second reduction procedure.⁵⁶ Second, his counter-argumentation boils down to debating the last line of the first stanza which postulates the incongruity of proposition that has no self-being to negate the "self-being of all things." Going over Nāgārjuna's constant appeal to "conditioned emergence" as an equivalent of "emptiness" which is equivalent to the "non-existence of self-being," it seems that the most sober argument that can be extracted from the polemics is as follows. That all things are devoid of self-being which does not mean that they are unable to perform the functions. So, a pot devoid of self-being performs the function of containing honey, water or milk, just as clothing protects one from cold, wind, etc. and in the same way words that have no self-being and claim that all is devoid of self-being perform the function of ascertaining the non-existence of self-being.

The example seems particularly interesting in the context of our discussion particularly because of its non-conventional nature. Regarding the description of Nāgārjuna's counter-argumentation against the charges included in the text, it must be noted that the position he himself embraces ought not to be treated as evidence of his opposition to the operation of exclusion. In confirming the operation of the first reduction, Nāgārjuna simply omits the issue as irrelevant (as he recognizes the proposition as *asvabhāva*), which is not tantamount to an essential rejection of the possibility of exclusion in any other case. It can be presumed from the whole context that the acceptance of the first reduction is caused not by the rejection of the possibility of the operation as such but by practical and doctrinal issues. This is supported by the fact that the author elsewhere himself uses the procedure of exclusion, as we will soon see.

In line with the Nāgārjuna's treatise that is fundamental to Madhianics,

⁵⁶See *kārikā* 24, in which the author states that there is no incongruity (*vaiśamīkatva*) in his position and there is no need to present a "special rationale." Of course, the adoption of the first reduction (where the proposition on the non-existence of self-being is itself devoid of self-being) proves that Nāgārjuna recognizes the possibility of leaving the proposition within the range of the great quantifier but this does not mean that he flatly rejects the possibility of the exclusion operation.

Mūla-madhyamaka-kārikā, his theory of "emptiness" (*śūnyatā*) was to constitute "a rejection of all views" (*sarva-dṛṣṭīnām niḥsaraṇan*), which exposed it to the criticism of self-refutation in line with the principle of *reductio ad absurdum*. Considering that the "rejection of all views" is in itself a view (*dṛṣṭi*), entails the rejection of oneself, too. Nāgārjuna was conscious of this criticism and in his *śūnyatā* also wrote a stanza (XIII S) warning against regarding as a view the doctrine of "emptiness," understood as one that "rejects all views," which naturally excludes the basic proposition from its range. Those for whom *śūnyatā* constitutes a view are, to Nāgārjuna, "incurable" (*asādhya*). This definitely does not give proof of the understanding of a logical-semantic essence of the matter, which was at that time impossible anyway, but the procedure of excluding a proposition (view) from the range of the great quantifier inherent in itself is an undoubted fact here.

Add that it was Nāgārjuna who initiated a custom among Madhianics of applying the operation of interest to us when it did not collide with the principles of the doctrine (as in the non-existence of self-being), but, conversely, served that doctrine. Thus the procedure of exclusion is used by Aryadeva, a direct disciple of Nāgārjuna, in his treatise *Śata-śāstra*,⁵⁷ with Candrakīrti being the most notable commenter.

He is the author of the lengthy text *Prasannapadā* a comment to the basic treatise by the founder of the school, *Mūla-madhyamaka-kārikā*. The meaning of this "clearly formulated" comment (to paraphrase the title) is all the more important as it was the only one to have been preserved in the Sanskrit original (and in the Tibetan version) with the other comments to the basic text only being known from foreign translations.

In *Prasannapadā* chapter XIII §5, Candrakīrti devotes more space to the subject than his forerunners. His comment to the corresponding stanza of Nāgārjuna's text is a harsh polemic against the "incurable," which sets out to prove that *dunya-vada* is not a "view" and cannot be refuted. It makes no sense, though, to present the argumentation in detail as it would entail going too deep into the subtleties of Madhianics' philosophy (which I am not very competent to discuss) and, being an opponent, Candrakīrti must operate extra-logical arguments, such as analogies and authoritative quotes, which go beyond our interest. A competent presentation of the passage in question can be found in an otherwise easily available work by Stanisław Schayer, all credit to him for noticing half a century ago the logical-semantic

⁵⁷The treatise was only preserved in the partial Chinese version which Tucci translated into English (Tucci 1929, part I: 85 (I did not have access to the Chinese version)).

aspect of the polemic.⁵⁸

What deserves a note is that which Schayer did not touch upon in his discussion. First, against the background of a broader context, even so limited as in this study, there is a self-imposing impression that Candrakīrti's presentation of Madhyanics' position (the founder included) is derived straight from the tradition testified to in *Dīghanakha-sutta*. *Mutatis mutandis*, Nāgārjuna's *śūnyatā*, described by the master himself as *sarva-dṛṣṭīnām niḥsaraṇam*, seems just a more sophisticated variety of the position which in *Dighanakha Sutta* is worded *sabbam me na khamati*, and which the canonical Buddha sanctioned with his own authority. In both cases we have to make do with positions rejecting all "views," there being a convergence of terms (Pali *ditṭhi*; Sanskrit *dṛṣṭi*). Apparently, there should be more research on this.⁵⁹

Second, it can be ascertained in this broader context that the attitude by Madhyanics to reductionist reasonings and the use of the exclusion procedure was instrumental and pragmatic. It means that in cases where the reductionist reasoning of interest to us (no exclusion) was useful to justify a corresponding point in doctrine, it was accepted without qualifications (such as Nāgārjuna accepting a reductionist reasoning concerning the non-existence of self-being in *Vigraha-vyāvartanī*). However, in cases where this kind of reasonings undermined a part of the doctrine, the procedure of exclusion was consistently and obstinately used, and it was justified with extra-logical arguments (such as Nāgārjuna and Candrakīrti in reference to *śūnya-vāda* as a "non-view" that negates all views; also, āryadeva in *Śataśāstra*). Finally, as expected and pointed out by Schayer, in the material that has been presented, noting indicates that Indian authors who accepted reasonings by the *reductio ad absurdum* in some cases, and in other cases

⁵⁸Schayer 1931: 36-39, part. 30n on page 36-37, which in Buddhism scholarship is the first rendition of the subject matter from the standpoint of modern logic. In particular, Schayer noticed that the charge of self-refutation, which Candrakīrti opposes, corresponds to European logic's traditional application of the *reductio ad absurdum* for the sake of refuting a proposition of the kind "All propositions are false." After his discussion of why such applications of the principle of reduction are illegitimate (on the basis of Kotarbiński 1929: 146-147), the author adds from himself, "Den Mādhyamikas konnten diese Subtilitäten der modernen Logistik selbstverständlich nicht bekannt sein. Sachlich hatten sie aber durchaus Recht, wenn sie das Argument der *tārkikas*, die Aufhebung aller *dṛṣṭis* sei auch eine *dṛṣṭi*, nicht anerkennen wollten." We will return to the matter in terms of its content in chapter IV; this is just to notice Schayer's primacy in noticing the subject matter of logic, which in Buddhism goes well beyond the text of *Prasannapadā* and which was not taken up by anyone later.

⁵⁹I realize the risk in putting forward such a hint by a non-specialist. My only justification is that I know nothing of this matter but to me it seems worthy of interest.

rejected such reasonings by the application of exclusions, realized the real logical and semantic reasons why these apparently obvious reasonings are illegitimate.⁶⁰

The examples provided so far, emphasizing a kind of mistrust in reductionist reasonings of the kind we are discussing, should not hint at the non-exceptional nature of such an attitude among Indian Buddhist thinkers. Of particular interest is the clearly opposite stance adopted to the matter by Dignāga (approx. 480-540), probably the greatest (not only) Indian logician and one of the most prominent philosophical minds from outside Europe. An example coming from him will now be presented in the context of an interpretation handed over by the Chinese Buddhist logician K'uei ki (632-682). What I mean is a message from the Chinese researchers of Mohist canons (chap. II, n. 38) and whose presentation requires some more introduction.

The only period in China when there was some vivid interest in Buddhist logic is related to the activity of the famous monk Huan Tsang and his school in the first half of the *T'ang* period Huan Tsang (596-664) brought two Buddhist logical works from his trip to India and translated them: *Nyāya-mukha* (The Face of Logic; the Chinese title *In-ming cheng-li men lun* suggests "The Gate of Logic"), doubtless authored by Dignāga himself, as well as *Nyāya-praveśa*, that is: *The Introduction to Logic* (Chinese title *In-ming zhu cheng-li lun*), probably authored by Śaṅkarasvāmin. Both these brief manuals of Buddhist logic enjoyed a degree of popularity in China, with the Chinese version of the latter having appended a series of comments. One of those, by Huan Tsang's most prominent disciple K'uei Ki, is thought to be the greatest achievement of Chinese Buddhist logic and the greatest work in logic that has ever been written in China. It is the so-called *Great Commentary* (to *Nyāya-praveśa*), *To Shu*,⁶¹ and it is in it that we see the example of interest to us.

The lengthy comment by K'uei Ki has not yet been subjected to a systematic Sinological-Buddhist study⁶² and neither has it been translated into any European language. The translation of the corresponding passage is given here through my own volition. Due to a peculiar layout, caused by

⁶⁰This will be discussed in more detail in chapter IV.

⁶¹In Chinese works, K'uei Ki's commentary is usually referred to as *To Shu* (with no explanations), which even for Sinologists can be unintelligible.

⁶²This gap has recently only slightly been filled by the publication of R.S.Y. Chi (1960, see pp. 126-143 in particular). A systematic study of Kuei Ki's commentary, including the daunting task of translating this difficult text into a European language seems to be an indispensable condition of establishing the real Chinese contribution to Buddhist logic.

it being a comment, I have also quoted a passage that directly precedes it, that is, what in K'uei Ki's comment is the beginning of the paragraph where the example is to be found. For clarity's sake I am introducing a division into paragraphs, three of which introduce the fourth main part. Please note that due to the names and technical terms that require Sanskrit identification, the reading of the translation must be difficult, only slightly overcome by *ad hoc* additions, explanations and glossaries. It is only the detailed discussion, which will follow after the quotation of the basic text, which should remove all ambiguity. Below is the translation of the passage from Kuei Ki's commentary to *Nyāya-praveśa*.⁶³

[As for] THE INCONSISTENCY IN OWN WORDS [Chinese *tsy-jü siang-wei*; Sanskrit *svavacana-viruddha*], such as my "mother is a woman of stone [infertile]."

Here is the commentary:

A sentence [*tsung* = *pratijñā*] is about what is called quality [*fa* = *dharma*] and the carrier of quality [*ju-fa* = *dharmīn*]. The carrier of quality is called a subject [*t'i*, lit. "body"] and the quality is sense [predicated; Ch. *i* = Sanskrit *artha*]. [Predicated] sense rests on this subject in a way in which [the two cannot] mutually preclude each other [*pu siang kuai-küe*], but ought to state something in accord [*k'o siang shun-li*]. The words "my mother" imply that we mean a woman who has a child, but the words "woman of stone" clearly attribute to her not having children. {In the case of } the subject "my mother" and the [predicated] sense "woman of stone," the carrier of quality and quality are not in accord. If [the speaker's] own words are in such contradiction, whatever is the space [*ho suo*] to adopt a position [*shen-li*] by an opponent [*tui-ti* = *prativādin*]? Therefore, we have to do with an error [in the very posing a sentence; Ch. *kuo* = *doṣa*, in this case probably corresponds to the Sans. *vākya-doṣa*].

The expression "woman of stone" ought to be translated as "infertile woman" but in line with an earlier translation the name "woman of stone has been retained."

Nyāya-mukha [in the text *Li-men lun*, which is an abbreviation of the title In-ming cheng-ki men lun = *Nyāya-mukha*] says: "as, for example, the proposition 'All statements at all are false.'" A certain heretic [*wai-tao* = *tīrthika*] claimed, "all statements at all are false" against which Dignāga [Ch'en-na] puts forward the [following] charges [*nan* = *dūnsana*]. If you say "all statements in all are false," than you ascribe correspondence with reality [shy-shy, lit. 'actuality'] to what you are saying. If (in this way) you are rejecting the falsity of it [your utterance], then it is on account of the [assumed] truthfulness of this one member [that is your utterance] that there is contradiction [*wei*, lit. 'opposition']

⁶³The basis of the translation is the text by K'uei ki *In-ming zhu cheng-li lun shu*, edn. *Taishō*, vol. XLIV, no. 1840. The passage translated is in the 2nd chapter (*küan chung* on page 110) and comprises verses (2) 21 to (3) 4.

with the word "all" in the subject [*dharmīn*]. If, however, this utterance of yours is false and [thus some] other utterances are not false, then there is a contradiction with the words "in all are false." You have yourself uttered a falsity [because] you considered false what is not false. If, therefore, your utterance is false and [thus some] other utterances are not false, then there is contradiction with the words "in all are false" in the predicate [*tsung-fa = pakṣa-dharma*]. It is therefore called, INCONSISTENCY IN OWN WORDS.

The paragraphs preceding the paragraph proper call for some explanation. As in other paragraphs, here too K'uei Ki begins from citing the text being commented on, to which refers his own commentary further. In this case, practically all of the first paragraph (as far as the example about an infertile mother is included) is a quotation from the Chinese version of *Nyāya-praveśa*. K'uei Ki's own comment begins with the second paragraph, which is not deprived of meaning in the context of his and our further discussion. The singling out of the *dharma* and *dharmīn* elements, which are part of the world denoted by linguistic expressions but are not words and as practically independent from linguistic constructions, they do not correspond to our grammatical predicate and subject,⁶⁴ which is not the commenter's idea, of course. The two terms are among those fundamental in (not only Buddhist) Indian logical analysis, their technical meaning rendered with sufficient proximity in this translation. The following analysis of the self-contradictory sentence "My mother is an infertile woman" is clear enough in the translation but two things need to be focused on here. First, as emphasized by K'uei Ki's analysis, the sentence in the example would in traditional Western logic be called *contradictio in terminis*. It is interesting that *Nyāya-praveśa* gives this example as a typical illustration of "contradiction in own words." We will come back to the issue later. Second, an European reader may wonder why K'uei Ki makes a reference to an "opponent." It is explained in the Indian and Buddhist approaches, every statement is treated as a proposition for discussion between the one who makes it (*vādin*) and the opponent (*prativādin*). The sentence-proposition ought to be duly formulated and refer to the actual subject of discussion (*pakṣa*). In the example sentence, due to its self-contradiction, we are dealing with an error that belongs to a broader category of mistakes, with a generic name *pakṣa-ābhāsa*, lit. "an appearance (*ābhāsa*) of the subject (discussion)." Here the opponent could not adopt a position towards such a flawed sentence and could not understand what the

⁶⁴Note the little known fact that Indian grammar knows no grammatical subject in the sense bequeathed on it by traditional European grammars. It was noted before by Andrzej Gawroński (1932: 130).

one uttering a sentence like this meant to say. The third paragraph contains a philological gloss that is of no interest to us. I have included it only to keep the translation as a whole.

Now onto the fourth section, which irrespective of some *ad hoc* explanations included into the translation, requires some complicated and lengthy explanation. The section starts with a quotation from the treatise *Nyāya-mukha*, authored as we know by Dignāga. Because at the beginning of the analysis of the sentence that immediately follows the quote, K'uei Ki makes a reference to this very Indian logician, the impression one gets is that the part that follows is also a quote from *Nyāya-mukha* or at least a quote (paraphrase) from some other text by the same author whose title is not given. There is all indication that K'uei Ki is making a mystification, possibly not even *mala fide*, but perhaps only resulting from the great respect had for the great Buddhist logician or a desire to add seriousness to his own words.⁶⁵

First, it needs to be explained that the quotation from *Nyāya-mukha* is the only sentence quoted at the beginning of the paragraph, which Dignāga himself gives in his manual without any discussion, probably believing that the sentence is an obvious example of *svavacana-viruddha* that does not call for a rationale.⁶⁶ This initial explanation does not preclude K'uei Ki possibly having paraphrased some other statement by Dignāga on the subject matter. Still, not only do we know nothing about the interpretation of the example sentence, K'uei Ki provides us with other excerpts from another text coming from Dignāga,⁶⁷ but, what is more, in this particular case the Indian thinker

⁶⁵Attributing your own idea to a famous philosopher need not be a mystification in a pejorative sense. Perhaps the mystification was spurious here, caused by the concise style and unique Chinese ambiguity. In K'uei Ki's text the phrase *Ch'en-na nan jen* seems unambiguous. "Dignāga makes criticisms," but with a hypothetical interpretation (perhaps too far-fetched but still possible) "[...] he would level charges," the only suggestion left would be that he consistently tries to guess how Dignāga himself would have proved the self-contradiction of his own example, if he had done that at all. Another thing is that in that case K'uei Ki reconstructs rather unsuccessfully. This will be discussed later.

⁶⁶See the translation from the Chinese version of the treatise (Tucci 1930: 1-72; cf. #1 on p. 7 — the treatise does not come back to this issue anywhere else). The treatise was preserved in two Chinese versions, practically identical, the later one being left out. Tucci made his translation on the basis of Huang Tseng's version (Tucci 1930, vol. XXXII, no. 1628), that is the same text that K'uei Ki had at his disposal.

⁶⁷Of more than a score of Dignāga's works we know of, including a dozen or so that treat about logic, none has been preserved in the original (apart from some isolated quotations scattered across later Indian literature). The main source for K'uei Ki's

is out of the question for more important reasons than as the source of inspiration of the Chinese commenter. Second, the very analysis that is supposed to prove the self-contradiction of the example sentence that is given by K'uei Ki proves that the author of the analysis — whoever it was — was not using the Sanskrit form of sentence that it had in the original text by Dignāga but, rather, chose the Chinese translation of this sentence as the basis. In practice it eliminates the Indian philosopher as the author of the analysis the commenter attributes to him. This demonstrates that we deal with a Chinese idea, perhaps one by K'uei Ki.⁶⁸

This is a more precise explanation, one that involves a reference to the translation of the example sentence into English. The reader must have considered the peculiar artificiality of the translation caused by the introduction of the quantifying determiner "in all" into its predicate part, which due to there being a general quantifier in the subject (all utterances) is, of course, redundant. This procedure, adopted by the translator, does not present him as pedantic but was determined by the need to precisely render the Chinese sentential form here, with its double quantification. The Chinese structure of the example sentence *i-ts'ie jen kie shy wang* is syntactically broken down into *i-ts'ie jen* "all utterances" and *kie shy wang* "in all" (to be more precise "in all cases") are false. The peculiar analysis by K'uei Ki, which is to prove the sentence false irrespective of the cover of technical Buddhist terminology, appeals to this very division and in particular to the quantification expressions included in both members.⁶⁹ In this situation,

interpretation could have been the main epistemological-logical work of Dignāga's *Pramāṇa-samuccaya*, the collection [of deliberations] on cognition, preserved in just two rather late Tibetan versions. The logical parts of this vital text, being the most mature illustration of Dignāga's doctrine, have not been translated. There are, however, known to be numerous correspondences between *Pramāṇa-samuccaya* and his earlier treatise *Nyāya-mukha*. In the translation of the earlier treatise, Tucci recounts transcribed parallel passages of the Tibetan version of *Pramāṇa-samuccaya*, but in the material he gives us (the only one I have) there is nothing to do with the matter under discussion (Tucci 1930: 7, 9n) (but in the passages quoted from *Pramāṇa-samuccaya* other sources of *pakṣa-ābhāsa* are discussed, illustrated by the same examples known from the Chinese version of *Nyāya-mukha*. It is also unlikely that K'uei Ki could have known the text of *Pramāṇa-samuccaya*.

⁶⁸It is hard to preclude the possibility of the commenter having used an interpretation of the example elaborated on in the course of debates conducted in Huang Tsang's school. The issue of precise authorship of the whole interpretation is indeed secondary. What matters is the emphasis on the Chinese rather than Indian origin of the analysis.

⁶⁹The word "predicate" used in the translation is a very inaccurate rendition of the term *pakṣa-dharma* (ch. *tsung-fa*), which in Indian logic means "the occurrence of quality (dharma) in the subject matter of the discussion (pakṣa)" I believe, though,

removing predicative quantification from the translation would make it impossible to translate the second part of K'uei Ki analysis, or make it illegible at least. In other words, the interpretation of the (alleged) self-contradiction of the sentence adopted by the Chinese commenter has some unique sense only with such double quantification, without which the very idea of this interpretation could not have emerged. Consider, too, that K'uei Ki undoubtedly understood the procedure of proving the self-contradiction of a sentence as analogous to that which he had previously applied to the sentence about the barren mother.

The redundant double quantification may not be mandatory in Chinese, but it is far from uncommon, and the Chinese version of the example sentence by Dignāga does not violate the Chinese syntax. However, the syntactic peculiarities of quantification in Chinese that are involved here need to be explained, not just because they are interesting in themselves, but above all because this is essential for the discussion. The ordinary single quantification, unlike in our languages, syntactically refers not to the grammatical subject in Chinese (*cf.* "All utterances are false," with the quantitative expression being subject-group modifier), but to the predicate and thus plays the part of a quasi-adverbial predicative determiner, which can only be rendered by a barbarism such as "utterances are ALL'LY false." For sentences that are explicitly quantified, this is a basic and binding construction, which can — but only can — be appended by an additional, linguistically and logically redundant modifier quantification of the subject. In other words, a well-formed quantified Chinese sentence must include the predicative quantifier (with the added possibility of subject quantification, so in all this would be the like of "ALL utterances are ALL'LY [in my translation 'in all'] false") but cannot only have a subject-group quantification (corresponding to our "All utterances are false"). In this respect the requirements of Chinese syntax are opposite to what holds in Polish and Indo-European (incl. Sanskrit) syntax.

It is only the above explanations that properly present the issue of the authorship of the analysis K'uei Ki gives of the important example sentence. AT least they determine one important point in it. Considering that the Sanskrit form of the example sentence must only have included a subject-group quantification,⁷⁰ it is clear that the whole analysis allegedly coming

that in this case such a translation is justified and cannot cause misunderstandings, with the translation becoming smoother.

⁷⁰It is not difficult to reconstruct the Sanskrit original of the sentence as *sarvam vacanam mithyā*, where the word *sarvam* 'all' is a subject-group modifier and the

from Dignāga has as its basis the Chinese translation of the sentence rather than its Sanskrit original. The original Sanskrit form of the sentence would render K'uei Ki's interpretation of self-contradiction (particularly the second, "predicative" part) outright impossible, and this means that Dignāga (like anyone using Sanskrit only) could not have invented everything that the Chinese commenter ascribes to him.⁷¹ Eventually, it was only a Chinese Buddhist that could have authored the interpretation as we have it in the text being quoted. It was most probably K'uei Ki himself.

That we are dealing with the author's own idea appears to be indicated also by the context that precedes the example and this was another reason why I included the initial paragraphs, too. In an attempt to supplement the mention of the (intended) parallel treatment by K'uei Ki of both the example sentences quoted in the text, we can now say with near certainty that both the analytical examples (not only the fourth one but the second, too) constitute the commenter's own contribution into the issue of self-contradiction, which he could rightly have deemed to have been vaguely positioned in Buddhist logic. This is all broader in scope as concerning also the concept of contradiction in a strictly logical sense as an inter-sentential relation.

K'uei Ki's contribution is otherwise not very fortunate, which needs to be highlighted in the broader sense of the authorship of both analyses and their relationship. Against the backdrop of the whole text and the explanations given before, the following can be said.

Note that the work the quoted passage comes from is a sizable comment to the short treatise *Nyāya-praveśa* in its Chinese version. In this treaty, the

whole exactly corresponds to "All utterance (is) false." What becomes clear, too, is the reason for the double quantification in the Chinese translation of the sentence. For literality's sake, the translator introduced a subject-group quantification (*sarvam* = *i-ts'ie*), but on account of the requirements of Chinese syntax he also had to introduce predicative quantification (*kie*), which did not exist in the Sanskrit original.

⁷¹Dignāga could surely have been the author of the first "subject-group" part of the analysis, related to the word *sarvam*, which in itself is completely sufficient to carry out the reduction along the formula ($p \rightarrow \sim p$). Moreover, it is rather clear that the Indian logician who used this sentence as a typical example of self-contradiction must have understood it in ways we know from such writings as *Zhu Shi Lan* (but allowing no exclusion of the sentence from the range of "all utterances") and thus in a way that is similar to the way given by K'uei Ki in the first part of his analysis. It can therefore be suspected that the author borrowed the first part of the analysis from Dignāga and supplemented it by himself with the predicative part" on the sole basis of the Chinese version of the sentence. However, this could only be proved by some sources other than K'uei Ki, but no such sources have been found.

"inconsistency in own words" (*svavacana-viruddha* as a kind of *pakṣa-ābhāsa*) is illustrated with the example sentence "My mother is a barren woman," just this one without any explanation.⁷² The commenter added his own analysis of the sentence which indicates its self-contradiction and made a successful appeal to the terms *dharma* and *dharmīn*, known to him from Buddhist logic. Because we have to make do with a *contradictio in terminis* here, and specifically with the inconsistency between a trait assumed in the subject (the carrier of quality, *dharmīn*) and a trait being imposed on the subject by the predicate (the predicated trait, *dharma*), the analysis conducted in this convention is obviously relevant. There is every indication that even the first analysis in this particular case has no correspondence to the Indian original that K'uei Ki could have known, which would make it his own contribution.⁷³

The commenter also knew that in another treatise (by another author) in the Chinese version of Dignāga's *Nyāya-mukha*, the utterance "All utterances are in all false" features as an example of *svavacana-viruddha*, which he had included in his commentary due to the scant exemplification of self-contradiction in the text being commented. Most apparently, K'uei Kidid not realize that he fell victim to the inaccuracy committed by the famous Buddhist logician, who probably could not distinguish between the self-contradiction of a sentence understood as the a *contradictio in terminis* (as in the example found in *Nyāya-praveśa*) from the self-refutability of a sentence, which is different from self-contradiction. Leaving aside the difference between the logical-semantic essence of the flaw found in the example sentence coming from *Nyāya-mukha*, this is just to note that the sentence is neither self-contradictory in the sense of there occurring a mutual preclusion of the subject and predicate (as in the example given in *Nyāya-praveśa*) nor in the sense of it including a conjunction of two contradictory

⁷²In the Sanskrit original we only have *svavacanaviruddho yathā mātā me vandhyeti* [= *vandhyā iti*] (*Nyāya-praveśa* 1931: 16), as well as the most recent edition of the text in the work by Tachikawa Musashi (1971: 141). It is exactly what we find in the Chinese version of Huang Tsang and what K'uei ki quotes from this version at the very beginning of the text quoted above in our translation.

⁷³In the materials available I have found nothing that would indicate any Indian model of even the first analysis by K'uei Ki. Buddhist logicians must have regarded the self-contradiction of that sentence as obvious and requiring no explication. The example in question is a sentential equivalent of the nominal expression *vandhyā-putra* (= Tib. *mo-gśam-gyi bu*), "barren woman's son," which in Buddhist Indian literature was used as an obvious and typical example of a self-contradictory name, referring to a non-existent object (and one that could not exist).

sentences ($p, \sim p$). Under the discussion conducted so far, the sentence would not be labeled self-contradictory, but self-refuting, as it renders itself to contradiction by directly implying (to be precise, seemingly implying) its own negation. Of course, the implication ($p \rightarrow \sim p$) is not the same as the conjunction ($p \wedge \sim p$).⁷⁴

In this light, K'uei Ki's otherwise unfortunate interpretation, attempting to treat the allegedly parallel but in fact very different self-contradictory sentences in parallel, does contain some originality which could have contributed to its appeal among Chinese Buddhists. This is indirectly evidenced by the fact that the interpretation is not questioned even by the contemporary Chinese explorers of K'uei Ki's text's fourth paragraph. They seem happy to classify the text as a Buddhist counterpart of the key Mohist Canon (known to us from chapter II; in fact only the example sentence rather than the interpretation is such a counterpart).

The peculiar two-part analysis of Dignāga's example sentence which is passed on to us by K'uei Ki comes down to the following points. First, if the sentence is true, then it contradicts its own subject (ALL utterances); second, if the sentence is false, then even though there is no contradiction with the subject, there are thus utterances that are not false,⁷⁵ and this contradicts

⁷⁴Note that similar misunderstandings are found in the only modern attempt I know at an analysis of the example sentence by Dignāga given by Suoki Takehiro (1970: 84-85). Suoki, a Tokyo University professor and author of a manual of symbolic logic is among the few scholars who use the techniques of modern formal logic to analyze issues in Buddhist logic. In this case, however, probably induced by the fact that according to Dignāga, the sentence is to be an example of "inconsistency in own words," in an unnecessarily complicated argumentation (and also one fraught with imprecision) reduces the example sentence to a conjunction of two contradictory sentences. Suoki cites as source of the example the Chinese version of Nyāya-mukha, but he takes the Japanese translation of the sentence as basis, with the latter similar to Indo-European structure (without the confusing double quantification). The Japanese author seems not to know either the analysis made by K'uei Ki or the Indian Buddhist tradition in reducing such sentences to absurdity. In any event, his attempt seems to be completely independent from suggestions that might come from such sources. Neither does he appear aware of the position taken by logical semantics connected to the theory of types. Therefore, his analysis needs to be assessed from pre-Rusellian positions, so it is difficult to understand why Suoki did not apply the simplest procedure that is, the *reductio ad absurdum*, as was done as early as in antiquity and which by the beginnings of our century had remained unquestionable.

⁷⁵I leave aside another thing, where the Chinese commenter is at fault, of the quantifier-free formulation of this point, which I remarked on and complemented in this translation of the passage. See above in the quantifier-free formulations of the Mohist Canons.

the predicate (are in all [ALL'LY] false). The first point raises no objections as finally leading to the assumption of the sentence's truthfulness entailing its own falsity, which is in itself enough to carry out the reduction of the sentence along with the rule " $(p \rightarrow \sim p) \rightarrow \sim p$." What is unfortunate is the second part of the argumentation, which as we otherwise know would not be possible at all on the Sanskrit form of Dignāga's example. More importantly, the other part of the analysis is not at all only unnecessary, but it hardly makes sense, even if we give the author credit for implicating in this part of the analysis the otherwise interesting additional reasoning that the falsity of the example sentence leads to the recognition of the existence of true sentences. Note also, that the whole two-part analysis is in a sense analogous to the analysis of the previous sentence (on the infertile mother) within the analytical convention making an appeal to the concepts of *dharmin* and *dharma* (*pakṣa-dharma*). The issue of this peculiar linkage of both analyses is most easily explained by their being K'uei Ki's own contribution.

Suggested by Dignāga's authority, the commenter accepted *bona fide* his sentence as an example of "self-contradiction," that is an error of the same nature, to which the example sentence from *Nyāya-praveśa* corresponds. The alleged identity of the categories of both sentences made the commenter think that Dignāga's example, whose self-contradiction was not explained by himself in more detail, cannot be interpreted in similar ways as in the previous case, with the Chinese formulation of the sentence providing a possibility of an analysis that appeals, in essence, to both subject and predicate (under the protection from the notions of *dharmin* and *pakṣa-dharma*). K'uei Ki's attempts were doomed to failure here, which he did not realize. Both of his analyses are only comparable in a very broad sense,⁷⁶

⁷⁶In the first case the analysis of the (real) self-contradiction is about contrasting the mutually exclusive members, subject and predicate, of which a sentence is made up. In the second case, which does not belong to the category of *contradictio in terminis* at all, the exposition of the alleged self-contradiction is, according to K'uei Ki, supposed to be about a double juxtaposition: the juxtaposition of the truthfulness of the sentence as obviating its subject; the other juxtaposition is to be about contrasting the falsity of the sentence — or, rather, the consequences of the falsity ("[some] other utterances are not false") — as inconsistent with the quantified predicate. Leaving aside the significant issue of the nonsense of the second "predicative" part of the analysis (which apparently has gone unnoticed so far), what is notable here is the difference in the type of juxtapositions the Chinese used in the interpretations. The similarity between the two boils down to both somehow appealing in some ways (different in both cases) to subject and predicate, the model of an appeal to such a division in the second case undoubtedly being the analysis of the example from *Nyāya-praveśa*, which was correct in itself, but had no application to the other case.

the latter (in its second part) being erroneous in fact, but the attempt to treat both sentences in parallel is unquestionable. Moreover, it must have been upon this stretched analogy that K'uei Ki thought the other analysis as not as bad as the first one if he did not hesitate to attribute it to the famous logician as a reconstruction of his own intentions.

This also testifies to K'uei Ki's ignorance of the Indian Buddhist tradition concerning sentential *reductio ad absurdum*. He would otherwise have been satisfied with the repetition of a simple argumentation, which was also obvious at that level of thinking, without engaging into his own speculations. Even if we assume that he could have known about the Indian methods of reduction in some cases but still, for some reasons, made the analysis of Dignāga's sentence by himself, we will conclude that he would not have attributed this analysis to the Indian thinker realizing the improbability of the reasoning coming from him. In all, the mystification reference to Dignāga paradoxically proves an additional test to prove K'uei Ki's authorship of the interpretation and a proof that the Chinese author did not know the Indian tradition.

Dignāga surely knew the Indian philosophical and logical tradition and a supposition that he may not have known that what we have been discussing would be groundless. He must have been familiar with the procedure of reducing corresponding sentences as well as the previously highlighted Indian thinkers' mistrust in it as expressed in the exclusion procedure, applied *ad hoc*. On the other hand it is directly known from *Nyāya-mukha* that Dignāga considered the sentence "All utterances are false" as an example of the *svavacana-viruddha* mistake; the fact that he limited himself to quoting the sentence without, it must be explained by his recognition of the example as obvious within (rather than without) traditional knowledge. The simplest guess is that Dignāga, first, accepted the traditional procedure of reducing the sentence to absurdity; second, and possibly explaining the thinker's originality in the Indian context, unlike the others, he decisively rejected the possibility of excluding this sentence from the range of "all utterances." So far, it has only lead to the sentence being an explicit example of falsity for Dignāga, but falsity is not the same as self-contradiction. However, because in Dignāga's text the example represents the column of self-contradiction (*svavacana-viruddha*), it appears that the famous logician did not distinguish between the kind of self-contradiction proper as in the example of a barren mother⁷⁷

⁷⁷It is hard to preclude Dignāga's having some awareness of the difference between

What has just been said is a good opportunity to raise an issue that may not be in the mainstream of this discussion but as indirectly related to it and significant should not be overlooked. In any event, the discussion of Dignāga's example has just demonstrated that Indian Buddhist logic did not have a clear concept of self-contradiction. One must admit that the matter is marginal, though, and does not illustrate the confusion that exists concerning self-contradiction in Indian Buddhism and the Indian context at large.⁷⁹ Details aside, suffice to say the thing that is possibly

both kinds of sentences but thought the difference was irrelevant from the standpoint of the Buddhist logical practice. Note that for Buddhist logicians a sentence is a potential proportion to put forward the subject of discussion, *paksa*, whereas the occurrence in a sentence of an error of the *paksa-ābhāsa* category disqualifies the sentence as a starting point of a discussion. In the case of *svavacana-viruddha*, which is a peculiar column of *paksa-ābhāsa*, the disqualification of a sentence is assumed, as it were, in its verbal formulation (without an appeal to anything else, unlike the other in the category *paksa-ābhāsa*, which is still found in the example of a barren mother. Dignāga might thus have tried to expand the column to include sentences that may not be self-contradictory in our understanding but are subject to self-refutation by a direct *reductio ad absurdum* and due to that are equally useless as propositions. The example from *Nyāya-mukha* could also have been done deliberately to attract attention to the uselessness of the other types of sentences, too. What is important, as well, is in the Buddhist category of *paksa-ābhāsa*, the only allocated column that cannot be taken into consideration as comprising "self-disprovable" sentences, is still *svavacana-viruddha* (see below n. 78). from the self-refutability of a sentence (that is the kind of falsity that results directly from the assumption of the truth of the sentence). A hypothesis can also be posed that Dignāga considered his example sentence as self-disprovable in the sense that it should not only state itself (p) but as one that entails its own negation ($\sim p$), it would also state its negation, thus jointly ($p \wedge \sim p$). However, here too an error needs to be indicated in the reasoning of the Indian logician, which is similar to one committed in modern times in an even more striking form by a modern interpreter of this example given by Dignāga.⁷⁸ What is most important for us, though, that even in such a case, the first step of a reasoning that leads to the rejection of the sentence as (alleged) conjunction ($p \wedge \sim p$) is an ordinary reduction of the starting sentence, implicated in this reasoning, on the basis of the implication ($p \rightarrow \sim p$).

⁷⁹This confusion is compounded by some unfortunate attempts at representing the state of affairs undertaken by some modern scholars (particularly about the quasi syntactic description of contradiction in Buddhist logic, left by the otherwise prominent Russian scholar of Buddhism, Shcherbatskoy; see the chapter "The law of contradiction" in his work, to date considered fundamental (Shcherbatskoy 1932: 400-442). To illustrate his point that has comparative pretenses. He states that the "law of negation" is the most general law of thinking (Aristotle calls it "the law of all laws"), with "the law of negation is the same as the law of contradiction;" (416, 4n). Shcherbatskoy appeals to *Metaphysica* Γ 3, 1005 b, 33-34: ἀρχὴ καὶ τῶν ἄλλων ἀξιωματῶν αὐτῆ

the most important: the technical Buddhist logic did not develop the basic concept of contradiction as an inter-sentential relation. This may seem all the more weird as Buddhist logicians were mainly interested in contradiction in the context of the theory of inference: a peculiar multi-member so-called syllogism (*anumāna*). However, even in this theory a very loose concept of contradiction is used, including contradiction as a strikingly heterogeneous relation that occurs between a sentence and something belonging to an entirely different plane and requires not even a verbal formulation, such as between a sentence and an observation.⁸⁰ A systematic study of the multifaceted issue of contradiction in Buddhist thought (as well as Indian at large) as well as an appropriate presentation of formal-logic aspects of this issue and a clear separation of these from extra-logical aspects remains an open task.⁸¹

To close the discussion, started by a passage from K'uei Ki, one more thing needs to be discussed that might otherwise arouse doubt. It is true that K'uei Ki's commentary, as one by a Chinese author to a Chinese version of an Indian treatise (not a translation from Sanskrit) belongs to Indian Buddhist logic, the more so as there are some deliberations that constitute the Chinese author's own contribution into it. It might, therefore, seem that it should have been presented in the previous chapter as supplementation of the Chinese Mohist examples, thanks to which the example now being discussed was at all noticed.

The discussion showed that the appropriate presentation of the issues inherent in the passage in the context of a purely Chinese exemplification of the subject matter, that is without the appropriate Indian Buddhist backdrop, would be impossible. This demonstrates that K'uei Ki's text as a matter of fact belongs to the Indian Buddhist circle. Let us highlight the

πᾶντωι which in Aristotle's text refers to the principle of contradiction rather than the "law of negation."

⁸⁰This can be illustrated on the basis of *Nyāya-mukha* and *Nyāya-praveśa*. Other than the previously discussed column *svavacana-viruddha* both text identify within the category of *pakṣa-ābhāsa* four more contradictions: *pratyakṣa-viruddha* [an inconsistency with perception], *anumāna-viruddha* [contradiction with what has been established on the basis of inference], *āgama-viruddha* [inconsistency with the testimony of the doctrine posed by the one who makes the proposition], *loka-viruddha* [a contradiction with a universally accepted convention]. An example of a sentence of the *pratyakṣa-viruddha* kind: "Noise is something inaudible," which is inconsistent with a direct perception.

⁸¹The only modern study I know of that constitutes a general source introduction to the subject: Staal 1962. The article mainly pertains to non-Buddhist Indian doctrines, though.

decisive aspect. As implied by *Nyāya-mukha*, to which K'uei Ki's testimony is unnecessary, the example sentence comes from Dignāga, who thought it illegitimate because of the *svavacana-viruddha* error. Whatever K'uei Ki's interpretation, Dignāga assumes an unconditional reduction of the sentence to absurdity, which means that the Indian logician rejected the previously suggested possibility of excluding the sentence from "all utterances." All this remains in the Indian Buddhist context and has no connection with the Chinese tradition, particularly Mohist. This refers not only to Dignāga, who could not have known the Mohist tradition, but also to the Chinese Buddhist author of our text. In K'uei Ki's day, the Mohist dialectics had been all but forgotten in China and the commenter could not have known it; he therefore did not know the canon, either, thanks to which it was only the modern Chinese scholars who have paid special attention to the relevant passage of his commentary.

In the context of the previous exemplification, it must be noticed that Dignāga's decisive stance on the *reductio ad absurdum* of sentences of the type we are interested in is rather rare in Indian Buddhism. Note also that it was only that stance, which assumed an unconditional rejection of the procedure of exclusion, and thus a recognition of absolute legitimacy of the *reductio ad absurdum* of those sentences (without which Dignāga's example from the manual would lose its sense) essentially corresponds to the stance taken by Ancient Greek and Ancient Chinese thinkers on the issue. There is a notable difference, though: Dignāga had to consciously oppose the procedures of exclusion he knew from the Indian tradition that undermined the legitimacy of the reduction of the corresponding sentences whereas the ancient thinkers from outside the Buddhist circle did not know the very operation of exclusion and did not need to reject it.

The position taken by Dignāga does not close the issue in Indian Buddhism. As we see, the procedure of exclusion can be encountered in later Buddhist philosophy, as per Candrakīrti, who lived long after Dignāga (apologetic comment to Nāgārjuna rather than his own reflection, which makes this testimony somewhat weaker). What is more important is that we see a return to the operation of exclusion in the post-Dignāga period: not just the undermining of the procedure but its rejection. I may be able to refer to just one such case but this one example known to me (there may be others) is proof that the tendency known to us from earlier texts — the tendency to use exclusion — survived until the later period of Indian Buddhist logic, even to its decline; also, it indirectly indicates the exceptional nature of Dignāga's position. His testimony is particularly important as it

comes from a follower of Dignāga's logical theory.

The most important preliminary information is as follows. The most prominent successor of Dignāga's was close to a century's older Dharmakīrti (7th century) believed to be the greatest Buddhist logician of the post-Dignāga period.⁸² He authored several treatises (mostly preserved in a Tibetan version only) including the short manual called *Nyāya Bindhu* (A Droplet of Logic), which was also preserved in its Sanskrit original. This work had a commentary [fika] by Dharmottara appended to it at the turn of the 8th century, also preserved in its Sanskrit original. The whole *Nyāya Bindhu Fika*, comprising the basic text by Dharmakīrti along with the commentary by Dharmottara is among the most significant work in post-Dignāga Buddhist logic. It has also remained the most ample source text on the subject which is available in its totality in a western language (English). This monumental translation (albeit in need of revision) was written by the Russian scholar of Buddhism Shcherbatskoy (see n. 79).

Using this translation I did not see in the basic text of *Nyāya-bindu* anything of relevance to the issue in question. *Svavacana-viruddha* column Dharmakīrti illustrated by an example that does not belong with the type of interest to us and there is no need for us to make use of it. The issue in question is indeed touched upon in the commentary to the column, where Dharmottara also discusses his own variant of a sentence similar to those we are studying. He does not allow the reduction of that sentence, which would have led to the ascertainment of its falsity. Conversely, he clearly hints at the sentence going beyond what it itself affirms. This is the opposite of Dignāga's position, and perhaps even a conscious polemic of it. Dharmottara's rationale is peculiar as he states that in the very fact of uttering the sentence there is supposed to be some factor that determines its truth-value and, in particular, he suggests that the sentence would not be uttered at all if it were to be false (Shcherbatsky 1910: 100).⁸³

⁸²It is likely that it was the popularity of Dharmakīrti's works that contributed to the original copies of his work in Sanskrit having disappeared: they would become the basis of Indian Buddhist education and through them the disciples studies Dignāga's work (Hattori 1908: 15).

⁸³Supposing somebody says that whatever I speak is wrong, even then the speaker pronounces this proposition in order to convey that his words (at least) have a true meaning. If this proposition is shown to be true, then his other propositions will (*eo ipso*) be shown to be false. There would then be no use of pronouncing them. He would have never pronounced them. Consequently, when a speaker pronounces a proposition, he (*eo ipso*) really declares that the idea produced by his words, the idea corresponding to the meaning of the proposition, is a true one (i.e. reflects reality). The transla-

So much can be said on the basis of the English version of the text. I had no chance to confront the translation with the original, which is inaccessible to us and limited myself to the above remarks (providing Shcherbatskoy's translation of the key passage in the notes), which should be enough for the modest purposes of the present study. The matter merits some more in-depth study, not only concerning Dharmottara's comments but also in the context of post-Dignāga Buddhist logic, its final period included. This is just a small portion of the history of Indian Buddhist logic which should be covered. The insufficient knowledge on the subject has already been mentioned but practically nothing is known about the final period of Buddhist logic in its Indian homeland and its subsequent follow-up in the Tibetan context.

IV

Having thus demonstrated the illustrations, I will now move on to the initial theses formulated at the beginning, the first of the two that having been illustrated in the previous chapters, which will now have additional explanations appended and discussed. Some of the things to be discussed have already been mentioned, but they will now be returned to against the backdrop of the material now known to us.

First, the oldest extant testimonies of the reduction principle have come from Greek philosophers (Plato, Aristotle). Notably, though, the earliest (and only) extant Chinese Mohist testimonies are only slightly later than the Greek ones, with Indian Buddhist ones coming rather late. Disregarding the Pali Canon, whose testimony may well be the earliest, but where the subject of interest to us appears in a peculiar context, the oldest clear Buddhist testimonies (*Zhu Shi Lan*, Nāgārjuna) only come from the early centuries of the Common Era. The late emergence of the subject in Indian Buddhism is compensated by some very interesting factors that have not been ascertained elsewhere, and these will require a separate discussion.

Second, the reasonings representing some unique ways of the application of the *reductio ad absurdum* emerge independently in all three circles. It is obvious that the Mohist dialecticians could not have been influenced by their contemporary Aristotle; neither is it plausible that the Mohist deliberations (virtually unknown outside of their own school and quickly forgotten in

tion is not free from obscurities which may have found their way into it while being retranslated from Russian, such as what the pronoun "them," used twice, is supposed to refer to. Therefore, I reiterate that the quote is rendered with absolute fidelity by the English version of Shcherbatskoy's translation. Despite some reservations, the most important matter of excluding the example sentence from its own range is very clear.

China) could have inspired the Indian Buddhist take on reduction. Not so with the testimonies concerning the independence of Buddhist thought from the Greek thought if we know that Pyrrhon, the founder of skepticism as an independent current in Greek philosophy, reached India with Alexander the Great's expedition. However, there are no grounds to suspect that the oldest known examples of reduction in Buddhist texts could in any way echo Greek influences.⁸⁴ Yet, the peculiar attitude on the part of Buddhist authors to the issue of reduction from the moment it emerged in their writings might demonstrate the native nature of the problem and precludes outside inspiration. The principle of reduction (or the scheme of inference which assumes it) as applied to the sentences under consideration seems to belong to the so-called universals of natural logical thinking in the sense that corresponding reasonings appear autonomously in various cultural circles that have reached a certain level of logical reflection.

Third, both the analysis of the similarity between the groups of examples representing the different cultural circles, which was raised at the beginning, and the differences between them call for thorough discussion. This is a complex compound of various issues which will be made more clear by having separate subjects identified within it.

Above all, it ought to be explained in more detail how similar the logical form is to the sentences in question. This similarity conditions the likeness of the reduction procedure of the sentences. This vital issue (and fundamental for the subsequent discussion of the third proposition) cannot really be properly presented in propositional calculus, which we have used in the discussion of most of the examples. The current purpose needs an analysis that penetrated the inner structure of the sentences — an analysis in terms of the functional calculus with quantifiers, which has so far only been used sporadically if demanded by some extraordinary conditions (such as the

⁸⁴Conversely, various Indian influences on Pyrrhon are taken into account, but these concern his attitude rather than his doctrine (Schayer 1931, XXX-XXXIII). As an aside to Schayer's comparison of the similarities between Greek skepticism and the Madhianic doctrine, it ought to be reminded that the latter was formed only several centuries after Pyrrhon's stay in Indian Punjab. Therefore it would be a better idea to compare Pyrrhon's ideas with the early skeptical currents in India, also those outside Buddhism, which are spoken about in the Pali Canon (Jaystilleke 1963: 129f). Regarding Buddhism, note that the skeptic principle of "suspending judgment" (*ἐποχή*) as leading to ataraxia finds analogy as early as in the stance of the canonical Buddha. He recognizes the non-dogmatically understood principle of *sabaṃ me na khamati* as right but also as the only one that prevents complicities and thus brings peace of mind. See above in the text.

analysis of example stanzas from *Vigraha-vyāvartanī* above). The starting point in all the examples under consideration were sentences that state something about ALL objects (" $(x)...$," i.e. "for all $x:...$ " or about all objects at all (as in the Madhianic proposition that ALL is devoid of self-being) or in a more specialized range of all utterances (sentences) or all views.

The inner structure of such sentences can thus be represented with the formula $(x)Fx$, where F symbolizes a function performed (or allegedly performed) by all x -s. Because the proposition $(x)Fx$ is itself an object (sentence) from the range of all objects (sentences), therefore one of the x -s it talks about, it follows that such a proposition entails itself performing the function it talks about $F: \{(x)Fx\} \rightarrow F \{(x)Fx\}$, so that in the end, along with the formula of reduction we get a conclusion $F\{(x)Fx\}$. The analogy with the principle of reduction in the basic sentential formulation ' $(p \rightarrow \sim p) \rightarrow \sim p$ ', or the inference scheme corresponding to it will be demonstrated most clearly if we assume F to be the negation of a proposition " \sim " (it is not true that) and the variable x will traverse the set of all propositions (and only propositions, with the exclusion of all other objects). We will then obtain a peculiar equivalent of the reasoning we encountered in numerous examples that refute the proposition "All utterances (sentences) are false." The proposition such as "for any sentence X , it is not true that X ," that is, " $(X) \sim X$ " is a sentence itself (one of the X -s) and as such seems to lead to a conclusion which is its own negation along the formula $((X) \sim X) \rightarrow \sim((X) \sim X)$, ergo $\sim((X) \sim X)$. Considering that the sentence " $((X) \sim X$ " seems a special case of a sentential variable p , the analogy with the scheme corresponding to the law of reduction to absurdity in the formulation of the propositional calculus in the propositional calculus formulated as $(p \rightarrow \sim p)$, ergo $\sim p$ seems rather obvious.

Having thus noted the *reductio ad absurdum* refuting the thesis that all sentences are false, we have also highlighted the convergence of the applications of reduction for this purpose in all the circles discussed. The variants of such a reasoning occur in Greek thought as well as Chinese and Indian Buddhist. This seems to prove that, first, the not-so-wise proposition holding that all utterances (sentences) are false was thought to be particularly dangerous and in need of refutation; second, the very discovery of the reductionist reasoning scheme is associated with a search for a plausible way of refuting this proposition. The proposition that holds that all utterances are false shares this uniquely heuristic role with the opposite, just as the absurd proposition that all utterances are true. This is at least what things look like in the Greek and Chinese philosophies, but in these circles the

variants of the contradictory propositions practically exhaust the range of topical applications of the reductionist scheme in question. Note that the Chinese Mohists had found themselves at the same level of philosophical speculation as the biggest Greek thinkers. Not so in Indian Buddhist literature, which leads us to reconsider the differences between the Greek and Chinese exemplification on the one side and Indian Buddhist on the other.

It seems that Buddhists were not at all interested in the proposition about the truth value of all sentences (or its refutation); at least I do not know any in their literature.⁸⁵ The gap may look all the more strange as they were interested in a number of variants of the opposite proposition, with examples of this reduction not only occurring in Buddhist texts no less frequently than in Greek writings but also cover a broader and topically unconventional range of interest. Let us emphasize that the Indian Buddhists not only discovered these reductionist reasonings, which had been discovered by the Greeks and Chinese before, but unlike their forerunners, content in the reductionist refutation of the proposition on the truth value of all sentences, they were the only ones that applied this discovery on a large scale. This is one of the factors that in a way compensate the late emergence of the reductionist reasonings in the Buddhist literature. The next such factor, much more important and also of a comparative nature, is a direct introduction to the third preliminary proposition, and definitely deserves being presented in the fourth column.

Fourth, between the Greek and Chinese examples on the one hand and Indian Buddhist on the other, a major difference appears in the attitude to reductionist reasonings: Indian Buddhists allowing the procedure (operation) of exclusion, as discussed *ad hoc* before. How significant this is, will be revealed in the subsequent parts of this study. I will first collect and consolidate the individual mentions concerning the difference.

Reductionist reasonings seem irrefutable, particularly that they allow a refutation of an obviously false proposition that collides with common sense (truth/falsity of all sentences) and lead to conclusions in agreement with this common sense. No wonder that Greek and Chinese thinkers treated such reasonings (limited to the striking cases in both these circles) as totally certain and unquestionable. The Chinese testimony may appear less relevant here as we know it was limited to a narrow milieu of Mohists and their conceptions saw no follow-up in Chinese thought. The Greek testimony is

⁸⁵Notably, the canonical Buddha rejects the position of recognizing all views, but here nothing indicates that the rejection is caused by the application of a reductionist procedure, see n. 43.

very important though. It is not only about the first testimonies coming from the most important thinkers of antiquity but also, unlike in China, the fact that these ideas were quoted by philosophers representing various currents of thought over several centuries as evidenced by Sextus Empiricus. Above all, the conviction that these reductionist reasonings are unquestionable had survived practically intact in European thought to date (except the late-scholastic episode, which we will return to in this chapter) to at least the end of the 19th century (the classic example being Bolzano).⁸⁶

Against this backdrop, Indian thinkers' bizarre mistrust of such reasonings is unusual. I will go on to discuss that. A tendency to undermine such reasonings emerged in the pre-logical era (in the sense that it precedes the formation of technical Buddhist logic, whose beginnings are usually linked to Vasubandhu). As we know, this tendency already surfaces in the Pali canon and it thus accompanies the reductive reasonings since the moment reduction appeared in Buddhist literature in its early, pre-logical form. Assuming that the exemplification presented in chapter III is representative enough (and I believe it is, at least in the sense that we do not know any documentation other than the Pali Canon), we can say that in the literary tradition, the tendency is not a product of evolution from the initial unconditional recognition of reductionist reasonings as obvious to the later speculation leading to their being questioned (which was the case in Europe, except that the process took more than a dozen centuries). On the basis of the written tradition, a surprising conclusion can be drawn that the early Buddhist discoverers of reduction never went through the stage of being convinced about the unquestionable nature of the reduction at all. However, the source seems to indicate a unique evolution of the early position in two opposite directions, marked by the starting point. This dichotomous concept can be described as follows.

In the beginning (*Dighanakha Sutta*, *Zhu Shi Lan*), it is only about the permissibility of the exclusion of the basic sentence from the range of the general quantifier inherent in it (which makes it impossible to reduce it). This procedure is roughly equivalent with retaining the basic sentence within what it speaks about itself (which leads to the reduction of the sentence). This inconsistent position in itself opens up two opposite directions in which

⁸⁶Some 20th century active philosophers betray the use of such reduction, such as the German Neo-Kantist Heinrich Rickert (deceased 1936) sought to refute the proposition that "es gibt kein absolut wahres Urteil" in a similar way; he regarded it as an token of "the most consistent epistemological relativity" (Rickert 1915: 300-310). This reasoning was also noticed by M. Wallis-Walfisz (1937: 303-304).

the inconsistencies within it can be abolished: either through the recognition of the necessity (rather than just a possibility) of exclusion and thus rejecting the possibility of reduction or the rejection of the possibility of exclusion and hence the recognition of the legitimacy of reduction. Within the margin marked by the Canon and Dharmottara's *Nyāya Bindhu Fika* the Buddhist speculation indeed evolved in the two directions, but in fact it mainly focused around the former. The end stage of this development is represented by Dharmottara who is probably the biggest proponent of exclusion and the rejection of reduction (disregarding his not very successful rationale for the position). The latter orientation, which accepted the rejection of the possibility of exclusion and thus recognizing the inviolable legitimacy of reduction is scarcely represented. However, it deserves our attention also because of its main (or only) representative being Dignāga.

The most important thing in it is the mistrust of the apparently obvious reductive reasonings, manifested by Indian Buddhists from the very beginning, which was correct and precursory from the vantage point of the contemporary logical semantics, in whose light such reasonings prove examples of paralogical overuse rather than just the use of the law. This needs some discussion, which will also constitute the development of the third introductory proposition.

Revealing the paralogical nature of the reasonings is a by-product of modern research on the problems of making logic safe from antinomies — peculiar reasonings which, despite being apparently in accord with the recognized rules of logic, lead to overt logical contradiction and are thus illegitimate. Some striking examples are antinomic sentences that are completely correct grammatically and seem sensible (even if not true) but which have the property that the assumption of their truthfulness implies their own falsehood and *vice versa*. Along with the rules of the *reductio ad absurdum* (simple and reverse), this would indicate that each such sentence is both true and false, which is an obvious contradiction and is illegitimate.

Such antinomies posed a problem as early as in Greece (the paradox of a liar), and in Late Middle Ages the *insolubilia* (as antinomies were then called) were so widely discussed that it grew to a separate field within scholastic logic. The medieval achievements were later forgotten, though, and it was only later, and more specifically recent studies by historians of logic of that period⁸⁷ that managed to demonstrate their anticipatory value regarding

⁸⁷A still valuable and in its day pioneering study was published by Rev. Jan Salamucha (1937: 68-69, 320-343) (the study concerns the earlier period only, Ockham included). The only study so far that presents the whole antinomic subject in scholas-

some modern views on antinomies. As this concerns the connections between those issues and the reasonings being the subject of this study, we will return to those medieval antinomies somewhat later.

For now, it needs to be emphasized that in modern times, antinomic issues only entered formal logic at the beginning of the current century, that is at the early stages of the modern mathematical logic. It happened independently from scholastic antecedences, surprisingly and in somewhat dramatic circumstances, which nobody could have predicted by the end of the previous century. The issue was started by the discovery of the fact that within the logical basics of mathematics which was studied by Gottlob Frege at the end of last century (first volume of his *Grundgesetze der Arithmetik* from 1893), an antinomy of the so-called non-reflexive classes could be constructed, that is, such that are not their own elements.⁸⁸ In other words, it turned out that the principles of the system that were supposed to be a logical ground for mathematics led to overtly conflicting consequences and this was demonstrated in the design brief for Frege's system where there was a mistake or vagueness. This was discovered by Bertrand Russell and also to him we owe the first modern theory that systematically eliminates the possibility of the emergence of antinomies and which also eliminates the reductionist reasonings discussed here as illegitimate paralogsms that have a structure similar to antinomies proper. This is the Russellian theory of logical types in the form presented to us in the first edition of the first volume of *Principia Mathematica*.⁸⁹ Presenting his position on the subject of our interest will not require getting into any detailed technicalities of the theory of types and neither will it require a discussion of further modifications the original theory was later subjected to (thanks to Polish logicians, among others). It will suffice if we limit ourselves here to several points of the Russellian 1910 text. They are both fundamental and can easily be grasped by a humanist.

Before we move on to this, though, consider that the sentence "all sentences are false" seems not to have the nature of an antinomy. The assumption of its truthfulness implies (seems to imply) its own falsehood in reductive

tic logic is given by Bocheński (1962: 275-292). See also W. Kneale, M. Kneale 1971: 227-229.

⁸⁸The class of all classes that are not their own elements is such that if it is its own element, then it is not its own element and the other way round — if it is not its own element, then it is its own element.

⁸⁹Russell formulated the theory of types first in 1908. on modern antinomic issues and the discussion of the theory of types (Bocheński 1962: 448-467; W. Kneale, M. Kneale 1971: 652-672).

terms, but the opposite does not hold true: assuming the sentence is false, it cannot be argued as before that it is true. The antinomic sentence in a strict sense, as in the case of a properly formulated Greek antinomy of a liar, or the Russellian class antinomy of the non-reflexive classes (there are many others), then a sentence like this is true if it is false and the other way round — it is false if it is true (a vicious circle). The difference is about the example sentence (and others with like structure) uni-directionality of inference leading to the falsification of the sentence (and thus to self-refutation), but not leading to contradiction ($(p \rightarrow \sim p)$ is not the same as $(p \wedge \sim p)$), but in the case of an antinomic sentence *sensu stricto* such inference occurs bi-directionality, which falsifies and verifies the same sentence and thus it directly leads to contradiction ($(p \rightarrow \sim p)$ and also $(\sim p \rightarrow p)$, which would demand the recognition of conjunction $(p \wedge \sim p)$).⁹⁰

It is thanks to this unique uni-directionality of inference that directly leads only to self-refutation (but not to contradiction) the sentences of interest to us — as opposed to antinomic sentences — could have seemed a sensible ground for their reduction to absurdity and the procedure might have been thought of as obvious and logically correct for hundreds of years of European thought. In fact these are just appearances that mask the paralogical nature of the operation, with basic sentences in the understanding that makes the procedure apparently possible masked by their grammatical correctness, veiling the violation of the rigors of sense-making, which only modern semantics was able to highlight. This might be the right place to remind ourselves that the normative requirements of a simple natural language grammar are far more liberal from the constraints of logical semantics in the sense that the former allow the construction of grammatically correct and apparently sensible sentences which are, however, flawed or illegitimate from the standpoint of logical semantics. In particular, this involves interrelated issues such as the lack of grammatical differentiation of the levels of language (the separation of the objective language from metalanguage, which are mixed up in a normal language and thus barely noticeable) and grammatically free use of self-reflexion and the linguistic equivalents of the great quantifier, unconstrained by semantics. These properties of a natural language, which incidentally make it a universal system, where anything can be uttered

⁹⁰This difference is something that the authors of the interpretations of the oriental examples do not realize; they refer to the antinomy of a liar (and this antinomy only whereas they are real counterparts) as an alleged ancient Greek example of these examples (Chan Kien Feng 1957: 118 — when discussing the key Mohist example; Suoki Takehiro 1970: 84 — as an aside to the Dignāgi's *svavacana-viruddha* example).

in grammatically correct sentences, are at the same time the sources of antinomies. The reason is that we know (not from linguists dealing with natural languages, but from mathematical logicians) that a "too universal a system where 'too much can be uttered' must be contradictory" (Mostowski 1948: 320, see also 315-320).

It is so with starting sentences, which we are discussing and with the reductive procedure, which these sentences seemingly are subjected to in an apparent agreement with logic and common sense. Essentially, what we deal with here is the same factors that give rise to antinomies, but the intervention of semantic-logical factors that violate the constraints is more concealed and more difficult to notice in such cases than in strictly antinomic sentences. The heart of the matter is more or less as follows. As we know, the antinomic nature can be summed up in the "vicious circle," that is, to the scheme "if true then false," and "if false then true." The same outcome can be obtained with the sentence "all sentences are false," (and the like) but this can be arrived at in other way — by repeating the unidirectional inference procedure which form the sentence "all sentences are false" one can arrive at "it is false that all sentences are false" (which we used to stop at), but also by another application of the same procedure — "it is false that it is false that all sentences are false" (i.e. "It is true that all sentences are false"⁹¹). This means that we have to make do with a vicious circle here, but this comes about along a slightly different scheme than in purely antinomic sentences: "if true then false," and at the same time "if true, then false that false," which leads to a contradiction, too. The likeness of the sentences we are discussing to strictly antinomic ones is, in essence, very close. There is nothing strange, then, that in the light of the semantic-logical constraints securing a natural language from the possibility of antinomy formation, the reductive reasonings we have been discussing are also eliminated, with the sentences that constitute the starting point of the reductive procedure proving illegitimate structures (pseudo-sentences) in a similar manner as purely antinomic sentences.

According to Russell, his theory of logical types is a consequence of and elaboration on what he calls a "'vicious circle' principle." Note that the term is not very apt because it is not really about a vicious circle but a principle that secures a natural language from constructing expressions that lead to

⁹¹Of course, this procedure can be recursively applied *ad infinitum*. Taking a sentence that says something about EVERYTHING $(x)Fx$ and assuming that the very sentence belongs to the range of EVERYTHING it talks about, one can arrive at $F[(x)Fx]$, $F\{F[(x)Fx]\}$, $F\{F\{F[(x)Fx]\}\}$, etc. respectively.

the vicious circle and antinomies. Details aside, by focusing on Russell's text' part I that refers directly to the issue in question, three interrelated points can be referred to.

First, Russell limits general quantification making sense only of cases where it does not cause self-reference. This limitation is contained in a rule holding that whatever includes in its own range all the objects of a set (and hence an expression such as "for all x : F from x "), it cannot itself be one of the objects that belong to the set."⁹² The violation of this rule leads to the construction of creations Russell calls "illegitimate totalities." Of course, the example sentence "All sentences are false" as well as the others discussed before, are understood self-reflexively, that is, that they themselves belong to the range they talk about, and constitute the "illegitimate totalities" that violate the rule.

Second, Russell notes that the expression $(x)F$ as one that includes in it the function F cannot in itself be the argument of this function F , and this means that the expression built along the formula $F\{(x)Fx\}$ is simply nonsensical.⁹³ This is an obvious consequence of the disqualification of the expression $(x)Fx$ in the sense of an "illegitimate totality," in the sense that the expression is to be one of the objects it talks about itself. Both formulas taken together highlight the illegitimacy of the reduction procedure in the reasonings demonstrated in the previous chapters. If the procedure is basically about the construction of an implication along the lines of $\{(x)Fx\} \rightarrow F\{(x)Fx\}$, whose consequent is to be tantamount to a conclusion, then we must say that the whole apparently logical reasoning is in fact a paralogism. In particular, the apparent basic implication is a para-implication, having in its antecedent the Russellian "illegitimate totality" (point one) and in the consequent (conclusion) a meaningless expression point two).

Third, irrespective of the formulation discussed, Russell himself names the counterpart of the sentence "All sentences are false" as an example of an illegitimate construction and notes a paralogical nature of the reduction of such a sentence. He realizes that in this case a reductive reasoning may appear to make sense and may suggest that his "vicious circle principle" allows for some exceptions. As he writes, it might appear that the sentence " $(p) \wedge p$ is false" (a sentence ascertaining the falsity of any sentence p) leads

⁹²Whitehead, Russell 1910: 40: "Whatever involves all of a collection must not be one of the collection."

⁹³Whitehead, Russell 1910: 44: "Since " $(z) \wedge \varphi z$ " involves the function φx , it must, according to our principle, be impossible as an argument to φ . This is to say, the symbol " $\varphi\{(x) \wedge \varphi x\}$ " must be meaningless.

to the sentence " $((p) \wedge p$ is false) is false," where the starting sentence which contains a function "... is false" is in itself an argument of this function — and that, as ascertained previously (see above, point two) is impossible. The author also highlights that in this case the very starting (basic) sentence violates the rule that "there cannot be any sentences about all sentences. (see above the comment one)."⁹⁴

It was only Russell's statements from 1910 that put in a proper light, and allowed for the assessment of, the precursory position of Indian Buddhists, who more than a millennium and a half before the author of the theory of types undermined the alleged truth and legitimacy of the reductive reasonings discussed in chapter III or even rejected these. We mean the operation of exclusion, which can now with more precision be said to essentially be about the sentence $(x)F$ having itself been excluded from the range of the quantifier inherent in it. It can now be seen that this procedure, recommended and sporadically used by early Buddhist thinkers, imposes self-reference and thus protects it from the Russellian "illegitimate totality," and makes impossible the construction of the apparently obvious para-implication $*((z)Fz) \rightarrow F((z)Fz)$ with an illegitimate totality in the antecedent and a meaningless expression in the consequent (and also the alleged conclusion of the reasoning). The Buddhist position on the reductive reasonings corresponds well enough to what Russell formulated in the design brief of his theory of types as late as the beginning of our century that this position can be regarded as a striking anticipation of the modern views on the subject and, more broadly speaking, the anticipation of the modern methods of the elimination of the respective (quasi-)reductive reasonings.⁹⁵

⁹⁴Whitehead, Russell 1910: 44: "Take for example the function ' p is false' and consider the proposition ' $(p) \wedge p$ is false.' This should be a proposition asserting all propositions of the form ' p is false.' Such a proposition, we should be inclined to say, must be false because ' p is false' is not always true. Hence we should be led to the proposition ' $((p) \wedge p$ is false) is false.'

i.e. we should be led to a proposition in which ' $(p) \wedge p$ is false' is the argument to the function ' p is false', which we had declared to be impossible. Now it will be seen that ' $((p) \wedge p$ is false', in the above, purports to be a proposition about all propositions and that, by the general form of the vicious-circle principle, there must be no propositions about all propositions."

⁹⁵This statement contains one of the most important findings of the study in comparative terms, particularly that the issue is unknown to even those specialists for whom it might be interesting. This is a good opportunity to remind us again that the one only scholar who pointed to the issue was S. Schayer (1931, 63n). He did not go in-depth, however, and his note in passing did not cause the issue to be taken up by scholars of Buddhism, with the historians of logic most likely remaining completely

I deliberately restrict myself to the presentation of the issue in the light of the first modern theory, which within the framework of a system that protects logic from antinomies, also exposes the paralogical nature of the reductive reasonings that are the subject of our study. Now, decades later, the theory of types in its original formulation is a mere part of the history of logic. As mentioned before, it underwent modifications; besides that, under the impulse of fighting antinomies, new theories were proposed, more or less independent from Russell. This matter, still not concluded, would go beyond my competence and would miss the main historical and comparative aims of the study, for which *Principia Mathematica* constitutes a convenient and sufficient landmark.⁹⁶

What must be discussed, though, is the scholastic antecedences of the Russellian theory. For the reason of chronology it might seem that they should have been presented earlier, but their historic and comparative significance can now fully come to light in the context of the whole discussion so far. The matter does deserve a more in-depth presentation than will be given here, but the knowledge of scholastic is still incomplete and the competences of the author do not go beyond what can be found in the monographs available.

In the scholastic thought, the problem of universal sentences (with the great quantifier) emerged around the 14th century in the writings of (Pseudo-)Duns Scott,⁹⁷ particularly in connection with the self-reference of these sentences, in the context of *insolubilia* (antinomies). Since no associations of this kind were found in earlier authors dealing with *insolubilia*, it can be presumed that the inclusion of the sentences we have been discussing, and which can be seen in Duns Scott's writings, to the antinomic issue is his own contribution and at the same time marks the beginning of a more mature phase of the scholastic speculation on the issue, which lasted until

uninformed about it.

⁹⁶As far as I know, after Russell there were no theories that would rehabilitate the reductive reasonings and recognize their legitimacy. Such reasonings apparently cannot be performed on the grounds of any strictly logical language and the only system in which these can be uttered in a way that purports to be correct is a natural language. If so, then any differences between the position described in (Whitehead, Russell 1910) and methods of resolving the issue that are independent from the theory of types are insignificant.

⁹⁷These are comments to Aristotle's *De Sophistia Elenchis*, which were ascribed to John duns Scott (dec. 1308), but which are possibly older and coming from one of his disciples (possibly John of Cornwall). In any event, it is assumed that the text was written later than by the mid-1300s. This is probably *terminus ante quem* of the issue, which might be (just) a little earlier than the oldest documentation that we know of. I will call the author (Pseudo-)Duns.

the decline of the Middle Ages. The first researcher of medieval logic who from this standpoint made a note of (Pseudo-)Duns's text was the Rev. Jan Salamucha (1937: 322-324). The material used to illustrate the matter, where I limit myself to the most important things and leave aside some vague areas that would require a separate discussion, comes from him.

(Pseudo-)Duns Scott (and not he alone) noticed that the source of the difficulty in the antinomy of a liar (his *Ego dico falsum*) is the self-reference of a sentence. It can be seen that at the beginning of his discussion he poses the problem of whether the self-reference of a sentence is at all possible. Using the terminology of the time, the matter boils down to the question whether a term that is part of a sentence can itself refer to (*supponere pro*) the whole sentence.⁹⁸ Noticing this self-reference becomes a link between the issues of antinomy with the question of general sentences, which are of interest to us and which, as we know, in an understanding that (purportedly) enables their reduction are themselves self-reflexive. So, into the discussion of the fundamental problem, the medieval author introduces some typical and universal "Any sentence is true" and "Any sentence is false," making an appeal to Aristotle, in whose writings these sentences are in no way associated with the antinomy of a liar.⁹⁹ (Pseudo-)Duns Scott puts forward arguments against self-reference which, as Salamucha (over-)emphasizes, "resemble the contemporary deliberations of logicians on the theory of types and the antinomy of the class of all classes that are not their own elements" (Salamucha 1937: 322) Of the several arguments, the most interesting one is apparently the one where the author, on the basis of the quotes from Aristotle's *Metaphysics* (see note 17 above), which are interpreted in a very peculiar way, seeks to prove that self-reference may lead to contradiction."¹⁰⁰

⁹⁸Salamucha 1937: 333, 67n: "Quaeritur circa hanc propositionem: 'ego dico falsum.' Et primo utrum terminus possit supponere pro tota propositione cuius est pars."

⁹⁹(Pseudo-)Duns makes a reference to the Latin version of the same section in *Metaphysics*, which was presented in chapter I of this study (see above). Aristotle only mentions the antinomy of a liar in very general terms in *De Sophisticis Elenchis* 25, 180b. The text by (Pseudo-)Duns is a commentary to this passage of *De Sophisticis Elenchis*.

¹⁰⁰The relevant passage in (Pseudo-)Duns (Salamucha 1937: 333-334, 68n): "Et quod non ostenditur, quia in propositione universali affirmativa praedicatum denotatur convenire omniconstituto sub subiecto. Si ergo alii denotetur non convenire, illud sub subiecto non continetur. Sed qui dicit, omnem propositionem esse veram, vel omnia esse vera: non dicit suum esse verum. Per Ari. 4 meta [a quote from *Metaphysics*:] Accidit itaque; et quod famatum est de omnibus talibus orationibus ipsas seipsas destruere. Nam qui omnia vera dicit, orationis suae contrariam facit veram, quare suam non veram: contraria autem non dicit ipsam esse veram: qui vero et omnia falsa: et

In the end, however, despite the argument he gives, the author is inclined to believe that self-reference is possible, again appealing to Aristotle.¹⁰¹ In the

ipse seipsum etc. [end of quote] Sed si terminus supponeret pro tota propositione cuius est pars: sequeretur, quod dicens omnia esse vera, diceret suam propositionem esse vera, ergo etc.” Allow me to add (Salamucha did not discuss that) the argumentation by (Pseudo-)Duns, which is to prove that the self-reference of a universal sentence can lead to contradiction is in fact rather inept, which may also be proof that we have to do with the first (and thus rather raw) attempt of combining antinomies with some more broadly understood self-reference. First, the medieval author puts the issue in this way that the utterance “All sentences are true” does not aspire to be true because, according to Aristotle, “whoever says that that all is true makes a true utterance contrary to his own and thus makes his own untrue.” This is also supposed to mean that self-reference does not obtain in that case because the predicative included in the sentence does not refer to the whole sentence. In the light of the initial part of the text it also means that the sentence does not belong to the range of its subject (*sub subiecto non contineret*). This is to say that what (Pseudo-)Duns suggests here is like the Buddhist operation of exclusion, but this one makes it impossible to perform the reduction of the sentence. This is a very arbitrary interpretation of Aristotle’s position, and in fact it is a series of misunderstandings based on his text. Second, what is a consequence of the previous misunderstandings, according to the medieval author the permission of self-reference would lead to a contradiction in the sense that the one who says that “Any sentence is true” would also claim that also this utterance of his is true, and that would go against Aristotle’s position on the subject matter. Of course, by applying the same analysis to the sentence “Any sentence is false” one much more easily proves that in the later case self-reference does not lead to a contradiction and is thus legitimate. See next note.

¹⁰¹Salamucha 1937: 334, 71n: “Ad oppositum est Ari. in fine quarti [about the same passage from the fourth part of *Metaphysics*] dicens. Qui dicit omnia esse falsa, dicit suum dictum esse falsum; sed hoc non staret, nisi pars [...]” So, according to (Pseudo-)Duns the possibility of a universal sentence being self-reflexive is dependent on the predicative contained within it. On the basis of both quotes, the previous and the present one, we can make the following reconstruction of his position: if the predicative that occurs in a universal sentence cannot be applied without contradiction (very vaguely understood, as we have seen) to the very sentence, then self-reference does not hold; if, however, the predicative of the sentence, without contradiction (and the more so in agreement with what is evident) can be referred to the very sentence, then self-reference is possible and perhaps even necessary. The difficulty of the reconstruction seems to be corroborated by the fact that it corresponds rather exactly to the position that was formulated even less ambiguously by William Ockham (dec. in mid 1300s). He meant the semantic assumption (*institutio*) which pertains to self-reference which concerns the “denotation of the whole by a part of the whole;” cf. Salamucha 1937: 340, 100n: “Ideo dicendum est quod quamvis pars posset significare totum cuius est pars tamten talis institutio non est semper admittenda. quando enim per illam institutionem partis habentis eandem institutionem totum significatum mutaretur a veritate in falsitatem et econverso tunc non est talis institutio admittenda” (quote from Ockham’s *Summa tatius logicae*). It seems that the sentence is more mature and thus

end, it turns out that all these discussions concerning self-reference that were to be an introduction to the discussion of the *Ego dico falsum* antinomy, are irrelevant to what (Pseudo-)Duns has to say in the main topic (Salamacha 1937: 323).

The latter issue aside, it can be inferred from (Pseudo-)Duns' not very coherent deliberations that, first, he treats the self-reference of universal sentences (corresponding to the formula $(x)Fx$) as connected with the predicative, but he overlooks the part played by the great quantifier as the real carrier of the self-reference of such sentences. This is a rather obvious extrapolation onto universal sentences of a peculiar self-reference which describes a particular (and thus non universal) antinomic sentence "*Ego dico falsum*." The extrapolation is all the more surprising that the author's words would imply his realization of a different nature of universal sentences, which he himself had introduced to the discussion, and in particular, where he noticed a special part played by subject-group quantification in such sentences.¹⁰² The lack of the reference of the self-reference in universal sentences to the quantifier they contain must be the main source of other misunderstandings.¹⁰³ Second, as related to the previous point but in need of emphasis, (Pseudo-)Duns in effect overlooks the reduction of the respective sentences.¹⁰⁴ In all, his deliberations will not contribute anything relevant

later than what we have in (Pseudo-)Duns' writings.

¹⁰²See the beginning of the quote cited above, n. 100.

¹⁰³It is about the misunderstandings that I noted *ad hoc* in n. 100 and 101 and which prove that introducing self-reflexive universal sentences into antinomies was far from easy and in the beginning caused difficulty to scholastic logicians. The misunderstandings as found among early scholastic writers, who endeavored to link such sentences with antinomies were unthinkable in Buddhist writings. As we know, the issue of self-reference was from the beginning brought down to whether or not the sentence belongs to the range of the great quantifier it contains (*cf.* a quote from *Zhu Shi Lan*, see note 44).

¹⁰⁴What strikes one is the omission and an indirect distortion of the reduction of universal sentences in the aforementioned (n. 101, 102) quotations, where the author directly cites *Metaphysics* Γ 8. It is certain that (Pseudo-)Duns failed to notice that the Aristotelian mention he quotes about the self-refutation of the respective sentences (*ipsas seipsae destruere* = *αὐτοὺς ἑαυτοὺς ἀναίρειν*) refers to the reduction of these sentences, nor the fact that Aristotle states the falsity of both (yes, both) sentences on the grounds of the same reductive procedure that assumes in both the same concept of self-reference as linked to the great quantifier occurring in both. The issue of reduction does appear in the subsequent passages of the text, of (Pseudo-)Duns (Salamucha 1937: 334, 72 and 73n; 335-336, 77n) but all that taken together remains vague and proves that the medieval author could not adopt a coherent position on the subject, which he may well have introduced to the scholastic deliberations, but which he entangled in the

to the discussion on the subject matter of antinomy. The text deserved mention and discussion for the mere reason of being the starting point for the scholastic speculation of interest to us. Its subsequent development was to lead to the real anticipation of Russell's position.

The main, albeit secondary, source of knowledge of antinomies in the later stages of scholastic thought has been *Logica Magna* by Paul the Venetian, the early 15th century author.¹⁰⁵ In the same work, preserved in its printed edition from the end of the same century, historians of logic have found texts that are significant anticipations of modern views on antinomies, including anticipations proper of Russell's position. Since we have discussed the fact that 14th century scholastics, starting from (Pseudo-)Duns started realizing the connection between *insolubilia* and universal sentences on the basis of self-reference occurring in them, it is befitting to start the review of the relevant texts found in *Logica Magna* from a peculiar example concerning the subject. This will also illustrate the evolution from the inept deliberation by (Pseudo-)Duns to some later formulations.

Paul the venetian quotes a revelatory definition of an *insolubile* (unsigned and undatable but possibly rather late as per the way it is formulated) that should be quoted verbatim. According to the definition, *insolubile* is "propositio habens super se reflexionem suae falsitatis aut se non esse veram totaliter vel partialiter illativa" (after W. Kneale, M. Kneale 1971: 228).¹⁰⁶ The revelatory quality of the definition is about it clearly linking *insolubilia*, that is antinomies, with self-reference and does so independently from the earlier speculations about "denoting the whole by its part." What is most important is that the definition covers in range both antinomic sentences (in a general sense) and the universal sentences in their basic Aristotelian variants. Consider that, thanks to its latter part "propositio [...] se non esse veram [...] illativa," the definition treats as *insolubile* not only the sentence "any sentence is false" (which would hardly be stretched to it the framework of "propositio habens super se reflexionem suae falsitatis") but

very beginning.

¹⁰⁵In actuality Paolo Nicoletti, deceased in 1429.

¹⁰⁶Apparently the authors as first historians of logic to make a note of this definition, did not fully appreciate it. In their intention, the definition quoted is just an example of the fact that medieval logicians were aware that the difficulty posed by *insolubilia* derive from their self-reference ("derive from the attempt to produce a certain sort of self-reference"). This does not highlight the significance of that definition, which in my opinion is one of the highest accomplishments of scholastic thought in the discussion of antinomies.

also "any sentence is true."¹⁰⁷ The precursory nature of the definition vis-a-vis Russell's position is about the scholastic writer's conscious equation of self-referenced antinomic sentences with self-referenced universal sentences. Like his medieval predecessor, Russell, too, treats both kinds of sentences in the same way. The difference in terms used by Russell as opposed to the scholastic writer should not overshadow the agreement of both positions because self-reference, emphasized by the medieval author, is also the essence of the vicious circle highlighted by Russell.

The definition also deserved to be raised because it was not presented in this light before (see n. 106). Moving on to other texts from the same source, it must be noted that Paul the Venetian describes a dozen or so scholastic methods for resolving the issue of *insolubilia*, of which fourteen coming from others (for the most part those can hardly be attributed), which he does not accept, and his own, fifteenth attempt. None of the solutions quoted overlaps Russell's theory, most of them having nothing to do with it. However, in the context of some solutions, some new views flashed, with an anticipation of those points of Russell's theory that were previously highlighted as relevant to our subject.¹⁰⁸ Leaving aside some solutions that deserve our attention from the perspective of modern approaches to antinomies but are unrelated to our issue,¹⁰⁹ from among the attempts presented by Paul, it is number

¹⁰⁷It might appear that the latter sentence does not fall under the definition. This illusion is caused by the fact that in this sentence falsity is not mentioned and that rendering the sense of the definition adequately may be difficult (*cf.* its English translation in the *Development of Logic*, p. 750, which seems to be flawed). In particular, this refers to the term "illativa" (one from which I can be inferred that .../ allowing the argument ...), used in the definition. Both sentences are such that their falsity is trackable to or derivable from (a conversion of the Latin *illativa*) themselves on account of their self-reference. It ought to be accepted that the author not only realized this but also wanted to highlight this in the second part of his formulation.

¹⁰⁸The only thorough review so far of the respective parts of Paul the Venetian's text from the vantage point of the contemporary historian of logic is presented by J. M. Bocheński (1962: 280-292). In particular the author cites (along with quoting the German text) numerous passages from *Logica Magna* that correspond to the respective solutions and makes a note of some novel formulations. This is to describe the points of utmost importance to us solely on the basis of this study (I had no access to *Logica Magna*).

¹⁰⁹One can mention two anonymous solutions, for example, no. 5, according to which *insolubile* is devoid of meaning at all, or no. 8, which denies *insolubilia* the truth value on the grounds that they only have an appearance of sentences but are not ones (Bocheński 1962: 281, 282). There are indeed "modern" positions, but in the passages from Paul the Venetian nothing indicates that the positions should concern not only antinomic sentences proper but also the ones we are interested in. This would

thirteen (Bocheński 1962: 284-287) that seems the most important to us, one that was among those he had rejected.

The solution in question is an extended and complicated system of propositions and resolutions. Within the context of our interest, three points need to be discussed as well as the fourth one, implicit in the other three, even though not to be found in the text. Those basic propositions contain an injunction against formulating expressions (sentences) leading to a vicious circle. Even though the unknown author (or perhaps the one who gives the account, such as Paul himself) falls short of using the term, and in his deliberations uses some peculiar terminological distinctions foreign to us, but the mere fact of such an injunction goes beyond doubt and this very prohibition is undoubtedly the scholastic equivalent of Russell's vicious circle principle (Bocheński 1962: 285).¹¹⁰ Note that Russell knew that (even if just indirectly or in very general terms) the inquiries of medieval logicians had led to the recognition of the vicious circle as the source of contradiction in *insolubilia*.¹¹¹

The problem of the vicious circle is key for the whole solution and other deliberations and recommendations are, in essence, their consequence. On account of the close interconnections occurring between the construction of universal expressions that contain the vicious circle or lead to it and the self-reference of sentences, the injunction against the vicious circle is

be so if the definition of *insolubilia* formed part of these solutions (no. 8!). However, the comparison of the respective references to *Logica Magna*, which indicates that the definition is to be found in places other than each of the solutions, seems to preclude such a possibility. It would be worthwhile to study this in depth because so far it is unclear if Paul connects the definition he quotes with any of the solutions he discusses (and if so, then with which one).

¹¹⁰Bocheński stresses that in the passages he quotes "enhalten eine exemplarisch scharfe formulierung des Verbotes des circulus vitiosus und somit des wichtigsten modernen Gedankens sur Losung der Antinomien."

¹¹¹Russell learned about this from the encyclopedic article *insolubilia*, written by the American logician C.S. Peirce (Kneale, Kneale 1971: 656 and the note). Because it is otherwise known that Peirce as the only one forerunner of 19th century logic read Paul the Venetian, it cannot be precluded that the information he gives in his encyclopaedic article is about solution number 13. What is not known is to what extent Peirce knew Paul's work and the chapter about *insolubilia*; Bocheński (1962: 440) suggests that he had noticed only one of the dozen or so solutions that Paul talks about, but fails to say which one he means. The matter is apparently minor and raising it here may seem unnecessary meticulousness, but on account of Paul being a major source and the role of Peirce as an intermediary for scholastic antinomies for the author of the types, it would be desirable to establish things more precisely, which would be possible for the historians of logic.

basically a reformulation of the prohibition of using self-reference. It is not surprising, then, that the injunction appears in the context of solution no. 13. This point requires no explanation except mentioning that the injunction is formulated in the terms known to us from (Pseudo-)Duns': the relation of a part to the whole. It is stated that a constituent part of a devised sentence in its proper sense cannot subordinate the whole of the sentence to itself. The third point is more of interest to us owing to the reference it makes to universal sentences. The author of the solution leaves no doubt as to the fact that his injunction against the vicious circle (and the related ban on designing self-referenced sentences) needs to be understood as referring to both antinomic sentences *sensu stricto* and quasi-antinomic universal sentences of the type in question. The proposition that states the impossibility of a sentence that is supposed to mean that it is itself true or false is illustrated by the medieval author through a self-referenced universal sentence. "Any mental proposition [*propositio mentalis*] is false," making a clear note that he means such an understanding where the subject of the example sentence covers the very sentence (Bocheński 1962: 285). The ban on the recognition of self-referenced universal sentences as permissible entails the ban on their reduction as a procedure at least as illegitimate or meaningless. The fourth point, interesting for us in particular in the context of what we are discussing, is not directly addressed in the texts available to me, but it can be accepted that the annulment of the reductive procedure which assumes the self-reference of the starting sentence is implicitly inherent in the solution.

It is easy to notice that the recommendations of the solution no. 13 could have been inspirational for Russell. Therefore it must be reiterated at this point that Russell's theory is independent from scholastic antecedences, just as it is independent from its Buddhist antecedences (which goes beyond doubt, of course). The technicalities of the theory of types aside, as there is no medieval prototype for these, and limiting ourselves to the basic design brief of the theory, which is of interest to us, suffice to say that Russell did not conduct any studies on scholastic logic, and given the near ignorance of scholastic thought in those days, he cannot have known about the things discussed here. The only interface can be the problem of the vicious circle as the source of antinomies, which Russell himself makes a reference to in an earlier paper.¹¹² This is, however, a generality whose extrapolation onto

¹¹²See above n. 111. Note that the issue of the vicious circle surfaced several years before the publication of Whitehead, Russell 1910 in the context of the debate between Russell and Henri Poincaré. The French interlocutor was the first to use the term to

scholastic discussion of antinomies as we know them (incompletely though we do) is out of the question for a number of reasons.

The late medieval anticipations of the new ideas that laid the groundwork for Russellian theory of types do not and cannot be evidence of the genetic dependence of the latter on the former. Indeed, they do testify, in their areas, which is not so rare, about the founders of modern logic having to rediscover the achievements of scholastic thought, which the anti-scholastic currents (humanism) disdainfully doomed to oblivion (Bocheński 1962: 18).¹¹³ Irrespective of this little-known fact, the anticipations presented above basically have historical and comparative value in the broader context of our study and as such deserve our attention. Of particular interest is the comparative juxtaposition of the differences between the set of facts making up the scholastic antecedences of the Russellian position and the peculiarly precursory part played by the Buddhist approaches towards this position.

At the beginning of the comparison, chronological differences must have been highlighted for two reasons. First, as we know, the earliest testimonies that can be considered the early stages of scholastic anticipation (self-reference), come from the first half of the 1300s,¹¹⁴ with the Buddhist idea of excluding the sentence from the range of the sentence speaking about "everything" appearing at the same time as the concept of the reduction of the respective sentences, that is, at the beginning of the common era at the latest (Pali Canon, *Zhu Shi Lan*). It means that in this case Buddhist thought came before all European anticipations by at least a millennium. Second, and what is no less important, the achievements of scholastic thinkers proved to be a short-lived and quickly forgotten episode, the only one in the history of European thought from antiquity to the 20th century¹¹⁵ whereas in the Buddhist context, the use of exclusion was a lasting phenomenon, consistently recurring over the centuries that separate the pre-logical era

describe "non-predicative" definitions (Russell's term) as ones which "contient un cercle vicieux." In his response to Poincaré's paper, Russell made a reference to the medieval recognition of the vicious circle in the antinomy of a liar (Kneale, Kneale 1971: 635-636).

¹¹³The author calls the Russellian vicious circle principle as a rediscovery of what already existed in Paul the Venetian's writings.

¹¹⁴Noting the rudimentary nature of the (Pseudo-)Duns' deliberations presented before, it does not seem likely that more medieval research could reveal the existence of an earlier and more advanced speculation on the subject.

¹¹⁵An analogy comes to mind with the Mohist period, also one of its kind in the Chinese context; however, it was about the principle of the reduction to absurdity as applied to the sentences of interest to us without an intention of undermining the procedure itself.

(the Pali Canon) and the closing stages of Indian Buddhist logic. So, in both time aspects, the Indian Buddhist attitude in the subject matter discussed here, a millennium earlier, has definite supremacy over the corresponding European speculation that was much later and short-lived.

The difference in content is much more complex. On the basis of the materials discussed before, it can be presented as follows. The most essential thing is the juxtaposition of two facts: in the scholastic speculation the issue emerged only in the context of the resumption and the subsequent development of interest in the antinomies, which had existed since antiquity, and it immediately became a constituent part of the issue;¹¹⁶ second, the Buddhist approach to this issue had from the very beginning been entirely independent from antinomies. Buddhist thought did not know the problem of antinomies in the strictest sense, as was in the case of the Old Greek paradox of a liar, as a result of which any considerations on antinomies in our understanding, for whom a starting point was lacking, were, through necessity, left out.¹¹⁷

¹¹⁶Let us emphasize that in the European context the issue does not appear detached from antinomy. It only appears as part of the issues in their mature phases. So, it first appears in the Late Middle Ages and then only at the beginning of our century. It is interesting that when in the period of the Renaissance that opened the modern era, continuity had been lost with the achievements of the scholastic logic, the problems of antinomies had disappeared, as well, for four centuries, and along with it all reservations concerning the reduction of self-referenced universal sentences. Of course, there was no lack of referring to the respective reductive reasonings. These, however, were just paraphrases of expressions taken from Aristotle or other ancient authors, with the legitimacy of the reasonings not only ceasing to be questioned but, conversely, exposed as common-sense and unquestionable, in line with the stance of ancient thinkers (the classic example being Bolzano, cited in chapter I).

¹¹⁷The reader should be forewarned that in the professional Buddhist literature the term 'antinomies' (or their derivatives) are often used about issues that would not be called antinomic here. (or in the new approaches to the history of logic). "Buddhist antinomies" are often referred to as a juxtaposition of general philosophical propositions that are mutually contradictory and ones where the mind would have a hard time deciding which to accept and which to reject. We are thus talking about antinomies in the sense close to Kant's understanding of cosmological antinomies (Schayer, 1931: XXVI-XXX). A more convincing example, and one that originates from technical Buddhist logic, is an illustration of a purported antinomy, which is a peculiar set of misunderstandings. Dignāga introduced to the list of the general category of "apparent reason" errors (*hetv-ābhāsa*, which should not be confused with the category of *pakṣa-ābhāsa*, which we already know about, being superior to the other contradictions discussed here in n. 80) a separate item he haplessly calls *viruddha-avyabhicāri*, approximately "does not depart from contradiction." It is not clear what this error is supposed to be about. In *Nyāya-mukha*, Dignāga mentions it as one of the "insecure reason" er-

The above difference, which is about the very origin of the scholastic and Buddhist anticipations, is superior to other detailed differences, which are in turn derived from this main one. Even a superficial look at the materials allows one to say that a collection of scholastic anticipations is characterized by its relative theoretical, evolutionary and complex nature, which is different in the Buddhist context: a practical approach, no evolution and the simplicity of reasoning. Also, it is not very difficult to notice that in both of these systems there is an interdependence of features that make it up. Below I will have a look at pairs of opposing component parts of both systems.

Firstly, the approach of scholastic thinkers to the issue is clearly theoretical from the very beginning (even though the beginnings may have not been very successful). Things had to unfold that way because as the problem was noticed as such against the backdrop of earlier scholastic theoretical deliberations on the subject. Not so among Buddhist thinkers, where there were no such connections and could not have been and the issue surfaced because of the doctrine (*Dīghanakha-sutta*), which inclined and possibly forced an *ad hoc*, pragmatic way out.¹¹⁸ A practical and simple solution appeared by itself without much theoretical speculation, and thus most probably intuitively.. As we know later attempts at the justification of the operation of exclusion (*ad hoc* and for apologetic purposes, and thus also pragmatic) are theoretically irrelevant and again this could not have been otherwise.¹¹⁹ The striking fact that the respective scholastic reasonings (the

rors (*anaikāntika*, a subcategory to *hetv-ābhāsa* and gives no examples. It is only from other non-Dignāga texts that we find out that it is apparently about contrasting the so-called Buddhist syllogism ("Sound is transient because it is an artifact, just like a pot") with a counter-syllogism ("Sound is permanent because it is audible, just like the essence of sound.") (Kunst 1939: 87). All that is vague and no wonder that the concept of *viruddha-avyabhicāri* was rejected by later logicians (Dharmakīrti). However, Tucci (1930: 35) translated the term *bona fide* as antinomies and this pushed the author of Buddhist logic to entitle the section on the item "The antinomic fallacy (Shcherbatskoy 1932: 316-327 suggests it could be about the "cosmological antinomies")."

¹¹⁸In scholastics, such factors of doctrine and pragmatics were out of the question. The reductive reasonings we are dealing with had long been known and raised no doubt for centuries; moreover, the authority of the ancients, which sanctioned the unquestionable nature of the procedure, also went against seeking to spot a problem in it. This is another argument to prove that in scholastics the problem could have emerged in peculiar theoretical speculation: the one which was brought up by antinomic issues then studied.

¹¹⁹The justification of the operation of exclusion must have been beyond the possibilities of theoretical Buddhist speculation. This must have been the main reason why Dignāga rejected this operation, who could not have recognized as persuasive the extra-logical motivation for the operation (rightly so), and was unable to notice the

earliest included) are theoretically incomparable to what we find among later Buddhist logicians is usually if not solely explained by the basic difference in the starting points in both cases. Note that all this is not to belittle either the practical value of the Buddhist solution or the inherent real theoretical value, which the discoverers and users did not realize. Neither does that violate the historical and comparative meaning of the operation of exclusion. On the contrary, it brings them to light.

Secondly, the scholastic solution of interest to us, and in effect the outcomes, add up to create an evolutionary sequence from some early attempts of little significance to ever more subtle formulations, which constitute the anticipations proper of modern views. Also, the evolutionary nature is derived from the origin of the issue in the scholastic context as noticed in the background of antinomies and developing within these issues, once intensively pursued. The pragmatic Buddhist solution, which appeared as early as at the pre-logical stage, was from the very beginning subjected to *ad hoc* purposes and required no modifications; also, it would be hard to imagine what that would be supposedly to be subjected to. The operation could either be accepted and used (not always consistently) or rejected. This is, as we know, what the peculiar evolutionary nature was about in the Buddhist context.

Thirdly, the variants of scholastic anticipations, scattered throughout various antinomic deliberations, and implicated in various attempts of solving the main problem, that is, strict antinomy had to lead to a complex set of partially overlapping elements, corresponding to various aspects of Russell's position. The complexity of scholastic anticipations contrasts, rather successfully, with the double simplicity of the Buddhist operation of exclusion that comes down to one simple formula, which does away with the Russellian "illegitimate totality," and eliminates the possibility of a para-logical overuse of the purportedly obvious reductive procedure is not only a simple but also a more direct anticipation of the Russellian issue than what we can find in the theoretically more elaborate scholastic studies (at least regarding the materials so far prepared by contemporary historians of logic). We will risk saying that in the Buddhist context a lack of connection between the (purportedly obvious but otherwise undesirable) reduction of self-referenced universal sentences and the issues of antinomy may have rendered impossible the attempts at a theoretical resolution of the problem of reduction, but it also allowed for a pragmatic and simple solution. In this sense the Buddhist

logical-semantic core of the issue.

formula, despite its pragmatic and intuitive origin and a lack of theoretical rationale, is not only chronologically earliest but, with its simplicity, it is also the historically strictest anticipation of the way it was presented in Whitehead and Russell 1910.

This is the conclusion the previous solutions were supposed to prime for (see above) but the fact may seem rather surprising and we need to dwell upon it for a little longer. As there is no doubt that the early Buddhist discoverers of the operation of exclusion hardly realized the logical nature of the problem they were dealing with, it cannot be denied that the source of their "modern" idea was pure intuition. It must now be said that the mere reference (made here before) to the intuition of the discoverers does not suffice even though overall it is no doubt right. It can be misleading, too, as it does not explain what could have been the intuitive starting point of the idea (other than the cause that set it in motion), and it can suggest *ex silentio* that what we are dealing with is some random chance, which is not conditioned by anything or whose conditioning we cannot point out. Also, considering that we are dealing with an idea that goes beyond the common sense obvious, regarded as such (except the late scholastic period) by the best thinkers until as late as the end of the 19th century, such an unintended suggestion might unnecessarily magnify the unusual fact which is otherwise interesting and may also create an impression that a degree of mystery has been included into historical and comparative issues.

Explaining this point, which we are now moving onto, will do away with the possibility of such misunderstandings, but this is not the only reason for such an explanation, which could have been reduced to a mention in passing during the previous argumentation. The simple thing in question is interesting enough in itself that it deserves to be separately discussed at this particular moment as the most fitting conclusion of the series of comparative insights.

The early Buddhist idea of exclusion, which is surprising in its novelty had intuitive origins in the some commonly known facts (or acts) of natural language use. The thing is that a natural language leaves ample space for the use of what we would today call a universal quantifier of a purportedly (superficially) unlimited range in cases where we indeed have to do with general quantification but in some ways (sometimes drastically) limited in range.¹²⁰ Usually, an appropriate limitation of the range of the quantifier

¹²⁰This must be a property common to all natural languages, and as such, one of the language universal. Suffice to say that this is so in the Indo-European languages, Sanskrit included. In Polish we know this from everyday experience, with examples too

thus used (more precisely, its linguistic counterpart) is implicitly inherent in the context (if only situational) with the very procedure of limitation so natural that it is usually overlooked by the usual users of language. In such cases, the "superficial" EVERYTHING (and its variants) is in fact no longer EVERYTHING as claimed — as early as in the context of the operation of exclusion — by the author of *Zhu Shi Lan* (see above). Note that the addressee of a sentence with a general quantification with a purportedly (and only purportedly) unlimited range, which interprets this sentence in line with the author's intention, imposes (not always consciously) on the quantifier a limitation and thus does something that in Buddhist context would be called the operation of exclusion. These two procedures do differ (more on that later), but faced with the obvious fact that both boil down to the procedure of exclusion of something from the surface-structure of the range of EVERYTHING, their similarity in this respect is clear and can overshadow, the otherwise quite significant, differences. Considering, too, that we do not find in a natural language anything that would resemble the Buddhist operation of exclusion more, it cannot be denied that this natural procedure of the interpretation of sentences with general quantification with a purportedly unlimited, but in fact limited range constituted the intuitive source of the "technical" Buddhist operation or (which is the same) that the latter is the intuitive extrapolation of the former.

The differences between both procedures are rather subtle and we can assume that the Buddhist discoverers of the operation of exclusion did not have full understanding. The differences can be reduced to two points. First in the natural interpretative procedure, the exclusion has a positive nature in the sense that it is about isolating from the superficially unlimited quantifier range all that it is supposed to cover and what would be included under it if the sentence were to be formulated precisely, that is, with an explicit imposition of a limitation on the quantifier. In the technical Buddhist operation, however, exclusion is a negative procedure in the sense that it is about the removal from the range of the quantifier of what ought not to be included in it (despite what the quantifier suggests is its unlimited and thus unexceptional generality). Second, more importantly in terms of logic, the natural interpretative procedure does not have any connection with self-reference of a proposition, whereas the technical operation of exclusion is related to sentential self-reference of a proposition (or view) and is directly about the removal of this self-reference. This has a quantitative consequence

banal to include here.

because only one object (sentence or view) is then removed from the range of the quantifier.

There is no indication that Buddhists noticed these differences clearly and, above all, that their procedure was about the removal of self-reference in itself. The formula of *Zhu Shi Lan* according to which the procedure of exclusion means that EVERYTHING is not really EVERYTHING is no testimony of some more knowledge on the issue. This general formula also covers an interpretation of purportedly universal sentences as actually general ones only in a limited range, which is automatic for the users of language, as well as the technical operation of exclusion, which was invented purely for the sake of satisfying some doctrinal and pragmatic needs. The formula of *Zhu Shi Lan* above all is evidence of there having been no clear distinction between the two different procedures, associated with each other upon the mere likeness and possibly a lack of awareness that the technical variety of the procedure having this pragmatic application for which it had been devised. On the other hand, because in the intention of *Zhu Shi Lan*'s author, its broad formula, encompassing both procedures, is directly related to the "technical" operation of exclusion, we are entitled to believe this formula to be a testimony to (or a trace of) the origin of the procedure as an intuitive extrapolation of a corresponding natural procedure of linguistic interpretation. This modest testimony is all the more important as the one and only known trace of early Buddhist reflection on the issue in question.¹²¹ Apparently, even this tiny trace of a peculiar relationship between both procedures was soon forgotten.

To be precise, it needs to be added that even though the testimony of *Zhu Shi Lan* to a degree corroborates the legitimacy of the explanation (which seems uncontentious), this would hardly be regarded as the proof that settles the issue. The explanation, which has been put forward here for the first time, is necessarily hypothetical, that the hypothesis is about a process that is *a priori* regarded as intuitive, apparently there can be no question of it being proved in the strictest sense. Here, the role of the hypothesis is about it having a rational and explicative role, and in these terms it seems to satisfy the conditions. It explains the natural and coherent way in which this "modern" early Buddhist concept came about in anticipation of Russell's

¹²¹As a personal aside, the oft-cited *Zhu Shi Lan* passage had a heuristic meaning for me. It was this excerpt that made me aware of the possibility of reconstructing the intuitive strand leading to the "technical" operation of exclusion and which also brought me a linguistic starting point as the most natural (and possibly the only one that can be considered here).

position. Thus it deprives the issue of the appearances of mystery and makes it intelligible. It would be hard to find a rational explanation that would have a stronger explicative power.

Having thus concluded comparative deliberations, some more remarks have come up, motivated by a desire to prevent some more misunderstandings that could arise against the background of the whole study. The oft-highlighted fact that the examples testifying of the *reductio ad absurdum* having been discovered in all the cultural circles discussed is solely made up cases of paralogical overuse of this principle could make an inquisitive reader who is unfamiliar with formal logic ask themselves a question which the logically correct applications of the principle are and even evoke doubt whether the very principle is indeed a logical law.

So, it must be said that the so-called principle of *reductio ad absurdum* in its basic sentential formulation " $(p \rightarrow \sim p) \rightarrow \sim p$ " and its reliable counterparts in the form of a functional calculus are logical tautologies which cannot be questioned. The peculiar quasi-applications of this principle are rejected; these come down to the self-referenced and vicious circle formula (see above), which, despite superficial likeness to a reliable formula of reduction, is its paralogical extrapolation. Back to reduction in its basic sentential formulation, suffice to say that it finds an appropriate logical application in indirect evidence (apagogic) as regards the proving of the negative proposition ($\sim p$). The truthfulness of the positive counterpart of the proposition is then assumed (p) and if the negation of the counterpart can be derived from this assumption ($\sim p$), the negative proposition is considered proved on the basis of the law of reduction. The examples of such reasonings have a different structure than the paralogical reasonings we were discussing, but discussion is unnecessary here.¹²² Note that the reverse procedure of reduction is used in the event of indirectly proving a positive proposition (p). The truth of the negation of this proposition is then assumed ($\sim p$) and if from this assumption an original positive proposition can be derived, it is presumed proved on the basis of the reverse law of reduction " $(\sim p \rightarrow p) \rightarrow p$." All that mainly concerns peculiar mathematical reasonings and because in mathematical practice there is a more common need for using apagogic argumentation for positive rather than negative propositions, the scope of using the reverse law of reduction is broader than the ordinary law of reduction. The more frequent applicability of the reverse law of reduction must have contributed to it having been discovered in antiquity (used for

¹²²For the exemplification of logically correct apagogic law [principle] of reduction to absurdity (Mostowski 1948: 24-25; Czyżowski 1949: 25).

the first time) in reference to a mathematical reasoning (Euclid), whereas all the known examples of the application of ordinary reduction are paralogical extrapolations that correspond to the law.

Therefore, the recent remarks have led me back to the fact that the discovery of the law of regular reduction occurred in all the cultural circles in the context of the same paralogical applications of the law. We know that the convergence is explained by the factors that have been highlighted before, such as the similarity of the issues, which by itself gave a reason for such solutions, but also the simplicity and the suggestive obviousness of the procedure that imposes itself under the circumstances. The revelatory applications never went beyond the paralogisms and never led their discoverers to logically correct reductive reasonings. This is partially explained by a peculiar and narrow range of reliable applications of the principle of ordinary reduction (as mentioned before), but a more important factor must have been that logically correct applications of this principle are less easy to grasp than its paralogical extrapolations. Paradoxical as it can be, noticing reliable applications of the law of reduction does require more intuition and logical skill than the finding self-declared purportedly obvious, but in fact paralogical, quasi-applications of this law.

ADDENDUM

After completing this study I got the newest book by A. C. Graham *Later Mohist Logic, Ethics and Science* (1978). This close to 600-page-long volume is and will long remain a unique study of the multifaceted issue of the so-called dialectical chapters of Mo Tsy (40-45). Since, in the discussion of the examples of reductive reasonings in Mohist canons of chapter II of this study, I used Graham's earlier study (1959), I feel obliged to write a supplement with ex post references to the new work and comment on them. Of course, the remarks, where I will limit the scope of the comment to a small section of Mohist issues, should not suggest any overall generalizations concerning this work as a whole.

In brief, the new book by Graham makes obsolete only my remark concerning the significance of his previous study (see n. 16). His modern translations of both basic canons constitute an almost complete reformulations of the previous editions of the canons, but the changes are basically about style, with the contents having been little changed in passages that are irrelevant to us. Therefore, my position on his earlier translations are, in essence, also true about his new interpretations of both canonical texts. I will address three points. Regarding the first of the canons I discuss (see above and *cf.* item

B 71 on pp. 445-446), I uphold my interpretation, that is, the explanations where I adopted the Sub I Zhang's *shen* → *tang* emendation (overlooked by Graham in this edition, too). See note 17 above. On top of the graphic similarity of both signs, I will now also note the fact that in the *textus receptus* of all four canonical chapters (40-43) the sign *sen* appears only this once and in a context that is rather unusual for it (Graham translates *pu shen* simply as 'ill-considered', which is artificial), with *tang* being a rather frequent sign there (19 times at least) and makes perfect sense. All that corroborates Sub I Zhang's emendation, which Graham does not accept (nor does he mention it), which causes logical vagueness of the significant sense of this item in the translation.

The thing about the next canon (see above; in Graham's work B 79, 453) is more complicated because the choice of the expositions of the beginning of the explanation (*shuo*) is related to a peculiar issue of the so-called heading signs in chapters 42-43. This issue was consciously overlooked in my study, which I did not want to overburden with technical-philosophical details which are barely perceptible for non-Sinologists. Apparently I must raise it, though.

In essence, at the front of each explanation there is a sign of explanation, identical with the one which begins the text of the respective basic canon (king), that is, the one the *shua* refers to. This heading sign does NOT belong either syntactically or semantically to the *shuo*, whose actual text only begins with the first sign after the heading sign. The heading sign is only supposed to perform the function of indicator that associates the *shuo* that follows with the right canon (which we know is found in another chapter); it goes without saying that the arrangement of these signs in the whole text also marks the boundary between *shuo*'s belonging to different canons. This important composition principle of chapters 42-43 had long been forgotten and its discovery (or, rather, gradual discovery) by Chinese scholars only in this century is one of the most important achievements of the textology of Mo Tsy's canonical chapters.

The principle described is proven unmistakably in a surprisingly high number of cases, including the previous example), which obviously highlights its instrumental meaning. However, given a number of various distortions in the *textus receptus*, it can be expected that some of these also affect heading signs. This is so in this case where the beginning of *shuo* is undoubtedly distorted and requires emendation. This is what we know for sure, but the kind of distortion and the emendation required are, as always in such cases, debatable.

The difference between the exposition of *shuo*, which is the basis of the interpretation given in my study and Graham's exposition is that I have adopted Sub I Zhang's emendation of the first sign as the beginning sign *shuo* with an additional assumption that, in this case, the heading sign was entirely lost from the *textus receptus*, with Graham moving the sign that in *textus receptus* comes second to the front as heading (with this sign in that position still requiring a minor emendation), and considering the rest as *shuo* text. This exposition may be more economical than mine (it does not assume the dropping out of the heading sign but only a shift of the sign by one place and a minor emendation of this sign), but it seems that both are more or less equally legitimate, particularly that in both cases the logical interpretation of the positron (at least in my understanding) boils down to the same. Therefore in my study I also mentioned Graham's exposition as an alternative version of *shuo*, which does not alter the logically significant sense of the whole. See notes 18 and 19 above. Also, my remarks about Graham not noticing the need of the interpretation of this canon (regardless of the choice of the *shuo* exposition) in terms of quantification remain valid as in this rendition his present interpretation is no different from the previous one. Overlooking quantification is still, in my opinion, the chief reason of keeping the logical aspects of the text discussed blurred in its present, reformulated translation by Graham, too.

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