
Cultural Nationalism in Bal Gangadhar Tilak's *Orion; or, Researches into the Antiquity of the Vedas*

Parishmita TayeResearch Scholar, Department of English,
Rajiv Gandhi University, Arunachal Pradesh.

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Abstract

This paper examines Bal Gangadhar Tilak's seminal 1893 treatise, *The Orion; or, Researches into the Antiquity of the Vedas*, as a revolutionary instrument of Indian cultural nationalism and anti-colonial intellectual resistance. During the late nineteenth century, British imperial historiography strategically compressed Vedic chronology to roughly 1200 BCE. This short timeline served to justify the colonial *mission civilisatrice* by framing Indian history as inherently primitive and stagnant.

Tilak systematically dismantled this Eurocentric narrative by bypassing subjective philological estimates in favor of the immutable laws of celestial mechanics. By calculating the precession of the equinoxes preserved within Vedic hymns and myths, he mathematically demonstrated that the earliest strata of the Rigveda date back to at least 4500 BCE.

This study provides a detailed textual analysis of Tilak's methodology, illustrating how he decoded complex sacrificial cycles and astronomical myths into precise scientific records. Furthermore, it explores the text's profound political afterlife, showing how Tilak weaponized empirical science to restore indigenous psychological self-confidence. Therefore, *Orion* transformed the field of Indology from an apparatus of colonial governance into a site of reclamation, anchoring the political demand for *Swaraj* in an unassailable, ancient heritage.

Keywords: Cultural Nationalism, Vedic Antiquity, Precession, Intellectual Resistance, Bal Gangadhar Tilak

Introduction

The intersection of philology, historical chronology, and political subversion forms one of the most compelling chapters in the history of colonial resistance, serving as a critical locus where academic inquiry and imperial governance violently collided. In late nineteenth-century British India, the deployment of intellectual scholarship emerged not as a detached,

esoteric pursuit, but as a primary battleground against European colonial hegemony. Academic inquiries into ancient texts were rarely ever purely speculative or neutral exercises; instead, they functioned as deeply political projects designed either to legitimize foreign rule or to dismantle its psychological foundations.

British imperial historiography, heavily influenced by the stark utilitarian models of James Mill, the early administrative histories of Vincent Smith, and the linguistic frameworks of early European philologists, had consistently and strategically operationalized a truncated chronology for Indian civilization. By systematically relegating the composition of the earliest Vedic literature to a relatively recent horizon of roughly 1200 BCE, colonial administrators and Western Indologists effectively constructed an intellectual narrative that framed Indian history as short-lived, derivative, and perpetually stagnant. This calculated compression of the subcontinent's historical timeline served a vital dual purpose for the British Raj. On one hand, it sustained the moral imperatives of the *mission civilisatrice*, the 'civilizing mission' by presenting India as a land lacking long-term, autonomous historical development, thereby requiring the paternalistic guardianship of an enlightened European master. On the other hand, it actively eroded the psychological self-confidence and cultural agency of the colonized indigenous intelligentsia, convincing them that their ancestors were mere primitive nomads when European classical antiquity was already dawning.

It was precisely within this suffocating environment of intellectual and political subjugation that Bal Gangadhar Tilak published his seminal astronomical and philological treatise, *The Orion; or, Researches into the Antiquity of the Vedas*, in 1893. While popular history primarily recognizes Tilak as a fiery political agitator, the "Lokamanya" (revered by the people) who would later galvanize millions with his radical declaration that *Swaraj* (self-rule) was his birthright, he was also an exceptionally astute mathematician, classicist, and Sanskritist.

In *Orion*, Tilak chose to completely bypass the speculative, highly subjective linguistic timelines that dominated Western academic circles. Instead, he turned his analytical gaze toward internal mathematical and astronomical references embedded directly within the layers of the Vedic hymns and *Brahmanas*. By utilizing the precise, immutable calculations of celestial mechanics, specifically the slow, backward shift of constellations known as the precession of the equinoxes, Tilak demonstrated that the earliest strata of the Rigveda could not have been composed later than 4500 BCE.

This paper argues that Tilak's *Orion* operates as a foundational, revolutionary document of Indian cultural nationalism that drastically altered the landscape of anti-colonial resistance. By scientifically establishing an immensely ancient, sophisticated, and autonomous heritage for the Vedic people, the text systematically deconstructed the core

tenets of Western cultural and racial superiority. Tilak's scholarship functions as a highly sophisticated form of epistemic disobedience; he masterfully utilized the exact empirical, scientific tools valued by the European Enlightenment to validate the accuracy of the native oral and textual tradition. Through a rigorous, expanded investigation into the socio-political background of late-Victorian India, the text's specific definitions of cultural nationalism, and a detailed, component-by-component analysis of its core textuery evidence, this study explores how Tilak brilliantly transformed passive astronomical observations into a protective shield for cultural preservation and an offensive intellectual weapon against British colonial rule.

Intellectual and Political Profile: A Biography of Bal Gangadhar Tilak

To fully grasp the symbiotic relationship between mathematical scholarship and political radicalism in *Orion*, one must examine the life of its author. Bal Gangadhar Tilak was born on July 23, 1856, into a middle-class Chitpavan Brahmin family in Ratnagiri, a coastal district in the Bombay Presidency (qtd. in Pradhan 4). Raised in an environment steeped in traditional Sanskrit learning yet rapidly confronting the structural realities of British colonial administration, Tilak developed a dual intellectual fluency. He excelled in Western empirical sciences, graduating with a Bachelor of Arts in Mathematics from Deccan College, Pune, in 1877, followed by a Bachelor of Laws from Bombay University in 1879 (11).

Rather than channeling his elite legal credentials into a lucrative career within the British judicial apparatus, Tilak dedicated his early life to indigenous educational reform. Believing that true national awakening required an education independent of colonial control, he co-founded the New English School in 1880 and the Deccan Education Society in 1884, which subsequently established Fergusson College in Pune (18). Through these institutions, Tilak sought to cultivate a new generation of Indian youths who possessed both Western analytical tools and a deep, uncompromised reverence for their own cultural heritage.

Tilak's entry into public consciousness widened dramatically in 1881 when he assumed control of two influential newspapers: the Marathi-language *Kesari* (The Lion) and the English-language *Mahratta* (22). Through these organs, he transformed political discourse from elite constitutional petitions into a vibrant, populist critique of colonial economics and cultural erosion. He systematically revived traditional cultural symbols to bypass colonial bans on political assembly, transforming the private worship of Ganesha into a massive, public festival (*Ganesh Utsav*) and establishing the *Shivaji Utsav* to commemorate the seventeenth-century Maratha warrior-king who successfully resisted imperial hegemony (45). These efforts earned him the popular honorific "Lokamanya", he who is accepted and revered by the people. As a leading figure in the radical faction of the Indian National Congress alongside Lala Lajpat Rai and Bipin Chandra Pal (the famous *Lal-Bal-Pal* triumvirate), Tilak fiercely opposed the moderate strategy or pleading for constitutional

concessions from the British Crown. His unwavering defense of Indian sovereignty resulted in multiple long-term imprisonments for sedition, most notably a brutal six-year exile to Mandalay Prison in Burma from 1908 to 1914, during which he authored *Gita Rahasya*, a monumental commentary transforming the *Bhagavad Gita* into a gospel of selfless, political action (112). Until his death on August 1, 1920, Tilak embodied the dual persona of the profound *Shastri* (scholar-sage) and the uncompromising political revolutionary, an intellectual duality that reached its apex in the pages of *Orion*.

Background and Context: Imperial Historiography and the Politics of Time

To fully comprehend the radical nature of *Orion*, one must examine the specific historiographical environment of late nineteenth-century India. Following the consolidation of British rule under the Crown after 1858, the colonial apparatus increasingly relied on ideological structures to legitimize its presence. Imperial historiography sought to convince the educated Indian elite that their native traditions were inherently unscientific, ahistorical, and primitive. A central pillar of this strategy was control over historical chronology. European scholars, restricted by biblical timelines that placed the creation of the universe around 4004 BCE, were deeply reluctant to attribute a vast antiquity to non-European civilizations.

Even Max Müller, who demonstrated significant empathy toward Sanskrit literature, adopted a conservative timeline for the Vedic period. Müller divided Vedic literature into four distinct chronological layers: the *Chhandas*, *Mantra*, *Brahmana*, and *Sutra* periods. Allotting an arbitrary two centuries to each period, he concluded that the oldest hymns of the *Rigveda* were composed between 1200 BCE and 1000 BCE. While Müller explicitly stated that this timeline was merely a minimum estimate and that its true age might never be fully known, Western academia quickly converted his cautious hypothesis into an immutable dogma. This short chronology carried profound political implications. If the foundations of Indian civilization were only slightly older than classical Greece, then the narrative of an ancient, unbroken, and sophisticated Indian heritage could be dismissed as native mythology. Tilak recognized that political subjugation was invariably preceded and sustained by intellectual subjugation. The British educational system in India, established under Thomas Babington Macaulay's 1835 Minute on Education, sought to create a class of individuals Indian in blood and colour, but English in taste, in opinions, in morals, and in intellect. By teaching Indians that their most sacred and ancient texts were the product of primitive, nomadic pastoralists who had only recently arrived in the subcontinent, the colonial state undermined native self-respect. Tilak understood that a political movement for *Swaraj* could not succeed if the people remained intellectually paralyzed by a sense of cultural inferiority. Furthermore, the late nineteenth century witnessed the rise of the Aryan Invasion within European comparative philology. This model frequently depicted the composers of the Vedas as primitive tribes whose cultural achievements were minimal until influenced by later contact or external developments. Tilak's educational background in mathematics and Sanskrit at Deccan College provided him with a unique methodological advantage. He

realized that while philological arguments were malleable and prone to subjective interpretation, astronomical calculations based on the immutable laws of celestial mechanics were absolute. If the Vedic texts contained explicit accounts of celestial configurations that could only have occurred thousands of years before Christ, Western scholars would be forced to reckon with mathematical reality. *Orion* was thus conceived not as a nostalgic romanticization of the past, but as a rigorous, evidence-driven intervention designed to reclaim Indian history from imperial distortion.

Cultural Nationalism and Intellectual Resistance

Cultural nationalism differs fundamentally from political nationalism in its emphasis on the defense, revitalization, and preservation of a community's unique cultural identity, language, and heritage. While political nationalism focuses on state structures, boundaries, and a legal right, cultural nationalism asserts that a nation's true sovereignty resides in its collective consciousness and historical memory. In the colonial Indian context, Bal Gangadhar Tilak was a pioneering theorist of this approach. He argued that a nation could not be built on the mere imitation of foreign institutions; it required an organic connection to its historical roots.

In *Orion*, Tilak uses the preservation of culture as a deliberate strategy of anti-colonial resistance. By positioning the Vedas as an incredibly sophisticated repository of astronomical and mathematical knowledge, Tilak challenged the Eurocentric evolutionary hierarchy that placed the modern West at the absolute pinnacle of human intellectual achievement. He demonstrated that at a time when the ancestors of modern Europeans were living in prehistoric conditions, the Vedic seers (*rishis*) were systematically observing the night sky, tracking the movements of the sun and moon, and formulating complex calendar systems to regulate their sacrificial rituals.

The reclamation of ancient heritage was essential for restoring the nation's psychological equilibrium. As Tilak notes in his opening chapter, the current views held by Western scholars regarding Vedic antiquity were based on "the assignment of arbitrary periods of time to the different strata into which the Vedic literature is divided" (1). By exposing the arbitrary nature of Western timelines, Tilak liberated the text from the confines of colonial epistemology. He transformed the Veda from a dead artifact analyzed by foreign philologists into a living, dynamic testament to the indigenous intellectual tradition.

The form of this resistance was remarkably subtle yet powerful. Because *Orion* was written in English and framed within the rigorous conventions of Western academic discourse, complete with cross-references to Greek, Roman, and Persian mythologies, the British administration could not easily dismiss it as native propaganda or seditious writing. It was a critique delivered from within the tent of empirical science. Tilak used the very tools popularized by the European Enlightenment, astronomy, mathematics, and critical text-validation, to dismantle the cultural justifications of the British imperial project. By proving

that Indian civilization possessed a deep, independent antiquity, Tilak provided his compatriots with the intellectual framework necessary to demand political self-determination. If India was the cradle of an advanced, scientific civilization, it had no moral or intellectual obligation to remain under the tutelage of a foreign power.

Detailed Analysis of the Text

The Limits of Comparative Philology

Tilak begins his treatise by conducting a critical evaluation of contemporary Western Indology, specifically targeting the chronological frameworks established by Max Müller. He acknowledges the immense contribution of European philologists in editing and publishing Vedic manuscripts, but he firmly rejects their methodological monopoly over historical interpretation. Tilak argues that comparative philology, while useful for establishing linguistic relationships, is an inherently imprecise tool for determining absolute dates.

He points out that Max Müller's assignment of two hundred years to each literary period was entirely hypothetical, noting that "they are all minimum estimates" that modern scholars have incorrectly treated as definitive boundaries (2). Tilak highlights the danger of treating these minimal estimates as historical ceilings, showing how Western scholarship had inadvertently created a rigid dogma out of a mere guess. He states that if text-critical evidence of a different nature could be found, the philological timeline would have to be abandoned. This part establishes the core methodological thesis of *Orion*: whenever literary texts contain specific, empirical descriptions of natural phenomena, such as the positions of stars and planets during key seasonal events, historians must prioritize astronomical computation over linguistic speculation.

The Sacrificial Calendar and the Year-Cycle

Tilak turns his attention directly to the structure of Vedic rituals, demonstrating that the performance of the Vedic *Yajna* (sacrifice) was intrinsically linked to the observation of the solar year. He argues that the Vedic religion was not a collection of primitive superstitions, but a highly organized ritual system that depended on an accurate calendar. The sacrifices were divided into daily, bi-weekly, monthly, and seasonal cycles, all designed to mimic and track the movement of the sun.

Central to Tilak's argument is the concept of the *Gavamayanam*, or the intercalary sacrifices, which were utilized by the ancient priests to correct the discrepancy between the lunar and solar years. He analyzes passages from the *Taittiriya Samhita* and the *Aitareya Brahmana* to show that the Vedic year was solar and commenced with the vernal equinox. Tilak argues that the position of the equinox served as the fundamental anchor point for the entire calendar. Because the equinox slowly recedes along the ecliptic over time due to the Earth's axial precession, a phenomenon known as the precession of the equinoxes, the specific constellations associated with the commencement of the sacrifice inevitably changed across different historical eras. Tilak maintains that if the texts preserve distinct memories of

different constellations occupying the vernal equinox, they provide an indelible timeline of Vedic history.

The Krittika Period and the Pleiades

Before presenting his calculations for the earliest Vedic period, Tilak examines the subsequent chronological layer: the *Krittika* (Pleiades) period, which corresponds to the era of the *Brahmanas*. This exploration serves as a vital transition point, allowing Tilak to validate his astronomical methodology by applying it to a period that was closer to accepted historical timelines. Tilak highlights a celebrated passage from the *Satapatha Brahmana*, which explicitly states that the *Krittikas* “do not swerve from the east,” (42) whereas all other constellations do.

Using astronomical calculations, Tilak demonstrates that the Pleiades could only have risen due east at the time of the vernal equinox around 2500 BCE. He notes that “the *Krittikas* were then on the equator, or that they rose due east” (42). He supplements this finding with the discoveries made by his contemporary, Shankar Balkrishna Dixit, who independently confirmed that this specific alignment was mathematically precise for the twenty-fourth century before Christ. By demonstrating that the *Brahmanas* must be dated to at least 2500 BCE, already a thousand years older than the standard colonial timeline for the *entire* Vedic corpus, Tilak successfully exposed the severe limitations of Max Müller’s chronology. This section establishes that the astronomical descriptions in the texts were not poetic metaphors, but accurate observations of the night sky.

The Mriga or Orion Period (4500 BCE)

The analytical heart of the treatise lies in Tilak’s radical and enduring thesis: that the oldest hymns of the *Rigveda* were composed when the vernal equinox was located in the constellation of *Mriga* or Orion, pointing directly to a period around 4500 BCE. To prove this, Tilak conducts a forensic examination of Vedic mythology, philology, and astronomy, focusing on the figures of *Prajapati*, *Rudra*, and the changing names of the Vedic months. Tilak begins by examining the word *Agrahayani*, a traditional Sanskrit synonym for the constellation *Mrigashiras* (the deer’s head, located within Orion). He performs a meticulous linguistic analysis of the term, noting that *Agrahayani* literally means ‘commencing the year’ (from *Agra* meaning first, and *Hayana* meaning year). Tilak argues that this lexical definition is a fossilized linguistic record of a time when the solar year actually began when the sun entered the constellation of Orion. For *Mrigashiras* to mark the vernal equinox, the observer must have lived between 4000 BCE and 5000 BCE. Tilak explicitly states: “We are thus led to place the commencement of the year in the Orion period at the vernal equinox” (85).

To reinforce this philological evidence, Tilak reconstructs the profound, ancient myth of *Prajapati* (the Creator) transforming himself into a deer and being shot by *Rudra*’s arrow, an account detailed in both the *Rigveda* and the *Aitareya Brahmana*. Tilak demonstrates that this myth is a vivid, allegorical description of the celestial architecture of

the Orion constellation. The three stars that form the belt of Orion represent the arrow of the hunter (Rudra), while the surrounding stars map out the form of the fleeing deer (Prajapati). Tilak links this configuration to the transformation of the sacred thread worn by Brahmins, known as the *Yajnopavita*. He asserts that the sacred thread itself reflects these ancient stellar coordinates, where the configuration of Orion's belt served as the original prototype for the ritual vestment. Through this synthesis, Tilak shows how daily religious rituals in India preserved the memory of an astronomical alignment that occurred over six thousand years ago. He observes that "the constellation of Mriga is called the head of Prajapati, or the sacrificed victim" (101), establishing an unbreakable link between cosmology, ritual practice, and historical memory.

The Ribhus and the Solstices

Tilak expands his inquiry by examining the myth of the *Ribhus*, a group of semi-divine artisans in the Rigveda who are celebrated for their extraordinary skills and their ability to renew the youth of their parents. According to the hymns, the *Ribhus* sleep for twelve days in the house of the sun (*Agohya*) during the winter solstice before awakening to commence their creative labors anew.

Tilak applies a mathematical framework to this narrative, demonstrating that the twelve days of slumber represent the intercalary days required to harmonize the lunar year of 354 days with the solar year of 365 days. He argues that the positioning of this solar rest period at the winter solstice provides another critical chronological anchor. By analyzing the constellations that the sun occupied during these twelve days, Tilak provides further cross-verification for his Orion thesis. He illustrates that the myths of the *Ribhus* are not arbitrary fabrications, but sophisticated mathematical allegories designed to preserve vital calendrical calculations across generations through oral transmission. As he states, "the twelve days of the Ribhus are nothing but the twelve intercalary days required to complete the solar year" (166), validating the scientific sophistication of the Vedic seers.

Comparative Mythology: The Indo-Iranian Connection

Recognizing that Western critics might dismiss his interpretations as isolated anomalies within Sanskrit literature, Tilak devotes considerable attention to comparative mythology. He extends his investigation to the sacred texts of ancient Iran, specifically the *Avesta* of the Zoroastrian tradition. Tilak argues that since the Indo-Aryans and the Iranians shared a common ancestral origin before their geographic separation, the core elements of the Orion calendar should be visible in the oldest layers of Iranian mythology.

He conducts a comparative analysis of the Vedic deity *Vritra* and the Avestan demon *Verethragna*, as well as the accounts of the celestial hound (*Shvana*) in the Rigveda and the sacred dogs in the *Vendidad*. Tilak demonstrates that the Avestan texts contain clear references to a calendar system where the year commenced with the vernal equinox in Orion, matching the Rigvedic data. He observes that "the correlation between the Vedic and the Avestic traditions is so close that it cannot be accidental" (201). This cross-textual correlation

was methodologically vital. By demonstrating that the astronomical traditions of India and Iran independently preserved the same celestial coordinates, Tilak effectively neutralized the claim that his findings were based on a biased or idiosyncratic reading of Sanskrit texts. He proved that the Orion calendar was a shared heritage of the undivided Indo-Iranian peoples, pushing the antiquity of their joint civilization deep into the fifth millennium BCE.

The Reception of *Orion* and Its Political Afterlife

The publication of *Orion* in 1893 sent shockwaves through both international academic circles and the nascent political landscapes of British India. Initially, Western Indologists reacted with a mixture of skepticism and profound astonishment. The dominant academic paradigm was so firmly wedded to Max Müller's conservative timeline that any attempt to push back the antiquity of civilization by over three thousand years was viewed as a direct challenge to Eurocentric authority.

However, because of the undeniable mathematical precision of Tilak's arguments, several of the world's most eminent scholars were forced to acknowledge the validity of his work. Hermann Jacobi, an illustrious German Indologist working independently in Bonn, arrived at remarkably similar conclusions regarding Vedic antiquity at almost the exact same time, using different astronomical passages. This extraordinary convergence of independent research lent immense credibility to Tilak's thesis. Renowned scholars such as Maurice Bloomfield of Johns Hopkins University, Auguste Barth, and Georg Bühler openly expressed their admiration for Tilak's rigorous dedication. Bloomfield, during an address before the American Oriental Society, praised *Orion* as an exceptional leap forward in Vedic studies, acknowledging that the force of Tilak's mathematical arguments could not be easily ignored. Even Max Müller, the primary target of Tilak's chronological critique, recognized the sheer genius of the author. This academic mutual respect led to an extraordinary historical intervention. When Tilak was subsequently arrested and sentenced to rigorous imprisonment by the British colonial government in 1897 on charges of sedition for his political writings in his newspaper *Kesari*, it was Max Müller who spearheaded a petition to the Crown demanding Tilak's release. Müller argued that Tilak was a scholar of international repute whose intellectual pursuits were of immense value to humanity. While in his prison cell, Tilak was permitted to receive books, allowing him to continue the research that culminated in his next monumental work, *The Arctic Home in the Vedas*.

Within India, the political afterlife of *Orion* was transformative. By demonstrating that Indian civilization possessed a deep, independent, and scientifically verified antiquity, Tilak provided the ideological foundation for the radical faction of the Indian National Congress. The text completely undermined the psychological rationale for British rule. It was no longer possible for English administrators to argue that they were introducing science, mathematics, and governance to a continent that had historically known only primitive stagnation. *Orion* became an intellectual shield for cultural preservation, instilling a profound

sense of national pride in generations of freedom fighters, and proving that *Swaraj* was not an imitation of Western democracy, but the reclamation of an ancient, indigenous sovereignty.

Conclusion

Bal Gangadhar Tilak's *Orion or Researches into the Antiquity of the Vedas* remains a towering monument of intellectual resistance and a foundational text of Indian cultural nationalism. Writing in an era when the British Empire utilized historical chronology as an ideological weapon to subjugate the colonized mind, Tilak recognized that true liberation required the reclamation of historical memory. By stepping away from the speculative and often biased boundaries of European comparative philology, he anchored his research in the immutable laws of mathematics and astronomy. His calculations of the precession of the equinoxes elegantly demonstrated that the ancient Vedic *rishis* were sophisticated observers of the cosmos as early as 4500 BCE, long before the dawn of Western classical civilization. For modern literature experts and cultural historians, *Orion* serves as an extraordinary case study in how textual analysis, mythology, and science can be weaponized against imperial hegemony. Tilak did not merely study the past; he preserved and defended it from colonial erasure. He demonstrated that the intricate myths of Prajapati, Rudra, and the Ribhus were not primitive fantasies, but a brilliant oral technology designed to transmit precise scientific data across millennia. In doing so, Tilak transformed the field of Indology from an instrument of colonial governance into a site of indigenous reclamation. *Orion* provided the intellectual scaffolding that allowed the Indian people to recover their collective self-confidence, ensuring that the demand for political independence was firmly rooted in a deep, scientific, and unassailable ancient heritage.

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