

THE BUDDHIST PHILOSOPHY *of the MIDDLE*



ESSAYS ON
INDIAN AND TIBETAN
MADHYAMAKA

David Seyfort Ruegg

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STUDIES IN INDIAN AND TIBETAN BUDDHISM

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Essays on Indian and Tibetan Madhyamaka

David Seyfort Ruegg



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Foreword

WITH THE PRESENT VOLUME, Wisdom Publications and the Studies in Indian and Tibetan Buddhism series have the honor of making available some of the finest scholarship in Buddhist Studies, fifteen key essays by David Seyfort Ruegg. The subject of the book is Madhyamaka, the “philosophy of the middle,” a school of thought founded by Nāgārjuna and Āryadeva in about the second century C.E. and going on to Candrakīrti and Bhā(va)viveka in the sixth century, Kamalaśīla and Śāntarakṣita in the eighth, and a host of illustrious Tibetan exponents. Numerous are the Western writers who have been fascinated by its promise, notably the critique of realism, the wide-ranging dialectical method, and the philosophical quietism it produces. David Seyfort Ruegg is one of the most outstanding of these scholars, and he has consecrated much of his life to the study of Madhyamaka thought.

Seyfort Ruegg was born in 1931 in New York. His university education was primarily in Paris, where he studied Indology under Jean Filliozat and Louis Renou and Tibetology under Marcelle Lalou and Rolf Stein. He has a strong connection with the French tradition of scholarship on Madhyamaka, a tradition that includes figures such as Louis de la Vallée Poussin, Étienne Lamotte, J. W. de Jong, and Jacques May. Another strong connection he has maintained throughout his career is with Tibetans. He has collaborated with high-level Tibetan scholars, in Europe, the United States, and also in India. Among others these include the Buryat/Mongolian Dge bshes Ngag dbang nyi ma, an abbot of Sgo mang college who taught in Leiden in the 1960s when Seyfort Ruegg was there, as well as Dge bshes Dge 'dun blo gros, whom Seyfort Ruegg knew in Kalimpong and who later became a professor at the University of Hamburg. Indeed, early on in his career Seyfort Ruegg adopted the perspective that the great scholars of Tibet were themselves scholars of Indian Buddhism. They were, as he once put it, Indologists *avant la lettre*.

Seyfort Ruegg's work—as the list of publications appended to the present book amply shows—has ranged over most aspects of Indian and Tibetan Studies. However two interests come back repeatedly: the philosophy of the buddha-nature (*tathāgatagarbha*) and the philosophy of the middle. The first was the subject of his 1969 doctoral thesis, *La théorie du tathāgatagarbha et du gotra*. In 1973 he published a translation of Bu ston Rin chen grub's treatise on the *tathāgatagarbha*, and in 1989 *Buddha-Nature, Mind and the Problem of Gradualism in a Comparative Perspective*. As for the Madhyamaka, besides the articles in the present book and recent publications in Vienna, we should especially mention Seyfort Ruegg's *Literature of the Madhyamaka School in India* (Wiesbaden, 1981). As the present book attests, buddha-nature and the Madhyamaka are in one way or another closely linked in later Indian Buddhism, and very much so in Tibetan philosophies.

David Seyfort Ruegg has held professorial positions in several major universities—Leiden, Seattle, Hamburg, and now the School of Oriental and African Studies of the University of London. He is a Sanskritist and a Tibetologist and at one time or another has held chairs in Indian Philosophy, Buddhist Studies, and Tibetan. Indeed virtually all his publications are proof that Buddhist Studies profits greatly from the double perspective that knowing both Tibetan and Sanskrit brings.

I first met David Seyfort Ruegg in the early 1980s and have been his admirer ever since. What has always impressed me is how he combines philological precision, extraordinary erudition in Western philosophy, hermeneutics, linguistics, and other subjects, and an ability to distill and illuminate broad trends within the field. The fifteen articles presented here show the richness of Indian and Tibetan Buddhist philosophy and the impressive scope of a remarkable career. We are reprinting them here that they may be readily accessible and continue to serve as a model for Buddhist Studies.

This book would not have seen the light of day without the invaluable help of several people. Above all, special thanks are due to David Seyfort Ruegg for his willingness to undertake this project and his patience throughout. We are greatly indebted to Burkhard Quessel of the British Library, who contributed to the book at every stage—he computerized the articles, corrected the scans, checked proofs, and so on. David Kittelstrom was the indefatigable editor at Wisdom Publications. Other Wisdom resources from whose help we benefitted are Laura Cunningham, Lea Groth-Wilson, Megan Anderson, and Tony Lulek. Finally, thanks are due to Professor David Jackson, who provided much useful biographical information.

The articles were reprinted with the kind permission of the original publishers. Full references are given in the initial note to each chapter. The Elisabeth de Boer Fund of the University of Lausanne, Switzerland, helped in defraying the costs of this publication. All that remains is to offer the traditional dedication: *dge legs 'phel*.

Tom J. F. Tillemans

Preface

THE PRESENT VOLUME comprises reprints of a selection of studies concerned with the Madhyamaka school of Buddhist thought in India and Tibet. For this volume misprints in the original articles have been corrected. The transliteration of Tibetan has been altered by the publishers, who have also made a number of editorial changes. To the paper on linguistic and mathematical models (no. 1) a postscript has been appended listing some newer publications dealing with the relative places of linguistic and mathematical models in Indian thought and providing references to some recent treatments of Indian mathematics and astronomy.

These papers were written in parallel with, and thus complement, their author's *Literature of the Madhyamaka school of philosophy in India* (1981) and *Three studies in the history of Indian and Tibetan Madhyamaka philosophy* (Part 1 of *Studies in Indian and Tibetan Madhyamaka thought*, 2000). The latter volume contains an outline history of earlier Madhyamaka in Tibet, a study on the place of propositional assertions or theses (*pratijñā*), philosophical positions (*mata*, *pakṣa*, etc.), and non-contentiousness or eirenicism in Madhyamaka thought (an earlier article on the subject published in 1983 is therefore not reproduced here) and a study on epistemological (*pramāṇa*) theory and the ontic in Tsong kha pa's (1357–1419) Madhyamaka philosophy (an earlier version published in 1991 is therefore not reprinted here). Part 2 of *Studies in Indian and Tibetan Madhyamaka thought* (2002) is comprised of a translation of Candrakīrti's (seventh-century) comment in his *Prasannapadā* on the first stanza of Nāgārjuna's great *Mūlamadhyamakakārikās* and a translation of a treatise going back to Tsong kha pa, but recorded by his immediate disciple Rgyal tshab Dar ma rin chen (1364–1432), on the eight Crucial Points (*dka' gnad* or *dka' gnas brygyad*) in Madhyamaka philosophy.

Since the original publication of the article on the Tibetan Jo nang pas

(no. 12)—the first of its kind on the subject—original texts composed by many of this remarkable school’s principal authorities have very fortunately come to light and been made more readily available in printed form; at the time of writing of this article in the early 1960s, the oldest such works known to be accessible in a public collection in the West were probably some manuscripts held by the Reiss Museum in Mannheim. The article reprinted here will serve the purpose of providing the reader with two examples of the Tibetan historiography and doxography of this school, including a critique, by an eighteenth-century master of the Dga’ ldan pa school, of the Jo nang pa doctrine of Emptiness of the other (Tib. *gzhan stong*, i.e., Emptiness of the heterogeneous, as opposed to Emptiness of self[-existence], *rang stong* or *svabhāvaśūnyatā*).

Concerning the negation of the so-called tetralemma (*catuṣkoṭi*), a characteristic and very fundamental procedure in Buddhist thought studied in the third article in this volume, further observations on it—and also on non-presuppositional and non-implicative negation (*prasajyapratishedha*) sometimes also referred to as propositional or external negation—are included in both parts of the present writer’s *Studies in Indian and Tibetan Madhyamaka thought* (especially Part 1, pp. 109–12, 142–44, on the tetralemma itself, with Part 2, pp. 19–24, on the two types of negation: *pariyudāsa* and *prasajyapratishedha*).

These papers were written over a time-span of several decades, and the reader will doubtless notice in them a gradual evolution in the translations of Indian and Tibetan technical terminology as well as in the description of systems of Buddhist philosophical thought. In the original of the earliest article reprinted here (no. 12), technical terms were often rendered by European equivalents with initial capitalized (following a style once introduced by the great Indologist Sylvain Lévi). In later papers, this style has been used more sparingly, exceptions still being, e.g., “Emptiness (of self-existence)” for (*svabhāva*)*śūnyatā*, “Gnosis” for *jñāna*, “Truth/Reality” for *satya*, and “Middle” for *madhyamaka*. It seems appropriate to retain this typographical convention at least in the case of European equivalents of terms having technical meanings in Buddhist thought where no single translation-equivalent seems to be entirely satisfactory and any rendering is an approximation. (Especially problematical is the matter of the translation of *satya* [Tib. *bden pa*] by “truth” in the Tibetan expression *bden par grub pa* [or *bden grub*] meaning “hypostatically established” or “reified.”) Capitalization of a term serves to underscore the fact that it is not in the first place a definition in an English dictionary of the equivalent selected for an original Sanskrit or Tibetan term

that will be determinative of its technical meaning in a given passage but, rather, definitions and uses of the term in our Sanskrit and Tibetan sources.

It is evident that studies in Indian, and in particular Buddhist, thought have long been complicated, sometimes obfuscated, and occasionally severely hampered by the fact that no system of technical equivalents—however conventional these must in many cases be—has been agreed upon by modern scholars. The development of a system of equivalents was, however, something achieved by Tibetan scholars and translators at a very early stage of their endeavours at the turn of the ninth century.

A case in point is the not infrequently found description of Nāgārjuna's Madhyamaka philosophy as "nihilism." Now, it is anything but clear how in modern English his philosophy of the Middle could be fittingly described as nihilism, a word that has as its closest equivalent Skt. *nāstikya* (even if Apte's English-Sanskrit dictionary has very curiously translated "nihilism" by Skt. *śūnyavāda*—while rendering "atheism" by *nāstikya* although this English word corresponds most closely to *anīśvara/nirīśvaravāda*—thus creating an inextricably confused skein of concepts and terms!). The very purpose of Nāgārjuna and his followers, the Mādhyamikas, was precisely to steer clear of the twin positions of nihilism and substantialism (metaphysical essentialism), each of which they regarded as an extreme (Sanskrit *anta* = Tibetan *mtha'*) to be carefully eschewed by the philosopher-practiser. (Many have indeed considered nihilism to be at least as dangerous as substantialism, if not more so; see *Kāśyapaparivarta* §§ 64–65 on *śūnyatādṛṣṭi* in relation to *pudgaladṛṣṭi*, as well as Nāgārjuna's *Mūlamadhyamakakārikās* xiii.8 and xxiv.11 on *śūnyatādṛṣṭi*.) At the very same time Mādhyamikas have refused to adopt and entrench themselves in some putative middle position (*pakṣa*, etc.) or speculative view (*dṛṣṭi*) between two extremes (see *Samādhīrājasūtra* ix.27). If, then, the Mādhyamikas are "centrists," they are so in a special sense. And Madhyamaka is strictly speaking no "third way." Buddhists in general have indeed ever sought to avoid the twin extremes of destructionism (*ucchedānta*) and eternalism (*śāśvatānta*), nihilism and substantialism. Those who explain *śūnya* and *śūnyatā* in terms of nihilism and nihility—or the *néant*—overlook the fact that the two Sanskrit expressions are as it were shorthand for *svabhāvaśūnya(tā)*, so that what the Mādhyamika is speaking about is not nihilism but, rather, the fact of emptiness of self-existence. Thus a *śūnyatāvādin* is a *niḥsvabhāvavādin*, one who considers all factors of existence (*dharmā*), all entities (*bhāva*), to be without self-existence (*svabhāva*). But he does not consider everything to be a mere nothing (*abhāva*), which would of course be an extreme position in terms of Madhyamaka.

The two extremes thus rejected are equivalent to the first two positions of

a tetralemma (*catuskoṭi*), namely the positively expressed one and the negatively expressed one. And the notion of a “third way”—i.e., a putative intermediate position or view between two extremes, which is also rejected—is reducible to the fourth (“neither...nor”) position, or perhaps to the third (“both...and”) position, of a tetralemma. Now, in Madhyamaka thought, all four positions of the tetralemma are in fact negated (through non-presuppositional and non-implicative negation, *prasajyapratiṣedha*).

Most of the branches of Madhyamaka philosophy are, moreover, not philosophically idealist in so far as the pure Madhyamaka admits pragmatically the relative existence of an object of cognition (the *bāhyārtha*) external to mind (*citta*, *vijñāna*) (the Yogācāra-Madhyamaka tradition being something of an exception in this regard). And in this sense Mādhyamikas might be described as realists. But they are realists of a very particular kind, ones who posit the ultimate reality neither of an external, objective, world, nor of an internal, mental, world; hence, in some respects, they have been described as anti-realists as well as anti-foundationalists. In what sense the Yogacara-Vijñānavādins—the advocates of the Cittamātra (Tib. *sems tsam*) who make up the second main school of Mahāyāna philosophy alongside the Madhyamaka—are “idealists” (cf. *vijñānamātra*), “mentalists” (cf. *cittamātra*), or “representationists” (cf. *vijñaptimātra*) has equally been the subject of discussion among historians of Indian and Buddhist thought. Very interestingly, early in the history of the Madhyamaka, authors belonging to the Vijñānavāda movement apparently wrote commentaries on Nāgārjuna (now extant only in Chinese versions), examples being Asaṅga and Śthiramati.

Because of the very considerable problems we encounter in employing terms borrowed from Western philosophy, or from the ordinary linguistic usage of some idiom of “Standard Average European,” some writers have preferred to retain the original (Sanskrit or Tibetan) technical terms, which they then explain in a glossary, note, or monograph. But this solution is not really available when translating from Sanskrit and Tibetan.

It is clear, then, that an adequate philosophical description of the traditions and systems of Buddhist thought, and in particular of the Madhyamaka, is a matter of the utmost importance because it raises a number of critical and complex issues, as does the translation of the technical vocabulary of these traditions and systems. There are required both a sort of modern (meta)language capable of describing specific (and perhaps fairly unfamiliar) systems of thought and a coherent set of established and agreed technical European-language equivalents for translating the relevant philosophical vocabularies. In this regard—and concerning the unavoidable conventionality of such renderings—reference may be made to the present writer’s “Some

Reflections on Translating Buddhist Philosophical Texts from Sanskrit and Tibetan” (1992: pp. 367–91) and “La traduction de la terminologie technique de la pensée indienne et bouddhique depuis Sylvain Lévi” (2007: pp. 145–71).

The glossary appended to the present book seeks to clarify some of the above-mentioned issues with particular reference to a selection of important technical terms in Madhyamaka thought.

Concerning the proper names Bhāviveka, Bhāvaviveka, Bhāvin, and Bhavya,—Legs ldan (')byed, Snang 'bral, and Skal ldan in Tibetan—, they have often been seen as alternative appellations of a single person, the sixth-century Mādhyamika known to Candrakīrti. And in some articles in this collection the appellations Bhā(va)viveka and Bhavya have been used as appellations for the same person. The name found in Candrakīrti's metrical *Madhyamakaśāstrastuti* is Bhāvin (rendered Legs ldan byed in the Tibetan translation published by de Jong); but in the prose of the *Prasannapadā* by the same authority we find Bhāvaviveka in the edition published by La Vallée Poussin. The form Bhāviveka is now widely accepted. It seems appropriate to refer to the author of the *Prajñāpradīpa*, a commentary on Nāgārjuna's *Mūlamadhyamakakārikās*, and of the *Madhyamakahr̥daya(kārikās)*, an independent text, as Bhāviveka. Whether this Bhāviveka was also the author of the *Madhyamakārthasamgraha* is perhaps not altogether settled yet. The *Madhyamakaratnapradīpa* is evidently to be assigned to a later Bhavya. The authorship of the (*Madhyamakahr̥dayavṛtti*-) *Tārkajvālā* ascribed in the Tibetan Bstan 'gyur to Bhavya—and very often assigned to Bhāviveka, which, if correct, would make this very extensive work an autocommentary—raises problems discussed in section 5 of the present publication. The main source of the “Svātantrika” branch of the Madhyamaka was, of course, the author of the *Prajñāpradīpa*. On these matters see also sections 2, 6, 11, and 15 in this publication. When reading the relevant articles in this book, these points are to be kept in mind. As for Bhavyakīrti and Bhavyarāja, they are different, and later, figures.

My sincere thanks go to those connected with the publication of this volume, and in particular to Tom Tillemans and Burkhard Quessel, both of whom have spared no pains in arranging for the reprinting of these articles.

D.S.R.

Abbreviations

A	Aṅguttaranikāya
AA	<i>Abhisamayālamkāra</i> ascribed to Maitreya(nātha). Edited by Th. Stcherbatsky and E. Obermiller, Bibliotheca Buddhica xxiii, Leningrad, 1929.
AAA	<i>Abhisamayālamkāralokā Prajñāpāramitāvyaḅhyā</i> of Hari-bhadra. Edited, together with the text of the <i>Aṣṭasāhasrikā Prajñāpāramitā</i> , by U. Wogihara, Tokyo, 1932.
AAWG	Abhandlungen der Akademie der Wissenschaften zu Göttingen
ABORI	<i>Annals of the Bhandarkar Oriental Research Institute</i>
AK	<i>Abhidharmakośa</i> of Vasubandhu. Edited by P. Pradhan, Tibetan Sanskrit Works Series, volume VIII, Patna, 1967.
AKBh	<i>Abhidharmakośabhāṣya</i> of Vasubandhu. Edited by P. Pradhan, Tibetan Sanskrit Works Series, volume VIII, Patna, 1967.
AKV	<i>Abhidharmakośavyāḅhyā</i> of Yaśomitra. Edited together with <i>AK</i> and <i>AKBh</i> by Svāmī Dvārikādāsa Śāstrī in four parts, Baudha Bhāratī Series 5–7, 8/9, Vārāṇasī, 1970–73.
ALB	<i>Adyar Library Bulletin</i>
AM	<i>Asia Major</i>
AO	<i>Acta Orientalia</i>
AOH	<i>Acta Orientalia Academiae Scientiarum Hungaricae</i>
BEFEO	<i>Bulletin de l'École française d'Extrême-Orient</i>
BHSD	Franklin Edgerton, <i>Buddhist Hybrid Sanskrit Dictionary</i>
BNTh	<i>Bu ston rnam thar</i> by Sgra tshad pa Rin chen rnam rgyal (1318–88). Contained in volume sha of the Gsung 'bum of Bu ston Rin chen grub (1290–1364).

- BrCb* 'Brug pa chos 'byung of 'Brug chen Padma dkar po (1527–92)
- BSOAS* *Bulletin of the School of Oriental and African Studies, University of London*
- BSOS* *Bulletin of the School of Oriental Studies, London*
- C* Co ne edition of the Bstan 'gyur. Microfiche from the Institute for Advanced Study of World Religions, New York, 1974.
- CS* *Catuhśataka* of Ārya-Deva. Chapters 8–16 edited with Candrakīrti's commentary by Vidhushekhara Bhattacharya, Visva-Bharati Series No. 2, Calcutta, 1931. Edited by K. Lang, Copenhagen, 1986.
- D* Sde dge edition of the Bka' 'gyur and Bstan 'gyur
- DNg* *Deb ther sngon po* of 'Gos lo tsā ba Gzhon nu dpal (1392–1481). Kun bde gling xylograph; published in facsimile by Lokesh Chandra, New Delhi, 1974.
- EB* *Eastern Buddhist*
- EW* *East and West*
- GK* Gaudapāda, *Gaudapadīyakārikās*
- HJAS* *Harvard Journal of Asiatic Studies*
- IBK* *Indogaku-Bukkyōgaku Kenkyū*
- IHQ* *Indian Historical Quarterly*
- IJ* *Indo-Iranian Journal*
- IT* *Indologica Taurinensa*
- JA* *Journal Asiatique*
- JAOS* *Journal of the American Oriental Society*
- JASB* *Journal of the Asiatic Society of Bengal*
- JBBRAS* *Journal of the Bombay Branch of the Royal Asiatic Society*
- JLABS* *Journal of the International Association of Buddhist Studies*
- JIBS* *Journal of Indian and Buddhist Studies (Indogaku Bukkyōgaku Kenkyū)*
- JIP* *Journal of Indian Philosophy*
- JPASB* *Journal and Proceedings of the Asiatic Society of Bengal*
- JPTS* *Journal of the Pali Text Society*
- JRAS* *Journal of the Royal Asiatic Society*
- JRASB* *Journal of the Royal Asiatic Society of Bengal*

- KD* Gsung 'bum of Klong rdol bla ma Ngag dbang blo bzang (1719–94). lHa sa xylograph.
- KbG* *Chos 'byung mkhas pa'i dga' ston* of Dpa' bo Gtsug lag phreng ba (1504–66). Published by Lokesh Chandra, New Delhi, 1959–65.
- KNZB* *Dka' gnad/gnad brgyad kyi zin bris* of Tsong kha pa / Rgyal tshab Dar ma rin chen
- KSS* Kāśī Sanskrit Series
- KZ* *Zeitschrift für vergleichende Sprachforschung*
- M* Manuscrit Pelliot tibétain 814, Bibliothèque Nationale, Paris
- MA* *Madhyamakāvatāra* of Candrakīrti. Edited with the author's own *Bhāṣya* (*MABh*) by L. de La Vallée Poussin, Bibliotheca Buddhica IX, St. Petersburg, 1907–12.
- MAV* *Madhyāntavibhāga* ascribed to Maitreya(nātha). Edited by G. M. Nagao, Tokyo, 1964.
- MAVBh* *Madhyāntavibhāgabhāṣya* of Vasubandhu. Edited together with *MAV* by G. M. Nagao, Tokyo, 1964.
- MAVṬ* *Madhyāntavibhāgaṭikā* of Sthiramati. Edited by Ramachandra Pandeya, *Madhyānta-Vibhāga-Śāstra*, Delhi, 1971.
- MCB* *Mélanges chinois et bouddhiques*
- MMK* *Mūlamadhyamakakārikās* of Nāgārjuna. Edited by L. de La Vallée Poussin, Bibliotheca Buddhica IV, St. Petersburg, 1903–13; edited by J. W. de Jong, Adyar Library Series, vol. 109, Adyar, 1977.
- MSA* *Mahāyānasūtrālamkāra* ascribed to Maitreya(nātha). Edited by S. Lévi, Paris, 1907.
- MSABh* *Mahāyānasūtrālamkārabhāṣya* ascribed to Vasubandhu. Edited together with the *MSA* by S. Lévi, Paris, 1907.
- N* Narthang edition of the Bka' 'gyur and Bstan 'gyur
- NS* *Nyāyasūtras*
- OLZ* *Orientalistische Literaturzeitung*
- P* Peking edition of the Bka' 'gyur and Bstan 'gyur
- PEW* *Philosophy East and West*
- PPMV* *Prasannapadā Madhyamakavṛttiḥ* of Candrakīrti. Edited together with the *MMK* by L. de La Vallée Poussin, Bibliotheca Buddhica IV, St. Petersburg, 1903–1913.

- PSJZ* *Dpag bsam ljon bzang* of Sum pa mkhan po Ye shes dpal 'byor (1704–88). Published by Sarat Chandra Das, Calcutta, 1908.
- RGV* *Ratnagotravibhāga Mahāyānottaratantraśāstra* ascribed to Maitreya (nātha). Sanskrit text edited by E. H. Johnston and T. Chowdhury, Patna, 1950, together with the *RGVV*, the commentary (Vṛtti, or Vyākhyā = Tib. *Rnam par bshad pa*) ascribed to Asaṅga. Tibetan translation edited by Z. Nakamura, Tokyo, 1967. (In the Chinese tradition the Śāstra is attributed to a certain *Sāramati.)
- RGVV* *Ratnagotravibhāga-Vyākhyā*. Edited by E. H. Johnston, Patna, 1950.
- RM* *Re'u mig* of Sum pa mkhan po. Appended to this author's *PSJZ*, and published as *dPag-bsam-ljon-bzan*, Part III, by Lokesh Chandra, New Delhi, 1959.
- RO* *Rocznik Orientalistyczny*
- S-P* Svātantrika-Prāsaṅgika
- StII* *Studien zur Indologie und Iranistik*
- T* Taishō canon
- TbG* *Thu'u bkvan Grub mtha' = Grub mtha' shel gyi me long* of 'Thu'u bkvan Blo bzang Chos kyi nyi ma (1732–1802)
- TP* *T'oung Pao*
- TPS* *Tibetan Painted Scrolls* by Giuseppe Tucci, Roma, 1949.
- TS* *Tattvasamgraha* of Śāntarakṣita. Edited by Svāmī Dvārikādāsa Śāstrī, Bauddha Bhāratī Series volumes 1–2, Vārāṇasī, 1968.
- TSP* *Tattvasamgrahapañjikā* of Kamalaśīla. Edited together with *TS*.
- VP* *Vākyapadīya*
- VV* *Vigrahavyāvartanī* of Nāgārjuna. Edited with the author's commentary by E. H. Johnston and A. Kunst in *Mélanges chinois et bouddhiques* 9 (1951); reprinted together with an English translation by K. Bhattacharya, *The dialectical method of Nāgārjuna*, Delhi, 1978.
- WZKS* *Wiener Zeitschrift für die Kunde Südasiens*
- WZKSO* *Wiener Zeitschrift für die Kunde Süd- und Ostasiens*
- ZDMG* *Zeitschrift der Deutschen Morgenländischen Gesellschaft*

1. Mathematical and Linguistic Models in Indian Thought: The Case of Zero and *Śūnyatā**

I

BEGINNING WITH the ancient Greek thinkers, the exact sciences have played what may be called a paradigmatic role in the formation and development of Western thought. And as the exact science par excellence, mathematics has indubitably exercised there a fundamental influence not only in the natural sciences but also by extension in the sciences of man inclusive of the “humanities.” Especially in linguistics and philosophical logic mathematical models, formalizations, and calculi occupy a prominent place. And despite the fact that Saussurean structuralism was not derived from mathematics, the mathematical mode of thought has clearly not been without impact in the development of some forms of structuralism. At the same time linguistics and the linguistically based form of structuralism have also exercised very considerable influence, so that a linguistically inspired paradigm has taken an important place in the main stream of modern Western thought.¹

In this respect a certain convergence has arisen, consciously or unconsciously,² between modern Western thought and classical Indian thought. For when the Indologist looks for ideas and methods that have played a modelling and paradigmatic role in the history of Indian thought, it is probably

* First published in *Wiener Zeitschrift für die Kunde Südasiens* 22 (1978), pp. 171–81.

1. Cf. C. Lévi-Strauss, *Anthropologie structurale* (Paris, 1958), chap. iii; *L'homme nu* (Paris, 1971), “Finale”; J. Piaget, *Le structuralisme* (Paris, 1968), p. 17; R. Jakobson, *Main Trends in the Science of Language* (London and New York, 1973). Cf. J. Lyons, *Semantics* (Cambridge, 1977), pp. 230–31.

2. Cf. J. F. Staal, *Euclides en Pāṇini* (Amsterdam, 1963); *Philosophy East and West* 15 (1965), pp. 99–116; S. Al-George, in *Actes du X^e Congrès international des linguistes* (1970), 2, pp. 235–40; T. de Mauro, ed., F. de Saussure, *Cours de linguistique générale* (Paris, 1972), p. 380.

above all to the grammatical śāstra that he would turn. The Indian thinkers have indeed themselves pointed to the paradigmatic significance of grammar in their civilization, and one of them has referred to it as a universal science (*sarvapārṣada-śāstra*).³ Mathematics appears on the contrary to have generally occupied a relatively less prominent place in the history of Indian thought taken as a whole.

II

At least one interesting exception to this general tendency may, however, be recalled here. As is well known, the Abhidharma schools of Buddhism developed a theory of elements or factors (*dharmā*), each of which is considered to bear its own specific characteristic that determines it.⁴ But the precise nature of the *dharmā*s was the subject of much discussion in the Buddhist schools, which differed appreciably as to their ontological status; and one of the major problems that arose concerned the nature of a *dharmā* with respect to its efficiency (*kāritra*) in the three times, namely present, past, and future. The Sarvāstivāda or Vaibhāṣika school maintained that the *dharmā*s exist in all three times, which are in fact determined by just this efficiency. Thus, when a *dharmā* exercises its *kāritra*, it is said to be present; when it does not yet exercise it, it is said to be future; and when having exercised its efficiency it has ceased, it is said to be past.⁵ But there was disagreement among the Ābhidharmikas as to how such a *dharmā* goes from one point in the time-scale to another.

Four distinct solutions to the problem have been recorded by Vasubandhu in his *Abhidharmakośabhāṣya* (v.26). One solution is ascribed to Dharmatrāta, who maintained that there takes place in time a change of condition (*bhāvānyathātva*) rather than of substance (*dravya*), like in the Sāṃkhya system; this change is then compared to the change (*pariṇāma*) of

3. Helārāja on Bhartṛhari, *Vākyapadīya* iii.3.1. (Cf. the term *sarvavedapāriśada* in Patañjali's *Mahābhāṣya* ii.1.58, vt. 1, and vi.3.14, vt. 2?)

4. *Abhidharmakośabhāṣya* I.1 (ed. Pradhan, p. 2.9): *nirvacanam tu svalakṣaṇadhāraṇād dharmāḥ*. See Th. Stcherbatsky, *Central Conception of Buddhism* (London, 1923), p. 26, with O. Rosenberg, *Probleme der buddhistischen Philosophie* (Heidelberg, 1924), pp. 72, 81. Cf. M. und W. Geiger, *Pāli: dhamma* (Ab. Bayer. Ak. d. Wiss., Phil. Kl. xxxi/1, Munich, 1921); H. von Glasenapp, *ZDMG* 92 (1938), pp. 383ff.

5. See *Abhidharmakośa* v.26d: *adhvānaḥ kāritreṇa vyavasthītāḥ; Abhidharmakośabhāṣya* ii.46 (p. 76.12ff.); ii.56 (p. 95.3: *ko 'yaṃ puruṣakāro nāma/ yasya dharmasya yat kāritram*); v.26d (*yadā sa dharmāḥ kāritram na karoti tadānāgataḥ/ yadā karoti tadā pratyutpannaḥ/ yadā kṛtvā niruddhas tadātīta iti*).

milk to curd, which involves a change of one property—e.g., taste—but not of another—e.g., colour. The solution connected with the name of Ghoṣaka maintained that the change in question is one of characteristic (*lakṣaṇa*), which does not involve a change of condition; the process is then compared to the case where a man becomes enamoured of one woman without being free of passion for others. Another solution is ascribed to Buddhadeva, who spoke of relational otherness, explaining that a *dharmā* that evolves in time may be said to be other (*anya*) with respect to the preceding and the subsequent without this involving a change of substance, just as one and the same woman is said to be a mother in relation to her child and a daughter in relation to her own mother.⁶ In each of the three solutions thus offered, the example adduced to illustrate the process of change in time remains of an everyday, non-scientific kind.

The case is somewhat different in the fourth solution connected with a certain Bhadanta Vasumitra, who is probably to be identified as one of the leading figures at the time of Kaniṣka's Great Council.⁷ Vasumitra explained the process in question by saying: "A *dharmā* evolving in the [three] times is stated to be other according to the different states it enters, [the change in question being then] due to otherness of state (*avasthāntarataḥ*) but not of substance." The example adduced to illustrate this is that of a marker or counter (*varṭikā*) in reckoning which in the unit position has the value of a unit, in the hundred's position that of a hundred, and in the thousand's position that of a thousand.⁸ It is this explanation by Vasumitra that the *Kośakāra* has described (v.26c)—provisionally—as correct, although as a Sautrāntika Vasubandhu would criticize all these solutions (v.27).

Vasumitra's explanation is of interest to us both because it adduces a more "scientific" example, and because it provides us with one of the earliest available references to arithmetical place-value and hence to one of the functions of zero.⁹

6. In his *Vyākhyā* on the *Abhidharmakośabhāṣya* v.26, Yaśomitra remarks that Buddhadeva's view would entail the existence of all three times in a given time. This is a view rejected by the Sautrāntika.

7. Kaniṣka's year 1 is placed either in 78 C.E. or in the first part of the second century (other dates have also been proposed). Cf. G. Fussmann, *BEFEO* 1974, pp. 48ff.

8. P. Pradhan reads *varṭikā* in his edition of *Abhidharmakośabhāṣya* v.26 (p. 296): *dharmo 'dhvasu pravartamāno 'vasthām avasthām prāpyānyo nirdeśyate, avasthāntarato na dravyāntarataḥ/ yathāikā varṭikā ekāṅke nikṣiptā ekam ity ucyate, śatāṅke śataṃ, sahasrāṅke sahasraṃ iti/* But Dvarikadas Shastri in his edition (p. 806) reads *gulikā*, following Yaśomitra's *Vyākhyā*.

9. For a discussion see W. E. Clark, "Hindu-Arabic Numerals," in *Indian Studies in Honor*

This example is indeed quite well known in Indian thought and it turns up in a number of later texts. An equivalent term—*nikṣepavartikā*—is to be found in the *Vibhāṣāprabhāvṛtti*.¹⁰ Yaśomitra in his *Vyākhyā* uses the term *gulikā* “ball, bead”; and in his *Pañjikā* on the *Tattvasaṃgraha* (1786), Kamalaśīla specifies that the counter was of clay (*mṛdgudīkā*). On the other hand the *Vyāsabhāṣya* on the *Yogasūtra* has the term *rekḥā* “line, stroke”;¹¹ and Vijñānabhikṣu glosses *rekḥā* as the *anīkaviśeṣa*, which denotes 100 when joined with two zeros (*bindu*), but 10 when joined with only one zero. The *Vyāsabhāṣya* differs from Vasubandhu by connecting the example of the *rekḥā* in the different places and the example of a woman who may be either a mother or daughter according to the particular relationship in question (which in the *Abhidharmakośabhāṣya* was connected with Buddhadeva’s solution). The term *rekḥā* in the same context is also found in Śaṅkara’s commentary on the *Brahmasūtras* (ii.2.17).

The terms *vartikā* and *gulikā/gudīkā* seem to presuppose the abacus system of reckoning, whereas the term *rekḥā* evidently refers to a written zero (cf. Vijñānabhikṣu’s explanation).

III

In view of the fact that in the Sanskrit mathematical and astronomical literature the word *śūnya* has the meaning of zero, there exists another point in the history of Indian thought where, at least in principle, it might be supposed that mathematics has had some influence on philosophy: the Buddhist theory of the emptiness (*śūnyatā*) of *dharmas*. And some scholars have in fact suggested a connexion between the Madhyamaka theory of *śūnyatā* developed by Nāgārjuna and the mathematical zero.¹²

of C. R. Lanman (Cambridge MA, 1929), pp. 223ff. See also the studies cited below in note 14.

10. Ed. P. Jaini, p. 260: *yathā nikṣepavartikāikāṅkavinyastāikēty ucyate, sāiva śatāṅke śataṃ sahasrāṅke sahasraṃ iti*.

11. Vyāsabhāṣya on *Yogasūtra* iii.13: *na dharmī tryadhvā/ dharmās tu tryadhvānaḥ/ te lakṣitā alakṣitāś ca tām tām avasthām prāpnuvanto ’nyatvena pratimīrḍiṣyante ’vasthāntarato na dravyāntarataḥ/ yathāikā rekḥā śatasthāne śataṃ daśasthāne daśāikā cāikasthāne/ yathā cāikatve ’pi strī mātā cocyate dubitā ca svasā cēti/* (variant reading: . . . *lakṣitā alakṣitāḥ/ tatra lakṣitāḥ tām tām avasthām . . .*).

12. See P. T. Raju, “The Principle of Four-Cornered Negation,” in *Review of Metaphysics* 7 (1953–54), p. 701 (on zero as an indeterminate number); B. K. Matilal, *Epistemology, Grammar, and Logic in Indian Philosophical Analysis* (The Hague, 1971), pp. 151–52 (“it

It has however to be noted in the first place that *śūnya* as a term for zero appears much later in our sources than the canonical Buddhist concept, and also after Nāgārjuna (no later than ca. 200 C.E.). The earliest datable attestations of *śūnya* in the meaning of zero seem to be in the Paitāmahasiddhānta of the *Viṣṇudharmottarapurāṇa*, which apparently goes back to the early fifth century, in the *Byhatsamhitā* (viii.20) of Varāhamihira (sixth century),¹³ and in another work by the same author based on five astronomical siddhāntas—the Pauliśa, Romaka, Vāsiṣṭha, Saura (Sūrya), and Paitāmaha—entitled *Pañcasiddhāntikā*.¹⁴ In Sphujidhvaja's *Yavanajātaka*—a versified version, made in 269/270 C.E., of another Sanskrit work (the source of which was an Alexandrine manuscript in Greek) going back to 149/150 C.E.—the words used for zero are *kha* and *bindu*, terms that were to remain in regular use later.¹⁵ In the new *Sūryasiddhānta* (i.29) *kha* is used for zero.¹⁶ Amongst literary works, the *Vāsavadattā* of Subandhu (ca. sixth century) employs the expression *śūnyabindu* for the symbol for zero.¹⁷

As already observed above, however, place-value (and hence a function of zero) was known to Vasumitra. And if this Vasumitra is the well-known contemporary of Kaniṣka, as may be the case, he could also be the contemporary of Nāgārjuna (if not older), and also of Sphujidhvaja's Sanskrit source of 149/150.¹⁸

was left to Nāgārjuna to make a very significant use of this mathematical concept [viz. zero] in philosophy”).

13. Cf. W. E. Clark, loc. cit., pp. 227–28.

14. For a discussion of early uses of zero and its symbols see also B. Datta and A. N. Singh, *History of Hindu Mathematics* (Lahore, 1935), i, pp. 75ff.; D. M. Bose, S. N. Sen, and B. V. Subbarayappa, *Concise History of Science in India* (New Delhi, 1971), pp. 175, 586; P. V. Kane, *History of Dharmasāstra*, V/1² (Poona, 1974), pp. 699–702; O. Neugebauer and D. Pingree, eds., *Pañcasiddhāntikā* (Copenhagen, 1970–71), p. 11112. On the *Paitāmahasiddhānta* of the *Viṣṇudharmottarapurāṇa*, see D. Pingree, *Journal for the History of Astronomy* 7 (1976), pp. 109–23. On *śūnya* in the *Chandaḥśūtra* see below.

15. See D. Pingree, *Yavanajātaka* (Cambridge MA, 1978), § 79, 6d and § 79, 7d. I wish to thank Professor Pingree for kindly giving me this reference to his forthcoming volume. He also points out to me that, in some instances, a place-value system was used by Sphujidhvaja (whose practice in this matter was, however, mixed).

16. Cf. W. E. Clark, loc. cit., pp. 226–27.

17. *Vāsavadattā*, ed. L. H. Gray, p. 174 (“cipher”). Cf. W. E. Clark, loc. cit., pp. 225, 229.

18. The evidence concerning Vasumitra has not been considered by Clark and some other more recent writers on the subject of zero in ancient India. Clark (loc. cit., p. 236), for example, refers only to the *Yogabhāṣya* passage. The date of the Bakhshālī manuscript, which uses zero, is not established; cf. Clark, loc. cit., pp. 224–25.

A few words need now to be said about *śūnya* and some cognate or semantically equivalent words.

Already in the *Ṛgveda* the cognate word *śūna* appears, as a neuter noun, with the meaning of “lack, absence, emptiness” (in sentences introduced by the negative particle *mā*). Later it is found as an adjective meaning “swollen, increased.”¹⁹ As for the word *śūnyá*, it appears as an adjective in the Brāhmaṇa literature with the meaning “hollow, deserted,” and then in the Epic with the meaning “empty, vacant (of a look); devoid,” etc. In the Epic *śūnya* is in addition attested as a noun meaning “desert; empty place.”

In the meaning of “nought, cipher, zero,” *śūnya* has as a synonym the word *kha* as well as such words as *ākāśa*, *ambara*, and *viyat*, all denoting empty space. The word *kha* is attested from the *Ṛgveda* in the sense of “hollow, cavity,” and from the Brāhmaṇa literature in the meaning of “empty space, sky, air.”²⁰

It is to be remarked that, as a word denoting the unlimited (*apeiron*), *ākāśa* served in ancient Indian thought so to speak as a model for the concept of *brāhman*. And *ākāśa* and *kha* are in fact attested as names for *brāhman*.²¹

The word *śūnya* has been usually derived from the root *śvi-* (*śū-*) “to swell, increase, grow.” Hence, both etymologically and in its actual usage, *śūnya* is linked with the ideas of swelling and blowing up and hence of hollowing out.²²

Finally, just as according to the *Bṛhadāraṇyakopaniṣad* (v.1.1) the full or “plenum” (*pūrṇa*, i.e., *brāhman*) is subject to neither increase nor decrease, in Buddhist thought the absolute element (*dhātu*)—which is empty (*śūnya*) only of all adventitious factors but *aśūnya* of certain constitutive informing factors—is subject to neither diminishing nor increase (*Ratnagoṭravibhāga* i.154–55). In this connexion it is interesting that the word *pūrṇa* has been used for zero by Bhāskara (twelfth century) in the *Gaṇitādhyāya* of his *Siddhāntaśiromaṇi*.²³

But concerning the question whether the theory of *śūnyatā* was inspired by or modelled on a mathematical concept, in the present state of our knowledge we can only say that neither the history of the Buddhist doctrine

19. Cf. the commentaries on Pāṇini's *Aṣṭādhyāyī* vii.2.14.

20. Cf. A. K. Coomaraswamy, *BSOS* 7 (1934), pp. 487–97; P. V. Kane, op. cit., p. 702.

21. Cf. *Bṛhadāraṇyakopaniṣad* v.1.1 (*kha*); *Chāndogyopaniṣad* iii.18.1 (*ākāśa*) and iv.10.5 (*kha*).

22. Cf. M. Mayrhofer, *Kurzgefaßtes etymologisches Wörterbuch des Altindischen*, s.v. *śūnam*.

23. Cf. P. V. Kane, op. cit., p. 702n.

starting with the canonical scriptures, nor the semantic history in Sanskrit of the words *śūnya* and *śūnyatā*, nor the history of mathematics and astronomy in India appears to establish that the philosophical concept of *śūnyatā* in the Madhyamaka or elsewhere in Buddhism has anything to do directly with the mathematical zero. This is consistent with our initial observation that in ancient India mathematical concepts did not often serve as models or paradigms in philosophy. At the most one could perhaps speak only of a subjacent and remote resemblance or cognitive homology between independently developed concepts.

IV

It may now be asked whether the theory of *śūnyatā* has connexions with the other model and paradigmatic type of thinking mentioned above: ancient Indian linguistic theory.

It is to be observed in the first place that the *Chandaḥśūtra*, a treatise on metrics attributed to Piṅgala, employs the word *śūnya* (viii.28–31). There the expression is used when a unit is not to be halved (since this would produce a fraction), so that it is there the sign of absence of a metrical operation.²⁴ But although the *Chandaḥśūtra* has sometimes been dated as early as 200 B.C.,²⁵ its date is uncertain, and the relevance of its testimony for the early history of the philosophical notion of *śūnyatā* is accordingly doubtful. Moreover, while *śūnya* in this text does clearly enough relate to the voidness of a particular operation so that its use might be compared with the philosophical *śūnya* which concerns a certain kind of inoperativeness—namely that of all entities since they are empty of own-being (i.e., aseitic existence, *svabhāvaśūnya*)—this usage has no bearing on the meaning of the term in the older Buddhist literature, where the allusion is in the first place to emptiness.

In grammatical theory going back to Pāṇini too we meet with certain concepts which are of interest in the present context, even though their historical links with the *śūnyatā* theory are anything but perspicuous.

In the *Aṣṭādhyāyī* we find the term *lopa* “elision, syncope” defined as non-appearance of a linguistic element (*adarśana*, i.1.60). The term refers to the non-realization in the actual speech (*bhāṣā*) of ordinary usage (*laukikaprayoga*) of an element posited in grammar as existing on the level

24. See A. Weber, *Indische Studien*, VIII (Berlin, 1863), p. 446. Cf. W. E. Clark, loc. cit., p. 227; P. V. Kane, op. cit., p. 700.

25. Cf. W. E. Clark, loc. cit., p. 227; P. V. Kane, op. cit., p. 701.

of the *sthānin*, i.e., the theoretically postulated form. In other words, what is postulated on the level of the *sthānin* may, according to grammatical theory, not in fact be represented on the level of the *ādeśa* “substitute,” i.e., the linguistic element which is in actual speech substituted for the *sthānin*.²⁶ And *lopa* as a zero substitute is then opposed to *śravaṇa* “hearing,” that is, realization of the *sthānin* by means of a full substitute-morph in actual speech.

Lopa = *adarśana* affects the postulated grammatical element that is termed *prasakta* “applicable”—or *prasaṅgavat* “having application”—on the level of the *sthānin*.²⁷ And the *sthānaśabda* is then termed *prasaṅgavācin*,²⁸ *sthānin* and *prasakta* being thus largely equivalent expressions.²⁹

The concept of *lopa* thus corresponds, at least in part, to that of zero in modern linguistics.³⁰ Furthermore, through *lopa* the *sthānin* might be regarded as in some sense void or empty on the level of real speech-usage. And perhaps to this extent a parallel (though a very limited one) presents itself with the *dharmas* which serve as theoretical factors of philosophical analysis, although in fact they are empty of own-being (*svabhāvaśūnya*) according to the Mahāyāna.

Despite the fact that the word *śūnya* does not form a part of the grammarian’s technical vocabulary, it is remarkable that the notion of a linguistic zero appears in close association with the idea of the *prasakta/prasaṅgavat*. Now in the Madhyamaka the theory of *śūnyatā* is quite closely linked with concepts expressed by terms derived from *pra-saj-*. Thus the Mādhyamika speaks of the *prasakta* (that which arises or applies within the frame of discursive development and dichotomizing conceptualization);³¹ of a *prasaṅga* (the unde-

26. See Patañjali, *Mahābhāṣya* i.1.62, vt. 14: *lopo 'py ādeśaḥ/ katham/ ādiśyate yaḥ sa ādeśaḥ/ lopo 'py ādiśyate . . .* Cf. P. Thieme, *Mélanges d'indianisme à la mémoire de L. Renou* (Paris, 1968), pp. 715–23; A. Wezler, *KZ* 86 (1972), pp. 7–20. For the application of i.1.60 see vi.1.66ff.

27. *Mahābhāṣya* i.1.60, vt. 4: *prasaktādarśanam lopasamjñam bhavati*.

28. *Mahābhāṣya* i.1.51, vt. 3. *Prasaṅga* glosses *sthāna*.

29. Cf. A. Wezler, loc. cit., pp. 12–13.

30. For a discussion of this subject cf. W. S. Allen, “Zero and Pāṇini,” in *Indian Linguistics* 16 (1955), pp. 107–13; S. Al-George, “The Semiosis of Zero according to Pāṇini,” *EW* 17 (1967), pp. 115–24. Cf. T. de Mauro, ed., F. de Saussure, *Cours de linguistique générale* (Paris, 1972), p. 380.

31. In Candrakīrti’s *Prasannapadā* vii.2 (ed. La Vallée Poussin, p. 147.8) *prasakta* = *prāpta* (cf. *prasaṅgavācin* ~ *prāpti* and *prasaṅga* ~ *prāpti*). See also *Prasannapadā* ii.8 and ii.11; ii.23.

sired consequence resulting within this frame);³² of *prasaṅgāpādana* (a form of reasoning based on a reduction to absurdity or logical impossibility of a conceptual position postulating some entity);³³ and of the *prasajyapraṭiṣedha* (absolute non-presuppositional negation which, contrary to relative or choice negation, does not commit one to asserting the contrary of what one has denied within the frame of discursive development and dichotomizing conceptualization, since it is shown by philosophical analysis that the subject of the negated proposition is null and empty and that no predicate or property whatsoever can therefore be ascribed to it).³⁴

This terminological convergence is at least worthy of note even if it is difficult to pursue it further by showing that the two systems of thought in question—the Vaiyākaraṇa's and the Mādhyamika's—are directly related historically or systematically comparable.

At the same time there are undeniably very considerable differences between the grammarian's zeroing of a postulated form and the philosopher's "zeroing" of conceptual entities and factors of analysis (*niḥsvabhāvatā, dharmānairātmya*).

As has been noted above, the *prasakta/prasaṅgavat* form belongs in grammatical theory to the postulated level of the *sthānin*, which in the event of *lopa* is not actually realized by means of a full *ādeśa* in speech-usage. In the Śūnyavāda of the Madhyamaka school it is the *saṃvṛti* or *vyavahāra* level of transactional usage that is comprised of the conceptual entities and the analytical factors which are postulated and applicable ("*prasakta*" so to say) in the frame either of conceptual thinking (*prapañca* and *vikalpa*) with its associated speculative views (*dr̥ṣṭi*), or of philosophical analysis. But in reality these entities and factors are empty of own-being; and on the *paramārtha* level they are simply not "realized."³⁵

32. With the grammarians, *prasaṅga* "(provisional) occurrence" refers to the domain of application of a rule, operation, or word, which may be annulled by the actual conditions or a subsequent rule; cf. L. Renou, *Terminologie grammaticale du sanskrit* (Paris, 1957), p. 230. More generally, *prasaṅga* may also mean "occasion, application."

33. Concerning the question of reasoning by the absurd in the grammatical tradition, see P. Boudon, *JA* 1938, pp. 358–91.

34. The term *prasajyapraṭiṣedha* was used also by the grammarians and ritualists. In grammar the term is used to denote a prohibition that operates after provisional (or virtual) application, and where negation pure and simple rather than the affirmation of the contrary (as in *pariyudāsa* negation) predominates; it is then defined as verbally bound negation. Cf. J. F. Staal, *BSOAS* 25 (1962), pp. 58ff.; G. Cardona, *Language* 43 (1967), pp. 34ff.

35. Cf. Nāgārjuna, *Mūlamadhyamakakārikās*, chap. xxiv.

Hence the relation between the two levels in question—the subjacent one of the postulated ideal *sthānin* and the actual speech-usage one of the *ādeśa* (with the *prasakta* on the *sthānin* level in grammar), and the absolute *paramārtha* level and the relative transactional one (with the so-to-say applicable *prasakta* factors on the *saṃvṛti* level in the *Madhyamaka*)—is not congruent in the two systems.

Most importantly, according to the *Mādhyamika*, *śūnyatā* does not refer to any kind of entity, ultimate or conventional. Nor is it another factor in philosophical analysis on the same level as the *dharmas*, and it transcends the duality of conditioned (*saṃskṛta*) and unconditioned (*asaṃskṛta*). It is then comparable with a higher-level principle that directs the correct analysis of the (lower-level) entities and factors, and that describes the ultimately real state of affairs, viz. the non-substantiality and emptiness of all *dharmas*. In the grammatical theory of *lopa*, there does not seem to be a place for anything corresponding to *śūnyatā*, which refers metalinguistically to the fact, or truth, that all conceptual entities and analytic factors are empty “ciphers” in philosophical and psychological description.

Furthermore, the conceptual process of construction or (*abhi*)*saṃskāra* in Buddhist philosophy and the linguistic process of word formation or *śabdasaṃskāra* in Indian grammar are hardly isomorphic or directly comparable.

V

While it has been possible to adduce an interesting link between mathematical and philosophical thought in the case of Vasumitra’s theory of the phases of a *dharma*, it has not so far been possible to establish any clear and direct influence of the arithmetical zero on the theory of *śūnyatā*. It has been noted, however, that in the *Chandaḥsūtra* the term *śūnya* is evidently used in connexion with the absence of an operation. And it has also been possible to point to a certain parallel, albeit a very limited one, between the *lopa* of a *prasakta* linguistic form in grammar and some important features of the *Madhyamaka*; but this parallel rests largely on a terminological convergence that scarcely suffices to demonstrate the dependence of the philosophical notion on a grammatical concept.

The main point of contact between the Śūnyavāda and the departments of Indian thought examined above appears, then, to lie with the grammarians’ (and the ritualists’) *prasajyapraṭiṣedha* and the theory of absolute negation as developed by the *Mādhyamikas*, especially from the time of Bhā(va)viveka

(sixth century) and Candrakīrti (seventh century), who both elaborate on it. The (onto-)logical use to which the Mādhyamika puts the *prasajyapraśiḍha* is of course distinct from the more limited application it had elsewhere.

If our search for either a mathematical or a linguistic background or epistemic homology for the philosophical theory of *śūnyatā* has thus resulted largely in a *non liquet*, the outcome of the investigation has at least the usefulness of underscoring the specificity—indeed the uniqueness—of the philosophical concept. The theory of *śūnyatā* evidently represents a new threshold in the history of Indian thought. And this uniqueness may help to account for the fact that, in the course of the development of Indian philosophy, the theory has raised many a problem—and perhaps also for the fact that, so often, it has been the object of misunderstanding on the part of philosophers, Buddhist as well as non-Buddhist, belonging to other tendencies who were unfamiliar with its background, significance, and implications.

Postscript (2008)

In the decades intervening since the first publication of the preceding article, the theme of Indian grammar in relation to geometry and mathematics has been taken up by J. Bronkhorst, “Pāṇini and Euclid: Reflections on Indian Geometry” in *Journal of Indian Philosophy* 29 (2001), 43–80 (containing an extensive bibliography of secondary literature). J. F. Staal, who had raised the question in his *Euclides en Pāṇini* (Amsterdam, 1963, cited in note 2 above), again addressed these topics in the frame of the idea of mathematics and Pāṇinian grammar as what he terms artificial languages; see his “Artificial Languages across Sciences and Civilisations” in *Journal of Indian Philosophy* 34 (2006), 89–141 (including a critique of Bronkhorst, and in note 10 a rejection of Joseph Needham’s curious suggestion that zero originated in Southeast Asia), and “Artificial Languages between Innate Faculties,” *Journal of Indian Philosophy* 35 (2007), 577–96. None of these articles considers the matter of *śūnyatā* in Buddhist thought, however. Beginning in 1980 Kamaleswar Bhattacharya published a series of articles relating to the place of grammar in Nāgārjuna’s and Candrakīrti’s thought: “Nāgārjuna’s Arguments against Motion: Their Grammatical Basis,” *A Corpus of Indian Studies* (Essays in honour of Professor Gaurinath Sastri, Calcutta, 1980), pp. 85–95, and “The Grammatical Basis of Nāgārjuna’s Arguments: Some Further Considerations,” *Indologica Taurinensia* 8–9 (1980–81, Dr. Ludwig Sternbach Commemoration Volume), 35–43; the relevant articles are listed in his “A Note on Nāgārjuna’s Sanskrit,” *Semuṣī* (Baldev Upādhyāya

Janmaśatī Volume, Varanasi, 2004), p. 659, including his “Nāgārjuna’s Arguments against Motion,” *Journal of the International Association of Sanskrit Studies* 8 (1985), 7–15, and (the last of the series) “Back to Nāgārjuna and Grammar,” *Adyar Library Bulletin* 59 (1995, C. Kunhan Raja Birth Centenary Volume), 178–89.

Concerning zero—which marks place value (known already to the Babylonians)—and numerals in general, see K. Menninger, *Zahlwort und Ziffer, eine Kulturgeschichte der Zahl* (Göttingen, 1958), G. Ifrah, *The Universal History of Numbers* (London, 1998), and R. Kaplan, *The Nothing That Is: A Natural History of Zero* (London 1999). For the transmission of the Indo-Arabic numerals, see recently C. Burnett, “Indian Numerals in Arabic, Greek and Latin,” in *Journal of Indian Philosophy* 34 (2006), pp. 25–26. According to M. Yano, *Journal of Indian Philosophy* 34 (2006), p. 154, Brahmagupta (sixth century) was the first Indian mathematician to have defined zero as one of the numbers.

Regarding grammar as a universal science and model for other Indian knowledge systems, to the references in note 3 above may be added Ānandavardhana’s observation in his *Dhvanyāloka* i.13 (KSS, pp. 132–33): *prathame hi vidvāṃso vaiyākaraṇāḥ, vyākaraṇamūlatvāt sarvavidyānām.*