Vedic Mathematics: Sources and Reality

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We can easily find many reliable and authentic documents on Vedic mathematics and related practices in the internet. We can easily find videos in the You Tube and can search for it in the Wikipedia. The most prominent countries where Vedic Mathematics is taught or learned are the U.K, the USA, Australia and India. We can see that the term Vedic mathematics is originated from the Vedas. It's a matter of pride for some to teach Vedic mathematics in the schools influenced by Hinduism. Now, some school curricula of the western countries have started to include it. Researchers are carrying out their research work on it .To explore the source of Vedic mathematics here the researcher has consulted many resources, based on the available materials in the internet. Before exploring what Vedic mathematics actually is, the researcher found some criticisms like: 'it is neither mathematics nor Vedic, "its sources are not found in the Vedas, and so on.' With the objective of finding the source of the Vedic mathematics a research is carried out based on document analysis. The analysis is descriptive in design and analytic in nature. The study has limitations: the materials consulted were mostly from the research-based English materials in the internet, the only print materials consulted and referred to be the dissertation papers and Vedic Mathematics by Bharati Krishna Tirthaji. It is concluded that, though criticized by many, their criticisms are not valid and acceptable. The source of Sutras, and other terminologies of Vedic Mathematics is Vedic texts. They offer most accurate equivalent English terms. Mathematics is scattered in the Vedas in the descriptive form, not in a distinct form literature or prayers; and Krishna Tirthaji has summarized it all and shaped in the form of mathematics and published in the print form. The content in his book is now known to be the Vedic Mathematics.

Key Terms:

Vedic Mathematics, sutras, sub-sutras, Bharati Krishna Tirthaji

Introduction

History of mathematics tells us all civilizations have always been striven towards the development of mathematics, whatever its sources, mathematics has come down to present by

two main stems of numbers and form. This first developed along with arithmetic and algebra and the second along with geometry (Bell, 1978).

Historians tell us that Vedic Civilization may have developed after the displacement of Harappa Civilization between 2,000 B. C. – 1,500 B.C.

Gupta (1957) writes that the sacred books of India, the Vedas, are generally believed to be the earliest literacy records of the Indo-European race. It is indeed difficult to say when the earliest portions of these compositions came into existence. Many shrewd guesses have been offered, but none of them can be proved to be incontestably true. The ancient Hindus seldom kept any historical record of their literacy, religious or political achievements. The Vedas were handed down by word of mouth from a period of unknown antiquity; and the Hindus generally believed that they were revealed to sages who were the "seers of hymns" (*mantradrasta*). Thus we find that when some time elapsed after the composition of the Vedas people had come to look upon them not only as very old, but also, so old that they had, theoretically at least, no beginning in time, though they believed to have been revealed at same unknown remote period at the beginning of each creation."Upadahya *(*2001*),* writes that the Vedic age is from 1500 to 200 B.C. He has also written that Max Muller supposed the date to be 1200 B.C., Hanged to be 2400 B.C. and Bal Ganghadhar Tilak to be 4000 B.C".

We have four Vedas, and we get the Purohits to read Vedas at our homes on auspicious occasions as a part of culture. But most of us don't know, or care, which Veda is being read. Each Veda is a domain of knowledge in different areas. For example, the Atharva Veda contains mathematics. Nowadays, it is easier and cheaper to get original texts, but difficult to find a person having adequate knowledge and skill of chanting these texts at Hindu households. We find plenty of texts and research materials in the internet, and in English language. We can have videos on Vedic mathematics and its pedagogical practices.

In general, we see that Vedic mathematics contains the mathematics of the Vedas. But serious questions are raised by some readers about its source from Vedic texts. There have been criticisms such as: 'it is neither Vedic nor Mathematics'. For this reason, it is justifiable to carry out a study on the sources of Vedic mathematics in relation to the Vedic texts. Therefore, the following statements are made for this study:

Statements of the Problem:

The statements of the problem of the study are as follow:

- Are the Vedic Mathematics Sutras from the Vedic texts?
- Do the terminologies of Vedic Mathematics match the Vedic texts?
- Is the Vedic Mathematics neither Vedic nor Mathematics?

Objectives:

To find the answers of the statements of the problems, the following objectives are targeted. The objectives of this study were to search for the sources of Vedic mathematics from the Vedic texts, as follows:

- To identify whether the Vedic Mathematics Sutras are from Vedic Text?
- To find whether the terminology of the Vedic Mathematics Sutras are from the Vedic texts.
- To find supportive logic that helps to verify or falsify the Vedic Mathematics as 'neither Vedic nor Mathematics'.

Significance:

We are proud of our Vedas. We hear the Vedas to be the sources or origins of all the knowledge. People with little Sanskrit language look for the knowledge of Vedic materials in English, too. There are not enough print materials on the analysis of Vedic Mathematics. In this context, this article will help to poke on the source of Vedic Mathematics in Vedic texts; and it helps to maintain reliability of Vedic sources. This article helps to answer the questions raised in different forms. Lastly, the findings of this study help to review the related literature on the concerned field of the study, and gives insights for the further research.

Sources of the Data:

All the information of this research is related to Vedic perspective, and the data are in the form of words. Necessary information is taken from the internet, articles based on the research works and the original book of Vedic Mathematics in English language; if not otherwise mentioned. So the sources of the data are secondary in nature.

Limitations of the study:

This study has the following limitations:

- The study is based on Vedic Mathematics only.
- The researcher has knowledge in Sanskrit language but it is incomplete to him. So, the study is based on the available materials in English.
- It is based on the analysis of research articles from Vedic sources. Original texts of the Vedic texts are not reached.
- It is an attempt to find the sources of Sutras and terminologies of Vedic mathematics from Vedic texts only.

Design:

The study is based on the document analysis of the resources on Vedic mathematics. Mainly the documents analyzed are the research findings and the book Vedic Mathematics itself. It is a kind of library research. So, the study is descriptive in design and analytic in nature.

Methods:

The method of conducting the study is just library visit and document analysis.

Reliability/Validity:

This study is based on the published sources and also from research areas only. Here the literatures and the findings of different researches are collected and analyzed. Based on this analysis, finding is drawn as guided by the statements of the problem. So it will assume that the findings of the study will be reliable as well as valid.

Conceptional Framework of the Study:

In Vedic culture the perception of Vedas is the source of knowledge in different areas, like religion, regulatory functions, administration, human resource management, economics, medicine, art, music, mathematics and many more. Luitel (2019), a translator of the four Vedas in Sanskrit to Napali version says in a telephone conversation that there is no mathematics in Atharva Veda as mathematics now a distinct discipline, but there are many examples explicit in sentences using numbers in the form of verse. These examples can imply different meanings in different situations and in different areas. It depends on the intuition, wisdom or approach of the scholars of the related field. In addition Luitel mentions that Atharva Veda has Parishista of two pages, but there we do not find any sutras of Vedic mathematics. So the Bharati Krishna Tirthaji's discussion on the preface of the book Vedic Mathematics "The *very word 'Veda' has this derivational meaning i.e. the fountain-head and illimitable storehouse of all knowledge . . . .''is taken as the conceptual framework of this knowledge.*

Analysis and Interpretations:

The analysis and interpretation of the study is based on the review of the related literatures on the research works of the Vedic mathematics. So, in order to maintain the reliability of the study, related texts of the literature are arranged and analyzed on the basis of the objective of the study.
Literatures Related to the Introduction to the Vedic Mathematics:
S.G. Dani in an article entitled 'Vedic Mathematics: Myth and Reality' writes "… the word 'Vedic' has the use of which promises dividends, especially in the oral context in India. So, the so-called Vedic Mathematics is a case in point. As commonly understood and implicitly assumed, the adjective 'Vedic' means being from the Vedas or the civilization around their time. While there are variations on the estimates of the period involved, it is said they were at least 2,500 years old. In that sense, do the content of the book belong there? No one have provided any evidence of it."

He also writes"… the mathematical problems can be easily solved with the help of some sutras in the Parishista of the Atharva Veda and it is genuine. But the objection is on the Thirthaji's claim of his own Parishishta to Atharva Veda. Because Tirthaji replied to his professor K.S. Shukla, a doyen in the study of ancient Indian mathematics that they are not in any Standard Parishishta. He adds,"…. Dr. V.S. Agrawal., the General Editor of the book, also mentions in the forwards to the book that the work deserves to be graded as a new Parishishta by itself. And it is not surprising that the sutras mentioned herein do not appear in the hitherto known Parishishtas."

Kandasamy W.B. V. (2006) writes in the preface (P7) that "Veda has its subsidiary and apocryphal text some of which remain in manuscripts and others have been printed but formulation has not closed. The work of Bharati Krishna Tirthaji deserves to be regarded as a new Parishisthas by itself and it is not surprising that the Sutras mentioned herein do not appear in the hitherto known Parishisthas".

From the above quote we conclude that, during his time studying at Sringeri Math (1911 -1919) at which time he made his discoveries, BKT had access to a vast range of library resources, many of which have never been published. So what he calls Appendix portions of Atharva Veda are not necessarily the same as what others call the same.

Mathematician C. K. Raju had published an article in The Hindu asking "Where in the Vedas is 'Vedic Mathematics' to be found?" Glover S.J (2016) wrote a rejoinder to the same newspaper, arguing "Vedic math is concerned with universal structure of Math revealed through a personal approach to problem-solving." He further wrote that the Shankaracharya had studied the Vedas for several years and from stray references and from Parishishtas, an appendix portion of Atharba Veda, he was able to construct the Vedic system of mathematics. Nobody has been able to find that Parashishta, so it's possible that it was unpublished.

It is cited in the Sambodhi (P 30) Dr.T.Ms' work. '……we cannot find special and separate chapter on mathematics in the Vedas. It may be scattered here and there and to discover it is a difficult task indeed. However, one of the most successful attempts was made by BKTM in this direction'. Thus the title of the book is valid to be 'Vedic'. Dani's claim to the estimation of the time is reasonable, because the other literatures cited initially also reflect the estimated starting time of Vedic period and Vedas cannot appear before its time. In response his doubt related to the Parishishta, we see other literatures; and discuss in the following sections.

Williams K. (2013) discusses the validity of the use of the word 'Vedic' in Vedic Mathematics in an article with the title *How 'Vedic' is Vedic Mathematics***?** As follows:

The system given by Sri Bharati Krishna Tirthaji and known as "Vedic Mathematics" is sound mathematically, but there are those for whom the name creates extreme mental reactions. How can it be called 'Vedic', they say, when these sutras are not in the Vedic texts?

In this article the answer is reiterated: that 'Veda' does not just refer to a set of writings from ancient times but has a much wider meaning. Swami Bharati Krishna Tirthaji himself discusses the word 'Veda' at some length in his Author's Preface:

"The very word "Veda" has this derivational meaning i.e. the fountain-head and illimitable storehouse of all knowledge . . . ."

It is clear from this statement that the word 'Veda' is not considered as confined to written texts.

At a press conference on 11 August 2004 with Maharishi Mahesh Yogi, a reporter at *The Washington Post* asked Maharishi to explain the term *Vedic*.

> Maharishi replied, *"Veda means 'knowledge'—Veda means knowledge. Vedic Means 'pertaining to knowledge.' Now when we say Veda is knowledge, we say Veda is* total *knowledge. Then what we present is the unified state of knowledge with the knowledge of all the diversified components of the unified structure of knowledge. "So, unified field of knowledge and diversified components of the unified field of knowledge. That is why, in every area, when we find Vedic this and Vedic this and Vedic this and Vedic this, what does it mean? It means this aspect of knowledge is connected to total knowledge—Vedic knowledge: Vedic education, Vedic health care, Vedic defense, Vedic architecture. Vedic administration: that means administration, the knowledge of administration, with reference to total knowledge of administration. When we say* Vedic *health then that'll mean all aspects of health with reference to the total knowledge of health. So all aspects of health are the different constituents of the one unified, holistic character of health."*

The above quote reflects that Veda means knowledge and Vedic means pertaining to the knowledge of all the diversified components of the unified structure of knowledge in different areas.

Williams (2013) again writes, "…by 'Vedic Mathematics' we therefore mean mathematics approached in a holistic and unified way. The techniques shown by Bharati Krishna Tirthaji show how this can be done: though mostly at an elementary level. This approach has however been applied with great success in more advanced areas of mathematics. On the basis of this understanding of the word 'Vedic' we can say that Bharati Krisna's "Vedic Mathematics" is indeed Vedic. It brings out and uses the natural unified structures of mathematics, in contrast to the conventional approach which is fragmented."

The above text reflects that the Vedic mathematics has the use in advanced mathematics. It appears with the unified structure, so the claim made by Kenneth in mathematics is indeed Vedic.

As cited by Williams, private communication made with a colleague Kelvin Carmody in an advanced research programme at the Maharishi University of Management, the theme was as below:

> *"One objection to the Ganita Sutras is that Swami Bharati describes them as Belonging to the parishishta (supplement) of Atharva Veda, while the text of the sutras does not appear anywhere within the known parishishta of Atharva Veda. This is not a serious difficulty, because each branch of Veda and Vedic Literature is not just a text but a field of knowledge. Saying that some expression is from one of these branches is analogous to saying that a formula is from physics or chemistry or mathematics. If someone publishes a new mathematical formula, we don't reject it just because we don't find it in existing maths books. Likewise, if we do not find the text of the sutras in the text of the parishishta of Atharva Veda, this does not mean that they do not belong to that field of knowledge."*

This talk reflects that the sutras are not in the Parishishta of Atharva Vedas mentioned. We cannot deny that it belongs to the field of knowledge.

Williams again writes, "… So even when reference is made to a particular Veda or portion thereof we cannot assume that the author is referring to actual physical texts. It is wrong then to believe that Vedic Mathematics is confined to the contents of ancient texts. That is not the full meaning of the word 'Vedic' or what Swami Bharati understood by the term. 'Vedic' refers to "the fountain-head and illimitable storehouse of all knowledge" which is unified and holistic in

nature since the vast merit of these rules should be a matter of discovery for each intelligent reader.

From the text above, we see that if we do not find the texts of the sutras in the text of the Parishishta of Atharva Veda, this does not mean that they do not belong to the field of knowledge: in the light that the term ‘Vedic’ refers to “the fountain-head and illimitable storehouse of all knowledge”. We can’t claim that Vedic Mathematics is not Vedic if the definition is valid. The Book Vedic Mathematics contains a list of sutras and sub-sutras. The editor has written that the list is compiled from stray references from the text.

Williams has presented the same sutra and sub-sutra with its translation though sub sutra 'On the Flag' is not in the list given in Vedic Mathematics, but is referred to in the text as below:

The 16 Sutras and Sub-Sutras of Vedic Mathematics

S.N.	Sutras	Translation of sutras	Sub - sutras	Translation of Sub-sutras.
1	Ekadhikena Purvena	By one more than the one before	Anurupyena	Proportionately
2	Nikhilam Navatashcaramam Dashatah	All from 9 and the last from 10	Sisyate Sesasamjnah	The Remainder Remains Constant
3	Urdhva-Tiryagbyham	Vertically and Crosswise	Adyamadyenant yamantyena	The First by the First and the Last by the Last
4	ParavartyaYojayet	Transpose and Apply	Kevalaih Saptakam Gunyat	For 7 the Multiplicand is 143
5	Shunyam Saamyasamuccaye	If the Samuccaya is the Same it is Zero	Vestanam	By Osculation
6	Anurupye Shunyamanyat	If One is in Ratio the Other is Zero	Yavadunam Tavadunam	Lessen by the Deficiency
7	Sankalana-vyavakalanabhyam Yavadunam	By Addition and by Subtraction	Tavadunikritya Varga Yojayet	Whatever the Deficiency lessen by that amount and set up the Square of the Deficiency
8	Puranapuranabyham	By the Completion or Non-Completion	Antyayordashake'pi	Last Totalling 10
9	Chalana-Kalanabyham	Differential Calculus	Antyayoreva	Only the Last Terms
10	Samuccayagunitah	By the Deficiency	samuccayagunitah	The Sum of the Products
11	Yavadunam	Specific and General	Lopanasthapanabhyam	By Alternate Elimination and Retention
12	Shesanyankena Charamena	The Remainders by the Last Digit	Vilokanam	By Mere Observation
13	Sopaantyadvayamantyam	The Ultimate and Twice the Penultimate	Gunitasamuccayah Samuccayagunitah	The Product of the Sum is the Sum of the Products
14	Ekanyunena Purvena	By One Less than the One Before	DhvajankaBy	On the Flag
15	Gunitasamuchyah	The Product of the Sum		
16	Gunakasamuchyah Adyam	All the Multipliers		

The use of the sutras and sub-sutras to solve the problems is beyond the scope of this study; and here the objective is to link its sources to the Vedic text.

Discussions:

Kansara (2000), director of Akshardham Center for Applied Research in Social Harmony has published an article about the Vedic mathematics dealing with the problems from all possible viewpoints. The theme of this article is as below:

A. Handwritten Manuscript Notebooks of Bharati Krishna Tirthaji Maharaja (BKTM) on Book Vedic Mathematics (VM) in sixteen volumes:

In his "Author's Preface" to the "Vedic Mathematics H. H. Shri Jagad-Guru Shankaracharya (the late) Swamy Shri Bharti Krishna Tirthaji Maharaja of the Govardhana Peetha Muth, Puri, has declared, himself about "Vedic sutras dealt with in the 16 volumes" on Vedic Mathematics.

On the web page of Govardhan Peeth, Puri we see that, at the age of 27 years, Bharati Krishna Tirthaji Maharaja studied advanced Vedanta Philosophy for eight years from 1911 to 1919 and practiced Brahma – Sadhana at the feet of his seniors. In this time he had discovered sixteen sutras associated with Vedic mathematics. This discovery was carried out in manuscript notebooks in sixteen volumes.

It is believed that the manuscripts' notebooks are kept safe but later found lost.

Professor Vijaya M. Sane, who evinced a great interest in tracing the location of the boxes containing the manuscript note-books of the VM in sixteen volumes, took great pains in utilizing his contacts with the higher up in the Gujarat Government and Gujarat Police Department, but his efforts don't seem to have met with any degree of success so far. This must-have happened sometime in the year 1955-56, since, "unfortunately, the said manuscripts were lost irretrievably from the place of their deposit and this colossal loss was finally confirmed in 1956".

It was finally in 1957, when he decided to undertake a tour of the U.S.A., that he re-wrote from memory the present volume, viz., the VM (1965 End.), giving an introductory

account of the sixteen formulae reconstructed by him; he wrote down the volume in his old age within one month and a half with his failing health and weak eyesight. The type-script of the VM was leftover by BKTM in the U.S.A. in 1958 for publication. It was through the good offices of Justice. Later it was published by Banaras Hindu University on a Sanskrit Granthamala (Vol. 10), in 1965, after about five years since the demise of BKTM in 1960.

From this, we conclude that the sixteen mathematical formulae are reconstructed from the Vedic text after arduous research and 'tapas' of about eight years. This justifies the first objective of the study.

B. On the Vedic Sources of the Vedic Mathematics (VM) Sutras:

Kansara (2000), writes in his talk and demonstration to a small group of student mathematicians at the California Institute of Technology, Pasedena, California on l9th February, 1958, and BKTM has been recorded to have said "that I also speak summarily about mathematics which I have been able to get from the sutras of the Atharva Veda." Giving some further details, he says: "one particular portion I am referring to, a particular portion of the Atharva Veda is called the Ganita sutras. The Ganita sutras are also called the Sulba Sutras 'the easy mathematical formulae', that's the meaning of the expression. And there are sixteen sutras, sixteen aphorisms in all, and the general name '*Ganita*' mathematics is given to the subject." In the same talk he says: "And, then fourthly, in the Atharva Veda we have what is called the Sthapatya Veda which is the Sanskrit term for a combination of sciences starting with mathematics and all its branches without a single exception going on to the application of mathematics in various other departments, including architecture, engineering, and so forth. "According to him, there are four Upavedas, viz., Ayurveda, Dhanurveda, Gandharvaveda and Sthapatyaveda, connected with the Rigveda, Yajurveda, Samaveda and Atharva Veda, respectively. Under the sub-topic "Ganita Sutras", BKTM has given the following details: *"One particular portion of the Atharva Veda is called the Ganita Sutras. They are also called the Sulba Sutras, and there are sixteen, aphorisms in all.*

In this connection, he referred to Professor Colebrooke, and quoted him as having said to the effect that he was, unable to understand what the contents of those sutras are, and

what connection those sutras have with mathematics, and that he did not understand those sutras; that it was unintelligible to him, it was beyond him: He has further informed us that coming to the same passage, the same portion of the Atharva Veda, Horace Hayman Wilson remarked "this is all nonsense", and that R. T. Griffith said it was "utter nonsense". We are further informed by BKTM that the above remarks of Colebrooke, Wilson and Griffith put him on the track, since, he thought that there must be something in the subject which was being discussed with so much earnestness and which the commentators were trying to understand but could make nothing out of. So he went on with his simple idea that there was some meaning, the meaning may be all absolutely wrong; but to dismiss something off hand as nonsense because it is not understandable was not correct.

From this talk it is concluded that some reactions or bizarre remarks about the work arise in the initial form of the writing at the level of Vedic Ganit but Bharati Krishna Tirtha Maharaja, the re-constructor of the sutras has justified his work with the Vedic text and presented to his senior gurus and became in the acceptable form at that time. All these conversations affirm that the Vedic Mathematics sutras are from the Vedic texts. Likewise, the validity of the term 'Vedic sutras' as applied to the Vedic Mathematics is maintained.

C. Vedic Sources of the VM-Sutra Terminology:

Kansara (2000), writes–"The VM sutras contain some very common mathematical terminology, which has so far been hardly examined from this point of view. On the same journal (P13) Dr. Satyakama Varma's research conclusion mentioned that though the term employed in these sutras cannot be claimed to be of the Vedic origin, yet they are later synonyms of the equivalent original Vedic terms, that the Vedic texts include much of the scientific and mathematical statements, which can make a strong basis for such like sutras, and that when the Jagad Guru claims that he has adopted nothing but Vedic Mathematics, he is right in his own way. Also he had added (P 14) with examples (app-1) that "On closer examination, we find that most of the terms utilized in the VM sutras are found to be prevalent in the Srauta Sutras and the Sulba Sutras". Showing the different 30

terms of Sulba Sutras that are used in which Vedic texts he concluded that “Most of the terms utilized in the VM Sutras are not new but quite as old as the Sutras”. This connection shows that Vedic Mathematics sutras cannot be branded as “Non-Vedic”. Because they do not incorporate the very ancient Sanskrit linguistic uses mostly found in the Vedic Samhitas of Brahmanas."

The text above reflects that the Vedic texts include much of the scientific and mathematical statements; and the sutras of Vedic mathematics are in the form of synonyms of the equivalent original. Vedic terms are found to be prevalent in the Srauta Sutras and the Sulba Sutras. It is clear that the Samhitas and Brahmanas are the source of Sulba sutra and it is composed with the utilization of same sort of Sanskrit language similar to Paninian and classical. With this all we conclude Vedic Mathematics is a properly scanned copy of thematic version of Vedic mathematical text.

Bell (1978). Proof is any argument or presentation of evidence that convinces someone or persuades someone to accept a belief. To him the following are situations in which one can accept the proof.

a) Personal experience.
b) Acceptable of authority.
c) Observation of instances
d) Lack of counter –example
e) Usefulness of result.
f) Deductive arguments.

Here, this work is document analysis based on the words. All the documents cited are either common or research based. We don't have much research based counter-examples in this topic in our context. So whatever I gather, all the texts cited are logically acceptable according to Bell’s argument. With this logic, here the validity of the study is maintained; and findings are drawn in the following section.

Findings:

After the long discussions of the related literatures based on the objectives the following findings are drawn:

- At the discovery time of Vedic Mathematics (1911 -1919), BKT had access to a vast range of library resources, many of which have never been published. So what he calls Appendix portions of Atharva Veda are not necessarily the same as what others call the same.
- Vedic Mathematics Sutras have sources in Vedic texts.
- The terminologies of Vedic mathematics are synonymous to the equivalent original Vedic terms.
- There is no claim to say nothing is Vedic in Vedic Mathematics.
- In fact, BKTM had used a particular portion of Atharva Veda called Ganita Sutras. The Ganita - Sutras are called the Sulba Sutra 'the easy mathematical formulae' and that contains sixteen aphorisms in all and it belongs to the Srauta Sutras of Baudhayana.

Conclusion:

Vedic mathematics nowadays is gaining popularity in the field of education. It is included in the school curricula of many countries of the world; as in the U.K, the USA, and India. It is because of the beauty of Vedic mathematics. We find some doubts and criticisms of Vedic Mathematics concerning the word used on its topic, estimation of the time mentioned, Vedic source of the sutras and terminologies used, the nature of presentation style on the book, and even 'neither Vedic nor mathematics' and so on. After a long discussion of the related literature in different forms, it is concluded that the sutras and the terminologies of Vedic mathematics have the sources in the Ganita Sutras. Ganita Sutras is a part of some Kalpasutra of the Atharvaveda. Mathematics is not seen as a distinct branch of knowledge in the Vedic texts; the different mathematical examples in

the form of prayers. Most of the terms utilized in VM sutras are found to be prevalent in the Srauta Sutras and Sulba Sutras. Lastly, Bharati Tirtha Krishnaji has the credit of referring, collecting, compiling, and renaming as Sutras. He has presented in the form of a printed book named Vedic Mathematics. Thus the name of the sutras is derived from the related word Vedic texts (App-1) and presented in a simpler form as a book entitled 'Vedic'. It is reasonable to use the word 'Vedic' in the title because there is no restriction on the use of words in the related works, even though Vedic is used to mean in the general oral sense as used in earlier times. Moreover, such other works are not restricted to use the word Vedic for its title.

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Appendices:

Dr. Satyakama Varma's research conclusion cited on (P13,14) of SAMBODHI Journal 2000 considered here as an appendices and it is as below.

https://archive.org/details/sambodhivol23015259mbp/page/n23/mode/2up

On closer examination, we find that most of the terms utilised in the VM sūtras are found to be prevalent in the Śrauta Sūtras and the Śulba Sūtras. We shall see here which terms are used in which Vedic texts :

(1) ANTA - Bau. Śul. I. 23.

(2) ANTYA - Tait. Sam. 1. 7. 9. 1.; Maitr. Sam. 1.11.3; "the last member of a mathematical series" - Monier-Williams, Ske.-Eng. Dict., p. 44, Col. 3 : Āp. Śul. 2.3; Ath. Anu. 20.9; 104; 118.

(3) ĀDYA - Ath. Sam. 19.22.1.

(4) ĀNURŪPYA / ANURŪPATVA - Āp. Śul. 13.8.

(5) ŪRDHVA / ŪRDHVAPRAMĀNA - Āp. Śul. 9.15; Bau. Śul. 2.3; Vādh. Śul. 7.2; 11. 9.; Hir. Śul. 3.14; 4.20.

(6) ŪNĪKṚTYA / ŪNĪKAROTI - Nid. Sū. 1.7.28.

(7) EKANYŪNA / EKONA - Kāt. Śul. 6.7.

(8) EKĀDHIKA - Kāt. Śul. 6.7.

(9) GUṆAKA / GUṆA / DVIGUṆA - Bau. Śul. 1.30.

(10) GUṆITA - Madh. Śi. 16.2.; Yajn. Śi. 2.104-105.

(11) CARAMA - Kṣud. Su. 1.1.; Bau. Śr. 10.48.2.

(12) TIRYAK / TIRYAG-DVIGUṆA - Kāt. Śul. 6.7; TIRYAG-BHEDA Bau. Śul. 17.8; 19.7; TIRYAN-MĀNA Kāt. Śul. 7.32; Bau. Śul. 1.46.

(13) DAŚAKA - Ath. Anu. 19.17.

(14) DAŚATAḤ - Āśv. Śr. 8.5.7; Āp. Śr. 20.14.2; 22.17.5; Hir. Śr. 17.6.42.

(15) NAVATAḤ - Āśv. Śr. 8.5.7; Bau. Sr. 15.23.

(16) NIKHILA - Mādhy. Sr. 1.7.8.10.

(17) NYŪNA - Āśv. Sr. 1.11.15.

(18) PŪRAṆA - Kāt. Śr. 24.7.18; Āp. Śr. 16.26.9; 16.27.6; PURAYET Bau. Śul. 8.12

(19) MADHYAMA - Śāṅkh. Sr. 7.27.20; MADHYAMA-PURVA Bau. Śul. 7.17.

(20) YĀVAT... TĀVAT - YĀVAT-PRAMĀṆA - Kāt. Śul. 37.12; Āp. Śul. 3.11; Hir. Śul. 1.50; TĀVAD-ANTARĀLA Bau. Śul. 8.11; Hir. Śul. 3.17.

(21) YOJAYET / YUJYATE - Hir. Śul. 4.20.; Āp. Śul. 11.46; Bau. 21.7.

(22) LOPANA / LOPA - Kāt. Śr. 19.7.6.

(23) VARGA - Kāt. Śul. 3.7; Āp. Śul. 3.11; Hir. Śul. 1.50.

(24) VEṢṬANA - Śāṅkh. Gr. 3.1.8.

(25) VYAṢṬI - Āp. Śr. 10.6; Śāśkh. Sr. 16.1.1.

(26) ŚŪNYA - Drāhy. Śr. 4.4.22; Nid. Sū. 9.11.21.

(27) ŚEṢA - Kāt. Śul. 3.2.3; Āp. Śul. 2.15; 13.2; Bau. Śul. 2.10.12.; Śul. 1.36; 4.34.

(28) SAMAṢṬI - Bau. Śr. 17.13.7; Jaim. Śr. 21.10.

(29) SĀMYASAMUCCAYA - Kāt. Śr. 1.8.7. 21; 14. 3.5.

(30) SOPĀNTYA / UPĀNTYA - Āp. Śul. 1.12; Hir. Śul. 1.22.

the Upaniṣads, which form the integral parts of some of the Saṁhitās Brāhmaṇas, are found to have been composed in a language which is more or less very similar to the one which is known as Pāṇinian or Classical. the Śulba Sūtras too utilize the same sort of Sanskrit, as for instance

Bau. Śul. 4.62-63	:	पञ्चमभागीयायाः चाष्टभ्यः । तानि दश ।
ibid., 7.6	:	यदवस्तादपरिच्छिन्नं तत्पुरस्तादुपदध्यात् ।
Mān. Śul. 10.3.5.11	:	द्विकयोर्वोत्सृजेत्ततः ।
Āp. Śul. 3.21	:	तृतीयेन नवमी कला ।
ibid., 5.18	:	अष्टाविंशत्पूतं पदसहस्रं महावेदिः
ibid., 13.7-8	:	द्वयानि खलु द्रोणानि । चतुरस्राणि परिमण्डलानि च ।
Kāt. Śul. 3.6-10	:	द्विःप्रमाणा चतुःकरणी त्रिःप्रमाणा नवकरणी चतुःप्रमाणा षे करणी । यावत्प्रमाणा रज्जुर्भवति तावन्तस्तावन्तो वर्गा ः तान्त्समस्येत् । अर्धप्रमाणेन पादप्रमाणं विधीयते । तृ नवमांशः । चतुर्थेन षोडशी कला ।