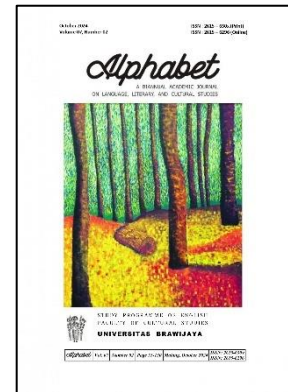


# ALPHABET

<http://alphabet.ub.ac.id/index.php/alphabet>



---

## Ancient India's Classical Alphabetical System Innovates, Evaluates, and Expands the History of Brahmi Scripts: Proofs, Prospects and Authenticity

Md Amirul Islam  
Mst. Baly Khatun

Alphabet / Volume 07 / Number 02 / October 2024, pp. 66-81  
doi: 10.21776/ub.alphabet.2024.07.02.02, Published online: October 2024

### How to cite this article :

Islam, A. & Khatun, B. (2024). Ancient India's classical alphabetical system innovates, evaluates, and expands the history of Brahmi Scripts: Proofs, prospects and authenticity. *Alphabet*, 07(02), 66-81. doi: 10.21776/ub.alphabet.2024.07.02.02

# Ancient India's Classical Alphabetical System Innovates, Evaluates, and Expands the History of Brahmi Scripts: Proofs, Prospects and Authenticity

*Alphabet* ©2018, by Study Program of English, Faculty of Cultural Studies, Universitas Brawijaya  
ISSN: 2615-630X (print)  
2615-6296 (online)  
Vol. 07, No. 02

Md Amirul Islam <sup>1,2</sup>  
Mst. Baly Khatun <sup>3</sup>

## Abstract

This study was an attempt to prove the Brahmi origin, evolution, expansion of history, significance, relationship with other writing systems, and alphabetical cultural heritage. This paper was aimed at clarifying the queries about Brahmi scripts using all current data. This study used qualitative, quantitative, statistical and past manuscripts and thinking methods. This study shows differences between northern and southern Brahmi in such things as language, country, people, vowels, and consonants: 25, 11, 1.06E+09, 233, and 677; but in next, 24, 11, 5.15E+08, 262, and 554 respectively. Finally, this paper proves that the Brahmi script is well expanded in the northern scripts.

**Keywords:** Brahmi, Linguistics, Alphabet, Linguistics value, cultural heritage.

In the rich fabric of the subcontinent's cultural and linguistic legacy, the Brahmi script, which is the classical alphabetical system used in ancient India, maintains a position of utmost importance. Brahmi, which originated in the third century BCE, was the fundamental script for a great number of Indian languages and played a significant part in the formation of literary, religious, and administrative records (Daniels 2019). The Brahmi script, which was distinguished by an elegant and methodical arrangement of characters, displayed exceptional plasticity, since it was able to adapt to a wide variety of regional languages. Not only did this old writing system make communication easier, but it also started serving as a medium through which significant

scientific and philosophical knowledge was passed down. The legacy of Brahmi continues to live on, having an impact on successive scripts throughout South Asia and leaving an indelible mark on the evolution of written communication in the region. Written, engraved, painted, and symbolic signs that represent human attitudes are termed "scripts" (Young and Cook 2023). Through writing, the fundamental language of the human mind is exposed. The Sindhi script, the Semitic script, the Sumerian script, the Egyptian script, and the Brahmi script are among the most ancient and significant of the world's major scripts (Ansumali 2023). The development of the Sindhi language had used 2400 years ago. With vocabulary from Arabic, Persian, and

---

1 Department of Sanskrit, University of Rajshahi, Rajshahi-6205, Bangladesh. Email: amirulislam6430@gmail.com

2 Institute of Natural Resources Research and Development, Rajshahi-6206, Bangladesh. Email: amirulislam6430@gmail.com

3 Department of Folklore, University of Rajshahi, Rajshahi-6205, Bangladesh. Email: ru.balykhatun20@gmail.com

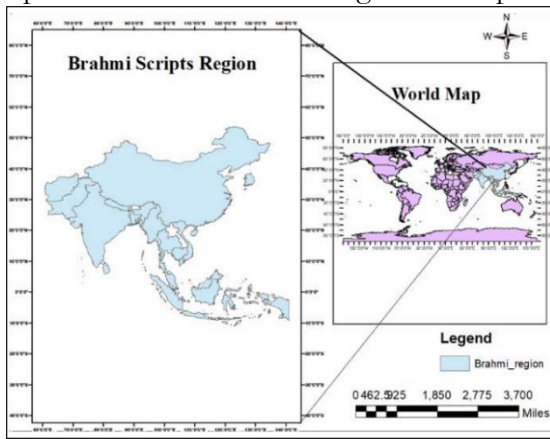
some Dravidian ancestors from the Mediterranean sub-continent, also known as the Mohenjo-Daro civilization, this language has a strong Prakrit and Sanskrit foundation (Mukherjee 2021). The language and script of his descendants were named Semitic after Shem, the son of Prophet Noah (Hetzron 2003). The first signs of the Semitic alphabet were discovered four thousand years ago. And also, the Brahmi script is the only authentic ancient Indian script that has been found so far. The "Prajnapanasutra" supplement by Jaindig states that the Brahmi script is the language's primary means of expression. According to what is known, India used this writing from the middle of the fifth century AD until the beginning of the fourth century AD. Nearly all Indian scripts, both ancient and modern, are descended from the Brahmi script. Furthermore, it is known that Brahmi writing was in use during the reigns of the ancient Lichchavivansa, Nandavansa, Mauryavansa, Chetavansa, and Shungamitravansa (Bhowmik 1992). Nearly all of the scripts that are currently in use were inspired by an examination of the inscriptions found in the Brahmi script. It is possible to identify the type of Brahmi script that was found in Mathu Saurashtra (Saurashtra), as virtually all the scripts were used in India up until the middle of the fourth century AD (Solomon 1996). And from this Brahmi script, a new, distinct script that is largely used in Bangladesh and virtually all Indian scripts, has developed. Just it has been known by different names in different countries, places, and containers in different eras. Based on the lasting impact it has had, the Brahmi script is deserving of a comprehensive study. Because of its versatility across a wide range of languages and its methodical arrangement of characters, it established the groundwork for efficient communication. The script was an essential component in the documentation of literary works, administrative documents, and religious texts, making a vital contribution to the preservation of cultural heritage. Furthermore, Brahmi's impact stretched to nearby regions, which resulted in following writing systems being influenced by himself. Archaeological discoveries of inscriptions that span multiple locations, such as Ashoka's edicts

written in a variety of languages, provide evidence that Brahmi has undergone a developmental process throughout history (Slingerland et al. 2020). Variations in characters among inscriptions in different linguistic settings, such as Prakrit and Sanskrit, highlight the adaptability of the language. In addition, the development of derivative scripts such as Kharosthi and Gupta is further evidence of the evolutionary diversity of the Brahmi language. In addition to demonstrating the script's significance in representing linguistic diversity and cultural development across ancient Indian civilizations, these proofs provide evidence that the script has undergone a dynamic historical transition. The legitimacy of the historical trajectory of the Brahmi script is thoroughly proved through the use of

**Table.1.** Available studies on Scripts and Brahmi Scripts.

Aspect	References
Indian epigraphy explores inscriptions in Sanskrit, Prakrit, and Indo-Aryan languages.	Salomon (1998)
Covers writing systems, a fundamental linguistic component.	Daniels (2017)
Brahmi-Net is a system for transliteration and script conversion of Indian subcontinent languages.	Kunchukutan et al. (2015)
The early usage of the Brahmi script in Anuradhapura, suggesting connections to India.	Coningham et al. (1996)
Brahmi-derived scripts, script layout, and their relationship to segmental awareness in language	Sproat (2006)
Orthographic units and their role in reading acquisition in Brahmi Scripts	Patel (1995)
Compares Kharosthi and Brahmi scripts, shedding light on their historical and linguistic connections.	Scharfe (2002)
Analyzes the origin of Brahmi script, suggesting it emerged from logographic elements.	Duhan (2022)

epigraphical evidence, inscriptions present on pillars, rock surfaces, and old manuscripts (Karpik 2023). Its evolution has been validated by consistent discoveries across a wide range of locales and time periods, which further substantiates the central role that Brahmi played in the development of written communication and cultural expression in ancient India. The significance of Brahmi origin and evolution, its significance as a writing system, the relationship between Brahmi and other writing systems, the importance of understanding ancient philo-



**Figure 1.** Brahmi scripts region around the whole world. It's created by me through ArcGIS.

sophical and religious doctrine, the significance of discovering the alphabetical cultural heritage of ancient India, and the data analysis of the Brahmi Branches. But several studies have been done on this issue (Table 1) and Brahmi scripts elemental contribute total of 18 countries languages (Figure 1).

But it lies in the need for a comprehensive and critical examination of the historical and linguistic evidence by innovating new scripts from Brahmi scripts in various countries, increasing the number of users, and supporting the claims of innovation, evolution, and expansion of Brahmi scripts. This research should rigorously assess the authenticity of these claims, potentially incorporating archaeological, epigraphic, and comparative linguistic analyses to provide a more robust understanding of the Brahmi script's development and its impact on ancient Indian civilization. It is important for shedding

light on the origins and evolution of Brahmi scripts, a crucial element of India's ancient cultural and linguistic heritage. It has the potential to authenticate claims and provide insights into the historical and linguistic innovations that influenced the script's development.

## METHOD

### Country Findings

In order to explore the Classical Alphabetical System of Ancient India and its development, a thorough methodology is utilized for the purpose of exploring the Brahmi script in a country-specific (Fig 1) manner. In the first place, studies of inscriptions, manuscripts, and artifacts are the primary subjects of archival research that is carried out in important repositories and museums located all across Bangladesh. Engaging with local historians, archaeologists, and linguistic experts is an important part of collaborative endeavors since it allows for the collection of varied perspectives. Cataloging and cross-referencing findings are made easier with the use of digital technologies. In order to improve the authenticity verification process, comparative studies with contemporaneous cultures and historical data are utilized. An all-encompassing narrative is constructed through the study by incorporating information from epigraphic, linguistic, and archaeological sources. In order to better examine prospects, it is helpful to make links between different subjects of study. We now have a comprehensive understanding of the history, changes, and cultural effects of the Brahmi script within the specified geographical area as a result of this occurrence.

### Primary Sources Analysis

An in-depth examination of the Brahmi script inscriptions found on ancient artifacts, texts, and archaeological discoveries is an essential part of primary source interpretation. For the purpose of deciphering script variances, paleographic inspection is executed with great care. Experts in linguistics work together to understand the content, and epigraphic details provide information that is used to inform

scholarly research. The contextual accuracy of the information is ensured by cross-referencing with historical records. Comparative research with current scripts is something that further validates the authenticity of the information.

**Data analysis**

In order to highlight the most important aspects of Brahmi scripts, descriptive statistics are utilized in data analysis. This allows for the evaluation of frequencies and distributions. The use of linear regression allows for the identification of patterns and connections within the historical context of vowels and consonants in southern and northern Brahmi. The methodical processing of script data is made easier with the assistance of statistical software. An increase in authenticity can be achieved through comparative analysis with historical and linguistic datasets. Through the use of strong statistical analyses, this methodological approach guarantees a thorough investigation of the Classical Alphabetical System that was used in Ancient India. It also offers insights into the system's development, potential, and historical relevance.

**Paleographic study**

The process of paleographic analysis comprises analyzing the stylistic characteristics of the Brahmi script and determining the most important graphemes and variations. Comparative analysis of inscriptions and manuscripts is carried out in a methodical manner, and evolutionary trends are identified. The accurate decoding of scripts is ensured through collaboration with specialists. This methodology sheds light on the complex development of the Classical Alphabetical System that was used in Ancient India, specifically in the Brahmi letters.

**THE ORIGIN OF BRAHMI SCRIPTS: EXPANDING THE ANCIENT EDUCATION SYSTEM**

The History of Brahmi scripts the exact origin of the Brahmi script in the distant past is unknown. Many studies about this script have been conducted by researchers since the short story was found. Scholars have expressed the

**Table.2.** Compression of north Semitic and Brahmi scripts.

Phoenician	Aramaic	Value	Brahmi	Value
𐤀	𐤁	*	𑀀	a
𐤁	𐤂	b	𑀁	ba
𐤂	𐤃	g	𑀂	ga
𐤃	𐤄	d	𑀃	dha
𐤄	𐤅	h,m,l	𑀄	ha
𐤅	𐤆	w, m,l	𑀅	va
𐤆	𐤇	z	𑀆	ja
𐤇	𐤈	h,m,l	𑀇	gha
𐤈	𐤉	t	𑀈	tha
𐤉	𐤊	y, m, l	𑀉	ya
𐤊	𐤋	k	𑀊	ka
𐤋	𐤌	i	𑀋	la
𐤌	𐤍	m	𑀌	ma
𐤍	𐤎	n	𑀍	na
𐤎	𐤏	s	𑀎	sa
𐤏	𐤐	m, l	𑀏	e
𐤐	𐤑	p	𑀐	pa
𐤑	𐤒	s	𑀑	ca
𐤒	𐤓	q	𑀒	kha
𐤓	𐤔	r	𑀓	ra
𐤔	𐤕	s	𑀔	sa
𐤕	𐤖	t	𑀕	ta

belief that the two found scripts were carved sometime in the fifth century BC. But despite extensive investigation, academics were unable to agree on the Brahmi script's ancestry. According to some academics, the ancient Brahmi script is a descendant of the old Semitic script. Some people think that the Brahmi script descended from Sindhi. Their case is supported by analogies between Mauryan art and Indus culture. The Brahmi script has first evolved into the Maurya script (Falk 1993). Consequently, it is plausible to believe

that Sindhi script was the ancestor of the earlier Arbhaktana Brahmi script. Brahmi script originated from ancient Semitic script (Table 2), according to proponents of this theory.

They claimed that when the Indus civilization collapsed, the local script also vanished and that later on, the old Brahmi script and Kharosthi script emerged as a result of Semitic influence like the writing of the Indus. Although significant advancements in the decipherment of the Indus scripts should be made before making a definite determination, the evidence strongly suggests that there is some connection with the Semitic syllabaries, and more specifically, an association with Aramaic (Diringer & Regensburger 1968). The Brahmi script is also illustrated. Several academics have not able to discover it. Many contend that the ancient Brahmi script can only be comprehended through its development and modifications since, despite being pictorial, it contains indications of notation. It was proven by Professor Langdon that it originated with the ancient Indus Valley script (Buhler 1898). He illustrated how he understood and ascribed phonetic significance to the letters of the created vowels in his book "Mahenjodaro and the Indus Civilization" the syllables that were uttered at the same time (Tagore 1978). The Sindhi script alphabet, which is composed of the letters A, E, E, O, A, C, D, F, J, T, T, Th, P, F, and B, among others, gave rise to the Brahmi alphabet. Through a number of investigations, Western scholar James Prinsep came to the conclusion that the Brahmi script descended from the Greek script (Bhowmik 1992). William Jones' study indicates that the Brahmi script descended from the Phoenician script. Buhler's research aimed to demonstrate that the Brahmi script came from the North Semitic script, contrary to Taylor's contention that it sprang from the South Semitic script. Some claim that the letters of the Brahmi script are not originally derived from Greek, Phoenician, or Hebrew, refuting these theories of Western scholars. The origin of Brahmi was inferred by James Prinsep and William Jones based on the coincidental likeness of two Brahmi letters to two Phoenician or Greek letters, which is completely illogical. On ancient

India's west coast, Semitic tradesmen from Iraq used to conduct business. According to Mr. Buhler, the Brahmi alphabet was constructed by combining the 22 letters of the Semitic script with required components from other scripts (Buhler 1904). Nevertheless, Mr. Buhler depicts a transition from Phoenician script to Brahmi script in his book "Indian Falacography" that is entirely fictitious, and the tone used to indicate the middle point is one of his own drawings rather than one that was taken directly from an ancient script (Tagore). Similarly, by imagining minor modifications to the current English alphabet, the genesis of the Brahmi script can also be demonstrated. Hence, it's not related to the Phoenician writing system. Furthermore, the Brahmi script's left-to-right writing method was not adopted to mimic another script (Salomon 1996). In essence, it is a magnificent invention that was made by the ancient Indian Aryans. It may be referred to as Brahmi, after the creator Brahma himself, because to its perfection and age. The script employed by educated Brahmins is known as "Brahmi script." This statement's veracity is debatable. The Brahmi script is the oldest script so far to be uncovered. And it has been established that this script has been in use since the fifteenth century BC. But the Vedas, which were written around 6000 BC, are thought to be the first examples of Indian literature. Some people think that the Vedas were written in Brahmi writing before 6000 BC, despite the fact that no trace of Brahmi script has been discovered prior to the 5th century BC (Basu 1980). The Vedic literature demonstrates that a coordinated writing system was in use and that the educational system was also rather advanced during this time. Early education does not allow for the development of the literary traces found in the Vedic Suktas. The employment of Jyotishastra, Ankashastra, grammar, numerology, etc. is known from a number of Vedic suktas. And it should go without saying that these scriptures cannot simply be used orally. The six limbs of the Vedas—Siksha, Kalpa, Grammar, Nirukta, Chanda, and Jyotish—cannot be studied or taught without a script. Alphabets are absolutely necessary for grammar. The Vedas, Samhitas, and Jyoti

Siddhanta were thus written down using some sort of writing and the Vedic alphabet at least 5,000 years ago. The Shatapatha Brahmana of the Suklajurveda provides astrological facts from roughly 5,000 years ago, according to astrological evidence cited in support of this "History of Indian Astrology" by author and well-known astrologer Shankar Balakrishna Dixit (Beinorius 2003). So, it seems certain that at least a portion of the Shatapatha Brahmana was made available at that time. Long before that, the Yaju Samhita and Rig Veda were published. The Taittiriya Samhita was discussed by Maharashtrian Balgangadhar Tilak, who demonstrated that the Indian Arya caste discussed astrology prior to the Basant equinox, or in 4000 BC. If we calculate the oldest astrological portion of the Risamhita, we will find that the Hindus were astrologers in 6000 BC. They kept a lot of records. The well-known German astrologer and archeologist Jacobi also stated that the Hindus found the pole star in 3000 BC, or roughly 5000 years ago, after discussing the astronomy of the Vedas (Basu 1906). The Rigveda contains many names and uses for rhythms, including Gayatri, Vishnik, Anushtuta, Brihithi, Viraj, Trishtut, and Jagati. In addition, the names and uses of every rhyme found in the Vedas and Brahmanical literature point to an extremely sophisticated writing system. The Rigveda contains several instances of the word "akshara." The Shuklajurveda also makes use of the word Akshara. The terms "Brahma" and "Brahmi" both refer to the Vedas. Rishabhadeva most likely developed the scripting method used in Brahmaidya. For Karma during the Vedic era, four priests—Hota, Adhvarsha, Udgata, and Brahmin—were required. The chiefs were Sankha Brahmins. Some claim that this Brahmi priest was the one who first discovered the script, giving rise to the term Brahmi (Tagore). Asoka reigned over a sizable heterogeneous population from the Ganges River capital Patliputra, as evidenced by the appearance of imperial edicts in Brahmi script elsewhere and Greek, Aramaic, and Khorostri scripts in the northwest (Buhler 1904; Coningham et al. 1996). There is no proof of such a stage, but some academics have contended that because Brahmi was fully formed when it first

appeared, it must have been in use for many years before Asoka (Winternitz 1985; Dani 1963). The explanations of the Vedic mantras or rites, which are now the oldest and most coherent prose or Brahmin literature known to the entire world, were written by students and pupils after hearing from the Brahmins, the leading priests of the Yagya, as shown by their existence. Consequently, it is clear from the discussion that Vedic writing was referred to as Brahmi script in ancient times. "It is only natural that there should be a connection between the Brahmi script and the Vedas, the primary literary works of the Indian Aryans." Yet, because no writing from the time from unknown antiquity to the fifth century BC has survived, this period is referred to as the "Dark Ages" in our culture. Yet we won't give up; perhaps soon, fresh knowledge will be found that will provide answers to the puzzling questions about man. Many Oriental researchers who support Western scholars have a positive outlook on the Indus script, believing that it took thousands of years for the Indus script to evolve into the Brahmi script. It is hoped that once the Sindhi script is deciphered, many script-related issues would be resolved and this Dark Period will come to an end since, to yet, neither a script nor the Indus script have been discovered or deciphered.

### **Script Evaluation and Introduction of Pictograms, Ideograms, and More Evaluative Script Systems and Classifications**

The entire scripts that we can see now did not happen all of a sudden or at one certain time. Thousands of years of evolution and human endeavor have led to its current state. The notion surrounding the first script's emergence, however, is still being investigated. The majority of what has been revealed is speculation. According to research, people have been engraving or drawing different images on stone tablets and cave walls for more than ten thousand years. This picture was once used to immortalize a thing or an occasion. Writing was developed as a result of the need to permanently recall an item or subject. Several kinds of graphic cave inscriptions and petroglyphs were the first

evidence of writing that archaeologists discovered (Farajova 2011). Several locations in the West have seen the discovery of such prehistoric paintings. For instance, a remarkable "script" known as "Quipu" that was found in the South American province of Peru is a priceless record that serves as a reminder of the script of that time (Hosne 2014). Making glands or knots in the string was how this "Granthilipi-method" expressed an item or a feeling. The quantity, location, fineness, etc. of the glands in the string or rope at the moment served as a record of an occurrence or a king's order. The rope's construction material also varied. The materialistic feeling was not expressed with colorful thread. Before a script can move on to the alphabet stage, it must pass through numerous steps (Bernal 1990). These levels include the alphabet, pictographs, ideographs, word writing, notation, and cave and stone tablet scripts (Schmandt 1992). The Early Stage of Writing (Fig 2), also known as Cave and Stone Scripts, used drawings made on stone tablets or in caves to represent ideas. This approach used an image to convey a full statement. Yet, using only an image to convey a whole thought might be challenging. As a result, only a small number of photos exposed the entire message. In that situation, the drawing's primary goal would have been defeated because the image used to illustrate the words would represent different things to different people. The "pictogram" was created as a solution when there are too many words in an image to represent a full message (Fischer 2003). With this approach, many images were drawn in place of a single image to represent the entire statement. An object was represented by each photograph. In this manner, a full sentence was conveyed using a series of visuals. But with such vivid visuals, it was impossible to convey any nuance. These pictures served merely as a way to convey disgusting things. As a result, eventually, people began having different problems using this strategy. This led to people making the decision to learn something new. The third stage "ideograph" was at one time found in this way. Ideogram Sentences were also expressed in this system by a variety of items, such as pictographs (McGee 1980). Yet,

"duplication's" unique quality was to reproduce the emotion the object in the illustration arouses. In other words, not only was the school's object image portrayed here, but also the subtleties of the object image. They used to depict the sun and stars, for instance, to signify day and night, respectively.

a	ā	ba	bha	ga	gha
da	dha	ḍa	ḍha	ha	va
u	ū	o	ḡa	ḡha	gha
tha	ṭha	ṭa	ya	ka	la
la	ma	-ṃ	na	ña	ṇa
sa, ṣa	sa	ṣa	e	ai	
i	ī	pa	pha	ca	cha
kha	ra	śa	ta	<i>The Brahmi Script</i>	

**Figure 2.** The Brahmi scripts.

Photo by: <https://www.crystalinks.com/brahmi.html>

In other words, a sun sign was drawn beneath the semicircle to represent day, and a star sign under the semicircle to represent night. However, this approach was likewise short-lived. Because not all images conveyed the intended meaning. The majority of the discourse was therefore incomprehensible. Sometimes, various people will have diverse interpretations of the same image. This difficulty prevented the continuation of creation. They therefore changed the way they thought in order to clarify this semantic uncertainty. They created logograms as a way to clear up this uncertainty in the text's meaning. "Syllabics" (Fig 2) are symbols that represent names or words (Olson 1995). The prior object image is condensed and changed into a unique symbol using this technique. Instead of representing the actual object, this symbol denotes its name. Animal images were made to depict animals in the second stage of "pictograms," but there was no picture of anything, such as an animal, drawn in word script. In this instance, a special symbol was employed in



place of the animal's image, which bore no relation to the symbol (Klingender et al. 2019). The "verbatim" approach was developed to help people grasp the "ideographs" method's meaning more easily, but with time, this method's meaning also grew more complex (Olson 1996). One sign served as a representation of each of the word's meanings in this notation. In other words, if a term has numerous meanings, a sign would allude to all of the meanings without mentioning any single interpretation. A symbolic symbol needed to be allocated to each word. Unfortunately, it is incredibly challenging to express the vast world's unlimited vocabulary with symbols. And a man found it challenging to retain the significance of so many symbols. As a result, over time, this approach was likewise rendered useless. At the fifth stage, the "syllabogram" system was developed to eliminate the difficulty of learning multiple syllable symbols (Unger & DeFrancis 1995). This technique takes into account the use of "vowel"-based symbols. This sign is not given collectively, but rather according to the number of vowels in a word. Each vowel in a word had its own symbol, regardless of how many there were. Consider the sun. Two symbols, one for the "sur" vowel and the other for the "y" vowel, were used in the word. Similar to this, the letters "A," "K," and "S" are all vowels in the Akash language; three symbols were created for each of these vowels. As a result, the notation is based on the number of vowels. In the history of the development of script up to the present, alphabetic writing represents the final phase. In other words, the script developed into the script from the script used in caves. This process led to the development of phonetic symbols. They are known as "Varnas" because they serve as symbolic representations of the sounds. The "alphabet" refers to the writing system and the symbols that were created based on differentiating between sounds.

### **Derivation of Devanagari and Bengali Script from Brahmi Script**

Brahmi is the source of nearly all Indian scripts, including Bengali. Let's quickly examine the development of Bengali and Devanagari

scripts from this Brahmi script (Table 4). No evidence of Brahmi writing has been discovered prior to the fifth century BC, despite the fact that its genesis is unknown (Shaw 2004). This script's earliest iterations can be found in Ashokalipi or Mauryalipi. This Brahmi script was widely used during Asoka's reign as Mauryan Emperor (Siromoney 1982). Two Brahmi lips named Piprabara and Bali that were discovered before Asoka serve as evidence that Ashokalipi is a later stage of Brahmilipi (Scripts) or that Brahmilipi is where Ashokalipi originated (Rahman 1996). In comparison to Asoka's script, these two scripts don't differ significantly. There is no long vowel scale in the Pip Raba script, and only the Asoka script makes use of the ee-kar (Dirgho-ee) scale symbol found in the Bali script. Except from this, Ashokalipi and Brahmilipi's letters are nearly identical. Furthermore, the Samabayangasutras of the Jains prior to Ashoka and the later Lalit-Vistha scriptures contain the names of numerous different scripts in addition to Brahmi script. Yet none of those scripts have been discovered up until this point. This is owing to the fact that as Brahmi script spread throughout antiquity, these scripts gradually vanished and were replaced by Ashoka's Brahmi script (Robinson 2008). The researcher believes it worked. The remarks made by script expert Buhler in his book "Indian Palacography" on scripts are significant in this regard. According to him, there are several regional variations and hastily written texts that demonstrate the script had a long history during Asoka's reign and that the Indian alphabet was in transition (Buhler 1904). Moreover, Piprabar script, the earliest type of Brahmi writing, predates the Ashoka script. However, from around 350 BC until about 100 BC, the Brahmi script remained virtually unaltered and was referred to as "Ashokalipi" or "Mauryalipi" (Sing & Kushwaha 2019). There are two different varieties of Ashokalipi in India. The writing on one type of script was done from the left to south, whereas the writing on the other type was done from the south to left. Thus far, 26 (twenty-six) scripts from this time frame (350–100 BC) have been found. These are inscriptions that speak to Ashoka, the Mauryan emperor, and

**Table 3.** Evolution from Brahmi to Gupta, Devanagari and Bengali.

No.	Context	Brahmi	Gupta	Devanagari	Bengali
1	k-	𑀓	𑀓	क	ক
2	kh-	𑀘	𑀘	ख	খ
3	g-	𑀕	𑀕	ग	গ
4	gh-	𑀛	𑀛	घ	ঘ
5	ñ-	𑀡	𑀡	ङ	ঙ
6	c-	𑀜	𑀜	च	চ
7	ch-	𑀝	𑀝	छ	ছ
8	j-	𑀣	𑀣	ज	জ
9	jh-	𑀤	𑀤	झ	ঝ
10	ñ-	𑀢	𑀢	ञ	ঞ
11	ṭ-	𑀦	𑀦	ट	ট
12	ṭh-	𑀧	𑀧	ठ	ঠ
13	ḍ-	𑀨	𑀨	ड	ড
14	ḍh-	𑀩	𑀩	ढ	ঢ
15	ṇ-	𑀪	𑀪	ण	ণ
16	t-	𑀌	𑀌	त	ত
17	th-	𑀍	𑀍	थ	থ
18	d-	𑀎	𑀎	द	দ
19	dh-	𑀏	𑀏	ध	ধ
20	n-	𑀐	𑀐	न	ন
21	p-	𑀑	𑀑	प	প
22	ph-	𑀒	𑀒	फ	ফ
23	b-	𑀔	𑀔	ब	ব
24	bh-	𑀕	𑀕	भ	ভ
25	m-	𑀖	𑀖	म	ম
26	y-	𑀗	𑀗	य	য
27	r-	𑀘	𑀘	र	র
28	l-	𑀙	𑀙	ल	ল
29	v-	𑀚	𑀚	व	ব
30	ś-	𑀛	𑀛	श	শ
31	ṣ-	𑀜	𑀜	ष	ষ
32	s-	𑀝	𑀝	स	স
33	h	𑀞	𑀞	ह	হ

his teachings and rules. Also known as Ashoka-Prakrita, AshokaBrahmi, Maurya script, Lat script, or Ashoka script, these scripts are written in Sanskrit. The Ashoka or Mauryan script

contains two stages. Examples include the Arabachen Maurya script and the Ancient Maurya script (Upasak 1959).

The inscriptions of monarchs at locations such as Allahabad, Padaria, Rampura, Radhia, Mathia, etc., and at locations such as Kalsi, Bairat, Sahasram, etc., inscribed on the rock, in caves, and on the pillars of Sanchi and Sarnath, are first divided by Mr. Buller into northern and southern categories. The stone carvings from locations like Girnar, Dhauli, Jaugarh, etc. are instances of the southern alphabet, whereas the scripts in question are of the northern alphabet. Subsequently, he noted the variations of the old northern Mauryan writing and further separated the "Ancient Uttari" script into three types, such as North Eastern, North Central, and North Western (Silk 2013). The laws of Allahabad, Rampura, Nigliba, Padaria, Radhiya, Mathia, and Sarnath are among those in the first group. The Patna clay seals, the ordination inscriptions of Bairat and Sahasram, the pillar inscriptions of Sanchi and Meerut, and the prehistoric cave inscriptions are all part of the second class (Sircar 1957). The third class of inscriptions consists of the Kalsi Inscriptions and the coinage of the Greek rulers Agathocles and Lantalion. Seven layers make up the unwise Maurya inscriptions: the Nagarjuni Caves of Dasaratha (200 BC), the inscribed arches, wall pillars, and door frames of Varhutt Stupas (150 BC), the Pavos Inscription of Uttar Pradesh (150 BC), the earliest inscriptions from Mathura, the Hatigumpha inscription of Kharbel in Kalinga (160 BC), and the Nanaghat inscription (Oza 2022, Lal 2006, Schopen 1987, Subrahmanyam 1966 & Buhler 1883). The Budha-gara script used in Dasaratha's cave inscription at Nagarjuni is thought to be 50 years later. The uniqueness of these cave inscriptions was the source of the original Bengali script. The Kushanlipi script is the second stage of the development of the Brahmi script (Hack 1927). This story takes place between 100 AD and 300 AD. The majority of the scripts that have been found date from this time period, and the most notable ones are those of rulers like Kushan or members of the Kushan dynasty like Kaniska, Hubishka, and Vasudeva (Sims 2012). The

Kushan script is the name given to the Brahmi script (Table 3) used during this time. It is generally accepted that the date written in Kushan script is Shakabda (Sing 2014). There are two popular dates this year, though. The Malabh Vikramabdaa, established by King Kaniska in 57 BC, is dated by the Kushan inscription. The two inscriptions' dates should be interpreted in terms of the century that King Kanishka proclaimed in 78 AD. Inscriptions from the first and second centuries BC have mostly been found in northwest India. The action of celebrating something is referred to as "celebration." No traces of the eastern alphabet of the last chapter of the Kushana period have been found so far. Some of the letters of the Kushan script have changed to resemble the Nagari script, such as U, B, A, P, L, Sh, Oi, Y (JA). Ch and DH of this script are similar to Ch and DH of Bengali letters. During the rule of the Kushana dynasty, the northern and southern script variations of the old Maurya script became more noticeable, while the Brahmi script developed after the Kushana script. The Northern script, which began in 350 AD, evolved into the Gupta script by 400 AD (Ashfaq 1977). The Dakshini script also developed during this time (350 AD) into Western (500–900 AD), Madhya Pradesh (500–900 AD), Telegu Kandi (from the 5th tr.), Granthamlipi (Manuscript scripts) (from the 7th tr.), and Kalinga (from the 7th tr. to the 11th c. AD), Tamil script (from the 7th c.), Bateluttu script (from the 7th century), Nandi Nagari (from the 7th century CE), etc. in script (Bhowmik 1992). Due to the widespread use of the later Gupta writing in the Indian subcontinent between the fourth and fifth centuries AD, the all-kings' script that was used throughout the dynasty has become the name is Guptalipi. In North India, two forms of alphabets—called Eastern and Western—can be found from the pre-Gupta era through the sixth century AD. According to Dr. Buhler and Prof. Bhandarkar, the distinction between the five letters M, S, S, L, and H serves as the basis for these two types (Bhandarkar 1989). It is thought that the inscriptions in North Indian writing using this eastern alphabet were where the Bengali alphabet first appeared. The Nagari script was also developed from the

western branches and Central Indian alphabets. The variations in the eastern alphabet were vanished by the Gupta era due to the impact of the western alphabet. Ultimately, the western alphabet completely replaced the eastern alphabet between the fourth decade of the fifth century and the sixth century (Fischer 2004). The Allahabad inscriptions of Samudragupta, the ruler of the Gupta dynasty, the inscriptions at Udayagiri, Mihroli, Bilsad, Karata, and Kuda, as well as the donation letters from Maharajas Lakshmana and Jayanath, are notable examples of Gupta period writings. These scripts' letters have undergone certain changes since the Brahmi script's time, taking on the current forms of the Nagari and Bengali characters. No dynasty has any influence over Kutillipi. Kutil is the aggregate name for the many scripts that spontaneously emerged in the eastern, northern, and southern areas of India in the sixth century AD without the influence of kingdoms. This script has very uneven tones and letters. This script should be known as the Kutil script as a result. From the sixth to the ninth centuries AD, India adopted this crooked writing as the norm. With the introduction of the Kutil script in the second half of the 6th century AD, the eastern script of North India, which had stagnated throughout the Gupta era in the Gupta script, started to independently develop once more (Bhattaacharya 2000). The evolution of these eastern kinds was never again stifled or crushed by western types. The impact of the western urban alphabet on the eastern variety was later eliminated during the reign of the Pratihara monarchs of Gujjar, and the eastern alphabet was once more split into two branches known as eastern and western. This western branch of the alphabet eventually became confused with the Nagri script. This Puri branch's alphabet diverges from the ancient eastern alphabet and independently developed around the start of the eleventh century into the original Bengali alphabet. Kutil script holds a significant role in the transition from Brahmi script to Nagari and Bengali script. Modern Nagari and Bengali scripts have largely adopted the letters and sounds of this alphabet. That is, the Nagari and Bengali scripts originated from this script,

**Table 4.** Northern Brahmi

No.	Name	Region	People	Vowels	Consonants	n
1	Devanagari	In, Fij, S. Afr, nep	600 m	14	33	47
2	Kaithi	In	77,368	10	33	43
3	Sylheti	In & Bd	11 m	5	28	33
4	Gujrati	In	55.5 m	12	34	46
5	Modi	In	0	10	36	46
6	Bengali	In & Bd	265 m	11	39	50
7	Assamese	In	15 m	11	41	52
8	Sharada	In	0	17	34	51
9	Tirhuta	Nep & In	0	16	33	49
10	Odia	In	46 m	11	41	52
11	Kalinga	In	0	0	0	0
12	Nepalese	Nep & In	17 m	12	36	48
13	Gurmukhi	Pak & In	29 m	10	31	41
14	Khudabadi	Pak	0	10	37	47
15	Multani	Pak, In & Afg	20 m	0	0	0
16	Dogri	In	2.6 m	10	28	38
17	Tocharian	Chi	0	26	47	73
18	Meitei	In	1.8 m	3	15	18
19	Lepcha	Tib & Bur	52,800	9	20	29
20	Tibetan	In, Bd, Nep& bur	6.7 m	4	30	34
21	Bhaiksuki	In, Bd, Nep & Bur	0	0	0	0
22	Siddham	In	0	12	33	45
23	Takri	In	0	10	34	44
24	Phags-pa	chi	0	0	0	41
25	Hangul	Korea	0	10	14	24

which then split into many branches. Characters from the previous Krishan script share similarities with several characters of the Nagari script. However, the Nandi-sutra from the Gupta era (4th or 5th century AD) contains the earliest recorded use of the Nagari script (Roy 1984). Following this, in the sixth century, a time of crooked script, Nagari script was introduced. The Nagari script, however, saw a remarkable evolution beginning in the ninth century AD, and by the tenth century AD, it had taken on a more- or-less finished shape. The script's development can therefore be dated to the ninth to the eleventh centuries AD. Nagrilipi's current

shape has caused us to observe an almost same shape in the present. In other words, the current Nagrilipi and the Nagrilipi of the 11th century AD are mostly compatible (Bakker 2008). It is thought that the entire current Nagri script dates back to the twelfth century AD (Guha 2004). Stone inscriptions from the fifteenth century AD and manuscripts from the seventeenth century AD both use this type of four-tone scale (Jones 1986). For this reason, the Nagari script has remained essentially unchanged from the twelfth century to the present, despite certain variations in the writing style, including the size of the letters. Depending on the nation or area,

**Table 5.** Southern Brahmi.

No.	Name	Region	People	Vowels	Consonants	n
1	Tamil	In, Sri, Mal, Sin, Indo	78m	12	18	30
2	Baybayin	Phil	0	3	14	17
3	Malayalam	In	45m	15	42	57
4	Sinhala	Sri	16m	18	42	60
5	Telegu	In	75m	16	36	52
6	Kannada	In	43.6 m	16	35	51
7	Goykandi	In	2.5 m	6	30	36
8	Saurashtra	In	247702	0	0	34
9	Tiglari	In	1.8 m	13	35	48
10	Burmese	In	33 m	13	20	33
11	Ahom	In	1.3 m	14	19	33
12	Chakma	In & Bd	550000	19	32	51
13	Karen	In	1 m	9	25	34
14	Shan	In	4.6 m	23	18	41
15	Khpner	cambodia	13 m	24	33	57
16	thai	Thiland	69 m	16	44	60
17	Cham	viet & cam	24500	3	12	15
18	Baliness	Indo	3.3 m	14	33	47
19	Javanese	Indo	100 m	9	20	29
20	Saundanese	Indo	27 m	7	23	30
21	Ulu	Indo	200000	0	0	0
22	Rejang	Indo	200000	12	23	35
23	Buda	Indo	0	0	0	0
24	Pyu	My & chi	0	0	0	44
25	Hangul	Korea	0	10	14	24

this variety happened at the hands of several writers or in accordance with the engraver's inclination. The script did not alter significantly between the fourteenth century AD and the invention of coins in the seventeenth century, nevertheless. The North Indian alphabet's eastern variant, or the transcription of the alphabet's eastern division, served as the basis for the original Bengali alphabet. This script flourished on its own from the 7th through the 9th centuries. Nonetheless, the Devanagari alphabet underwent some slight changes in the 10th century AD. The first use of this altered alphabet was in the donation letter inscribed on Vinayak Pal's copper plate. It thus became a part of Bangladesh and the Ordor Pratihara administration.

The original Bengali alphabet first appeared in the late 10th century when the Devanagari alphabet progressively lost its popularity after Mahipala I (Nanda 2005). The earliest evidence of this alphabet is found in the Irda grant of Kamboja king Naipaladeva and in the Bangarh grant of Mahipala I. The spread of this script began in the eleventh century AD or the first half of the twelfth century.

A greater spread of this alphabet is seen in Vijay Sen's Devapara inscriptions. After this, in the late twelfth century, this Bengali alphabet expanded and almost reached the level of the present alphabet. After Muslim rule in North India began, all eastern characters were converted into the modern Bengali alphabet during this

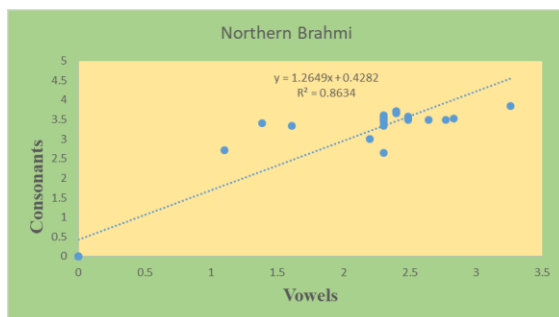
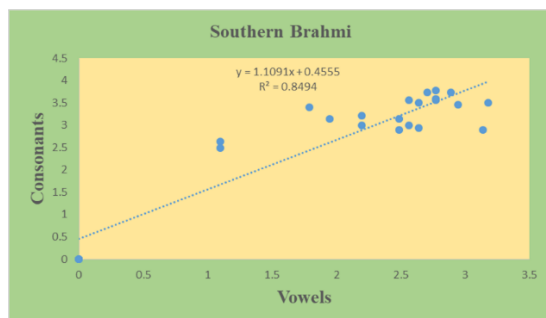
**Table 6.** Descriptive statistics analyses of northern Brahmi scripts.

ELEMENTS	n	MEAN	SE	MED	SD	SV	KUR	SKE	MAX	CL (95.0%)
People	1.06E+09	42549207	25546535	77368	1.28E+08	1.63E+16	16.50	3.976	6E+08	52725457
Vowels	233	9.32	1.205	10	6.02	36.31	1.313	0.382	26	2.487
Consonants	677	27.08	2.826	33	14.13	199.74	-0.072	-1.03	47	5.83
Alphabet (I)	951	38.04	3.563	44	17.81	317.45	0.917	-0.955	73	7.354

**Table 7.** Descriptive statistics analyses of southern Brahmi scripts.

ELEMENTS	n	MEAN	SE	MED	SD	SV	KUR	SKE	MAX	CL (95.0%)
People	5.15E+08	21471758	6258148	2900000	30658541	9.4E+14	0.692	1.367	1E+08	12945966
Vowels	262	10.91	1.477	12.5	7.24	52.42	-0.85	-0.120	24	3.057
Consonants	554	23.08	2.809	23	13.76	189.3	-0.75	-0.372	44	5.81
Alphabet (I)	894	37.25	3.45	35.5	16.93	286.8	0.172	-0.72	60	7.15

period. As a result of the Muslim conquest of Eastern India, the literary culture was disrupted for some time (13th– 14th centuries AD) (Wink

**Figure 3.** Linear (Ln) regression of northern Brahmi.**Figure 4.** Linear (Ln) regression of southern Brahmi.

2002). For good reason, the use of script is also slow. The term "virtual reality" refers to the use of virtual reality in the creation of new products, as well as the use of virtual Reality in the creation of new products. However, there was no change in the Bengali alphabet. After that, there was no significant change in the Bengali alphabet in the sixteenth, seventeenth, or eighteenth centuries. Therefore, from the twelfth century to the nineteenth century, Bengali script did not undergo any significant change.

This is really realistic concept and evaluation and innovation history of Brahmi script, Ashoka script, Kushan script, Gupta script, and Kutili script and the evolution of Nagari and Bangla scripts from Brahmi scripts. But Brahmi scripts are mainly two kinds: Northern Brahmi (Table 3) and Southern Brahmi (Table 5). This data analysis shows that Brahmi scripts have expanded more in the northern statistics (Table 6) parts of the country than in the south Brahmi (Table 7).

The linear regression analysis of Northern and Southern Brahmi reveals a convincing association between vowels and consonants (Fig. 3, 4) inside the alphabet. This correlation is established by the analysis. This method of statistical analysis highlights the systematic relationship

that exists between various linguistic components, so indicating that there has been an organized evolution. Their dependency on each other demonstrates how the Brahmi script has developed in a logical manner, revealing light on the intricate design rules that guided its construction. The results suggest that as vowels and consonants coevolve, their dependence on each other shows how the Brahmi script has formed.

## CONCLUSION

Brahmi scripts from ancient India are the main source of south Asian languages, and there are 49 languages scripted in total. The origin history of the Brahmi script is speculative, and the precise origin period is unknown. Brahmi scripts have been tested in two major South Asian scripts: Devanagari and Bengali. The Brahmi scripts are formed sequentially in the Asoka scripts, Kushana scripts, Gupta scripts, and Kutila scripts, and then in the Devanagari scripts and Bengali scripts. Though Brahmi is an alphabetic writing system, it comes through cave inscriptions, petroglyphs, pictograms, ideograms, logograms, and syllabograms. Scripts in India and other countries all derive from the Brahmi script. So, all scripts write from left to right, and this relationship and co-relationship among all scripts is the same and important. The value of Phoenician scripts, Aramaic scripts, and Brahmi scripts has been tested and found to be the same. This study emphasizes the significance of learning the Brahmi alphabet in understanding ancient culture such as the Dark Ages and ancient philosophical and religious doctrines for gathering knowledge and expanding into the current generation. This research proves that northern Brahmi has 25 languages scripts and is under 11 countries, while southern Brahmi has 24 languages scripts and is under 11 countries. So, the researcher recommends finally that Brahmi has achieved a huge position through its branches.

## Acknowledgement

The author would like to extend him sincere appreciation to the Professor Dr. Md. Yeamin Hossain, Department of Fisheries, University of

Rajshahi and Professor Dr. Juely Biswas, Department of Sanskrit, University of Rajshahi, Bangladesh for overall supports this research paper.

## Funding Acknowledgement

There is no funding for completing this research.

## Declaration

Conflict of Interest: The author declares that there is no conflict of interest.

## REFERENCES

- Ansumali Mukhopadhyay, B. (2023). Semantic scope of Indus inscriptions comprising taxation, trade and craft licensing, commodity control and access control: Archaeological and script- internal evidence. *Semantic Scope of Indus Inscriptions Comprising Taxation, Trade and Craft Licensing, Commodity Control and Access Control: Archaeological and Script- Internal Evidence (January 2, 2023)*.
- Ashfaque, S. M. (1977). Astronomy in the Indus valley civilization: A survey of the problems and possibilities of the ancient Indian astronomy and cosmology in the light of Indus script decipherment by the Finnish scholars. *Centaurus*, 21(2), 149-193.
- Bakker, H. T. (2008). Mansar. *The Discovery of Pravaresvara and Pravarapura, Temple and Residence of the Vakataka King Pravarasena II*. Rijksuniversiteit Groningen. Universiteitsbibliotheek.
- Basu, J.R. (1980). Introduction of Veda's.
- Basu, S.N (1906). The seventeenth part edited encyclopedia. PP. 586-587.
- Beinorius, A. (2003). The followers of the stars: On the early sources and historical development of Indian astrology. *Acta Orientalia Vilnensia*, 4, 119-149.
- Bernal, M. (1990). Cadmean Letters: *The Transmission of the Alphabet to the Aegean and Further west Before 1400 BC*. Eisenbrauns.
- Bhandarkar, D. R. (1989). *Some Aspects of Ancient Indian Culture*. Asian Educational Services.

- Bhattacharjya, S. K. (2000). *Role of STs in the Assam Legislative Assembly since 1972* (Doctoral dissertation, University of North Bengal).
- Bhowmik, K. (1992). A guide to manuscript reading. *Bangla academy*.
- Buhler, G. (1883). Inscriptions: I. the Nanaghat Inscriptions. *Report on the Elura Cave Temples and the Brahmanical and Jaina Caves in Western India*, by Jas. Burgess. *Archaeological Survey of Western India*, 5, 59-74.
- Bühler, G. (1898). *On the Origin of the Indian Brahma Alphabet: Together with Two Appendices on the Origin of the Kharosthe Alphabet and of the So-called Letter-numerals of the Brahmi*. De Gruyter.
- Bühler, J. G. (1904). Indian Paleography. Edited as an Appendix to The Indian Antiquary 33, by John Faithfull Fleet.
- Coningham, R. A., Allchin, F. R., Batt, C. M., and Lucy, D. J. C. A. J. (1996). Passage to India? Anuradhapura and the early use of the Brahmi script. *Cambridge Archaeological Journal*, 6(1), 73-97.
- Dani, A. H. (1963). Indian palacography. Oxford: Oxford university press. Daniels, P. T. (2017). Writing systems. *The handbook of linguistics*, 75-94.
- Daniels, P. T. (2019). Indic scripts: History, typology, study. *Handbook of literacy in Akshara orthography*, 11-42.
- Diringer, D. & Regensburger, R. (1968). *The alphabet (Vol. 2)*. London.
- Hutchinson. Duhan, P. (2022). Origin of Brahmi Script from Logographic Elements: An Analysis. *Integrated Journal for Research in Arts and Humanities*, 2(5), 18-24.
- Falk, H. (1993). *Schrift im alten Indien: ein Forschungsbericht mit Anmerkungen* (Vol. 56). Gunter Narr Verlag.
- Farajova, M. (2011). Gobustan: Rock Art Cultural Landscape. Adoranten, 41.
- Fischer, S. R. (2003). *History of Writing*. Reaktion books.
- Fischer, S. R. (2004). A History of Reading.
- Guha, S. (2004). Speaking historically: The changing voices of historical narration in Western India, 1400-1900. *American Historical Review*, 109, 1084-1103.
- Hackh, I. W. (1927). The history of the alphabet. *The Scientific Monthly*, 97- 118.
- Hetzron, R. (2003). Afroasiatic languages. In *The world's major languages* (pp. 645- 653). Routledge.
- Hosne, A. C. (2014). Assessing Indigenous Forms of Writing: José de Acosta's View of Andean Quipus in Contrast with Chinese "Letters". *Journal of Jesuit Studies*, 1(2), 177-191.
- Islam, M. A. I. (2023). Ancient Sanskrit Makes Remembering The Past Linguistic History And Culture: Current Influence In Bangladesh. *Eastern Journal of Languages, Linguistics and Literatures*, 4(2), 1-14.
- Jones, R. (1986). The origins of the Malay manuscript tradition. In *Cultural Contact and Textual Interpretation* (pp. 121-143). Brill.
- Karpik, S. (2023). Light on Epigraphic Pali: More on the Buddha Teaching in Pali. *Journal of the Oxford Centre for Buddhist Studies*, 23.
- Klingender, F. (2019). *Animals in Art and Thought: To the End of the Middle Ages* (Vol. 28). Routledge.
- Kunchukuttan, A., Puduppully, R. & Bhattacharyya, P. (2015, June). Brahmi-Net: A transliteration and script conversion system for languages of the Indian subcontinent. In Proceedings of the 2015 conference of the North American chapter of the association for computational linguistics: demonstrations (pp. 81-85).
- Lal, K. (2006). Peacock in Indian art, thought and literature. Abhinav Publications.
- McGee, M. C. (1980). The "ideograph": A link between rhetoric and ideology. *Quarterly journal of speech*, 66(1), 1-16.
- Mukherjee, S. (2021). Sindhi language and its history.
- Nanda, J. N. (2005). *Bengal: the Unique State*. Concept Publishing Company.
- Olson, D. R. (1995). 4 Writing and the mind. *Sociocultural Studies of Mind*, 95.



- Olson, D. R. (1996). Towards a psychology of literacy: On the relations between speech and writing. *Cognition*, 60(1), 83-104.
- Oza, P. (2022). Buddhism and spread of religion through the Inner Nuances of Caves- A case study of Western India. Available at SSRN 4036075.
- Patel, P. G. (1995). Brahmi Scripts Orthographic Units and Reading Acquisition. In *Scripts and Literacy: Reading and Learning to Read Alphabets, Syllabaries and Characters* (pp. 265-275). Dordrecht: Springer Netherlands.
- Rahman, T. (1996). Languages of the proto-historic Indus Valley. *Mankind quarterly*, 36(3), 221.
- Robinson, A. (2008). Deciphering vanished scripts.
- Roy, A. K. (1984). A History of the Jains. Gitanjali.
- Salomon, R. (1998). *Indian Epigraphy: A Guide to the Study of Inscriptions in Sanskrit, Prakrit, and the Other Indo-Aryan Languages*. Oxford University Press.
- Salomon, R. G. (1996). Brahmi and kharoshthi. The world's writing systems, 373-383.
- Scharfe, H. (2002). Kharosti and brahmi. *The Journal of the American Oriental Society*, 122(2), 391-394.
- Schmandt-Besserat, D. (1992). Before Writing, vol. I: from counting to cuneiform (Vol. 1). University of Texas press.
- Schopen, G. (1987). The Inscription on the Kuṣān Image of Amitābha and the Character of the Early Mahāyāna in India. *Journal of the International Association of Buddhist Studies*, 99- 137.
- Shaw, J. (2004). Nāga sculptures in Sanchi's archaeological landscape: Buddhism, Vaiṣṇavism, and local agricultural cults in Central India, first century BCE to fifth century CE. *Artibus Asiae*, 5-59.
- Silk, J. A. (2013). Kern and the study of Indian Buddhism: With a speculative note on the Ceylonese Dhammarucikas. *Journal of the Pali Text Society*, 31, 125-154.
- Sims-Williams, N. (2012). Bactrian historical inscriptions of the Kushan period. *The Silk Road*, 10, 76-80.
- Singh, A. P. & Kushwaha, A. K. (2019). Analysis of segmentation methods for Brahmi Script. *DESIDOC Journal of Library & Information Technology*, 39(2).
- Singh, T. S. (2014). The Endless Kabaw Valley: British Created Visious Cycle of Manipur, Burma and India. Quills Ink Publishing.
- Sircar, D. C. (1957). Inscriptions of Asoka. Publications Division Ministry of Information & Broadcasting.
- Siromoney, G. (1982). The origin of the Tamil script. *Tamil Studies*, 2(1), 8-23.
- Slingerland, E., Monroe, M. W., Sullivan, B., Walsh, R. F., Veidlinger, D., Noseworthy, W., & Spicer, R. (2020). Historians respond to Whitehouse et al. (2019)," Complex societies precede moralizing gods throughout world history". *Journal of Cognitive Historiography*, 5(1-2), 124-141.
- Sproat, R. (2006). Brahmi-derived scripts, script layout, and segmental awareness. *Written Language & Literacy*, 9(1), 45-66.
- Subrahmanyam, R. (1966, January). An early Brahmi inscription from Guntupalli. In *Proceedings of the Indian History Congress* (Vol. 28, pp. 114-121). Indian History Congress.
- Tagore, R.G. (1978). History of Sanskrit alphabet.
- Unger, J. M. & De Francis, J. (1995). Logographic and semasiographic writing systems: A critique of Sampson's classification. *Scripts and literacy: Reading and learning to read alphabets, syllabaries and characters*, 45-58.
- Upasak, C. S. (1959). *The History and Development of Mauryan Brahmi Script*. University of London, School of Oriental and African Studies (United Kingdom).
- Wink, A. (2002). *Al-Hind: The Slavic Kings and the Islamic conquest, 11th-13th centuries* (Vol. 2). Brill.
- Winternitz, M. (1985). History of Indian literature. Motilal Banarsidass Publ.
- Young, M. & Cook, A. (2023). Just scratching the surface: Post-fire engravings as ancient Andean writing. *Journal of Anthropological Archaeology*, 70, 101510.