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# Bediuzzaman Said Nursi and His Excellence in Modern Science in the Post-Caliphate Era

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## Abstract

Bediuzzaman Said Nursi was a Turkish scholar who experienced three critical phases of political transition; the fall of the Ottoman Caliphate, the establishment of the Republic of Türkiye, and the Islamic resurgence. During this period, he actively defended Islam, which was threatened by secular ideologies, through the application of science and scientific thought. The disintegration of the post-caliphate education system, which separated science from religious and divine perspectives, left the Muslim community in Türkiye in a state of dilemma and confusion without proper guidance. Amid this tension, Badiuzzaman Said Nursi challenged the dominance of Western science through his Risale-i Nur writings—a thematic interpretation of the Quran that incorporates the values of natural sciences and astronomy. Thus, this study aims to explore his

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background in natural sciences in light of the educational weaknesses of that time. To achieve this objective, the study employs a qualitative research framework with library research as the primary method of data collection. Data analysis is conducted using conventional text analysis methods. The findings reveal that Bediuzzaman Said Nursi's excellence in science developed organically, uninfluenced by specific individuals or circumstances. Indeed, he deserves recognition as a modern scientific figure who carries forward the legacy of scientists from Islamic civilization.

**Keywords**: Bediuzzaman Said Nursi; Science; Natural science; Modernization; Ottoman empire

## Introduction

The Post-Caliphate Era refers to the establishment of the Republic of Türkiye following the dissolution of the Ottoman Caliphate after World War I. During this period, the education system introduced by the Republic of Türkiye was based on Western science and technology. This initiative was a continuation of the weaknesses of the Ottoman Caliphate's educational system, which had been plagued by political, religious, and social crises due to Western intervention. Consequently, the process of radical secularization was implemented following the establishment of the Republic. However, the foundations of modern science education did not align with several aspects of Islamic perspectives and philosophy, as it was heavily influenced by secular and materialist ideologies.

Before World War I, the religious education system, which had been a cornerstone of knowledge in the Ottoman Empire, weakened due to the disorganization in administration, outdated curricula, and teaching methods (Khuluq, 2005). This prompted the government to address the situation by introducing an education system modeled on the West, which was then advancing through science and technology (Nursi, 2010). During the Tanzimat era, science and religious education were separated as part of an effort to secularize education. Science subjects were removed from the religious schools (*medrese*), and religious subjects were reduced, while the establishment of a secular education system, such as primary schools (*mekteb*), was streamlined with the support and funding from Christian missionaries (Ayub et al., 2019).

This situation led to the further marginalization of two other educational streams: the existing Sufi traditions, such as *al-takaya*, and the traditional *medrese*. Muslim society became divided based on their educational backgrounds, creating factions of both zealous and secular groups. The Muslim community was then burdened with superstitions, innovations (*bid'ah*), polytheism (*shirk*), deviations within Sufism, heretical groups, widespread oppression, excessive luxury, and contradictions leading to fragmentation (Al-Salabi, 2001). At the same time, those influenced by secularism rejected Islamic law, deeming it irrelevant to modernity and rational thought. As Lubis (2015) emphasizes, effective implementation of an integrated Islamic education system is critical for addressing this gap, ensuring that curricula reconcile contemporary scientific knowledge with Islamic values and principles. Therefore, the objective of this study is to explore the Nursi's educational background on natural science.

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## Methodology

This study adopts a qualitative approach aimed at gaining an in-depth understanding of the thoughts and contributions of the figure under investigation. Data collection is conducted through library research, examining both primary and secondary sources, including the four main books of Risale-i Nur; The Words, The Flashes, The Gleams and Nursi's biography besides journals, and related articles. The data obtained is then analyzed using a conventional textual analysis method, involving processes of classification, interpretation, and evaluation of the textual content. This approach enables the study to explore and analyze Nursi's uniqueness of learning modern science despite all the challenges and conflicts he faced at the time.

## Results and Discussion

*Cognitive Strength and the Natural Advantage of a Scientific Attitude*

Nursi was naturally endowed with an extraordinary intelligence quotient (IQ) from a young age, setting him apart from his peers. This distinction was evident in his intense curiosity, critical thinking, eagerness to explore, and his responsiveness to natural phenomena and his surroundings. Curiosity, as a driving force, plays a crucial role in learning science. In Nursi, this trait was exceptionally strong, making him an assertive individual who was not easily influenced, possessing a remarkable capacity for reasoning from a young age.

His extraordinary IQ was particularly demonstrated through his ability to memorize dozens of Islamic scholarly texts, including *hadith, tafsīr, sīrah, aqidah, fiqh*, Arabic grammar, and more, in a very short time. Among the texts he memorized were Ibn al-Subki's *Islamic Jurisprudence' book*, parts of *Qamus al-Uqyanus*, *Jam'u al-Jawāmi'*, *Matali'*, *Mirqat* and *al-Maqamat al-Haririyya*. He mastered works like *Jam'u al-Jawāmi'*, *Syarḥ al-Mawāqīf*, and *Ibn Hajar* in just 24 hours. At the age of 11, he memorized *Jam'u al-Jawāmi'* in one week and recited it in front of Sheikh Amin Efendi without making a single mistake. His brilliance was recognized as comparable to that of Bediuzzaman Hamdānī (968-1008). Thus, the title 'bediuzzaman' meaning 'the beautiful of age', was bestowed upon him in recognition of this extraordinary gift (Vahide, 2010). Nursi's prodigious memory was described as being like a camera, significantly influencing his capacity for deep reasoning and understanding of various matters.

Nursi excelled in his studies because he was highly skilled in metacognition which is define by researchers as an awareness and understanding of one's own thought processes (Guner & Erbey, 2022). This metacognitive skill is crucial as it helps individuals become self-directed learners, enabling them to assess their own understanding and adjust their approaches to achieve better outcomes. Since he according to the biography learned all modern sciences by independently and prioritized a certain topic in Islamic sciences curriculum, Nursi can be described as a proponent of self-directed and independent learning (Zamri, 2023).

In addition, Nursi demonstrated a high level of scientific attitude. According to Singh and Bai (2019), a scientific attitude refers to a complex behavior associated with the mental processes of scientists, who consistently respond when faced with problematic situations. This attitude encompasses

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rationality, curiosity, open-mindedness, intellectual objectivity, and suspended judgment (not rushing to conclusions). These qualities are evident in his writings in the Risale-i Nur, where he discussed issues objectively and emphasized logical reasoning. This unique trait served as a catalyst for his understanding and appreciation of the universe.

*Continued Support from the Government*

Due to Nursi's profound knowledge of Islamic studies and his remarkable debating skills, which astonished the scholars of Eastern Anatolia, he was invited by Governor Tahir Pasha to further his study of modern sciences at his palace in Van. The palace housed an extensive library with a vast collection of modern scientific references, including books, newspapers, and international journals. It also served as a meeting place for government officials, giving Nursi the opportunity to interact with them and stay informed about the current affairs of the Ottoman Caliphate. During his time there, Nursi dedicated himself to studying various fields of natural science and memorized 90 related books. His rapid mastery of these sciences surprised contemporary scientists. Among the fields he excelled in were chemistry, physics, astronomy, mathematics and geography, most of which he studied independently without the aid of a teacher. He became well-known for his expertise in these disciplines (Vahide, 2010) which is geography, chemistry, mathematic physics and astronomy. His expertise is stated as follows:

Nursi's Excellence in Inorganic Chemistry and Modern Geography

Nursi's mastery of inorganic chemistry left his assigned teacher astounded when he comprehended the entire principles of the subject within five days. A similar situation occurred with his geography instructor (Al-Nursi, 2011; Vahide, 2005; Ahmat, nd). However, Nursi admitted that he did not have the opportunity to fully grasp the principles of organic chemistry during his studies (Vahide, 2010). Inorganic chemistry seems to be more difficult compared to organic chemistry. According to Porterfield (2014), inorganic chemistry studies all the elements variety of compounds, the matter in interstellar space including the solar energy and technology produced from the earliest modern-human culture acting as a critical source for the application of modern technology. Basic compounds and solid-state inorganic compounds are widely used as core components in the fields of information technology, automotive industries, aerospace, and more. This field is also closely related to discoveries and advancements in medicine (Farrel, 2019). Due to his command of this subject, Nursi concluded that the Earth is a vast and complete chemical repository (Nursi, 2009). His focus on inorganic chemistry may have stemmed from the relevance of this field in the pre-modernization era, which required a modern approach to demonstrating the existence of God.

Mastery in Mathematics Surpassing Experts

In the field of mathematics, Nursi once developed a new algebraic formula and successfully defeated all mathematicians in a calculation competition. His intense dedication to solving certain mathematical problems led him to experience mental exhaustion for three years, requiring medical treatment. As a result, Governor Tahir wrote a letter to the Sultan, requesting that Nursi be treated at the Caliphate's expenses (Vahide, 2010). Nursi also wrote about the concept of

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mathematical probability and presented it to Governor Tahir, but the book was tragically lost in a fire that occurred at the palace. Since the original material could no longer be accessed, the details of the mathematical concept Nursi wrote about remain unclear, especially as it dealt with one of the more complex aspects of probability theory (Vahide, 2010; Dergisi, 2023).

Understanding Physics through '*Ilm al-Kalām*

Although Nursi mastered physics during his time at Pasha's palace, his initial exposure to the subject came through his study of tawhid (theology) within the framework of '*Ilm al-Kalām* (Islamic scholastic theology). This is evident because *Ilm al-Kalam* also discusses atoms, referred to as *dharrah* or *jawhar* (the smallest indivisible particle of matter) (Muhammad, 2017). In addition to debating atoms and their occurrences (atoms and accidents), '*Ilm al-Kalām* also delves into the concepts of space and time, change, and causality, which, in essence, are foundational discussions in physics, whose core study involves matter, motion, and energy (MacGinnis, 2022).

Nursi's mastery of '*Ilm al-Kalām* was demonstrated when he wrote a book on the subject and pioneered the concept of modern '*Ilm al-Kalām*. This was reflected in his explanations about atoms and causality, many of which were presented in the Risale-i Nur. Among them, he utilized the concept of causality and developed the notion of *'iqtirān'* (concomitance). This concept was later studied and found to coincide with the analysis of Muhammad Basil, an Iraqi physicist specializing in quantum physics (Isra, 2022). Tarhan (2021) also concluded in his book 'A Journey from Mind to Heart' that Nursi's understanding in physics is beyond the intellectual advancements of that era.

*Reasoning on Natural Phenomena and Knowledge of Astronomy*

Nursi's understanding and mastery of modern sciences during his time at Pasha's palace were further enhanced by his natural inclination towards observing natural phenomena. One of his early exposures to celestial events was witnessing an eclipse as a child, an experience shared with his mother, Nüriye. This incident is documented in his work *Al-Kalimat* as follows:

> "When I was a child, I saw a lunar eclipse. I asked my mother about
> this strange occurrence, and she said: 'A dragon is swallowing the moon.' I then asked, 'Why can we still see part of the moon?' My mother replied, 'Because the dragon is semi-transparent." (Nursi, 2010).

Nursi later reflected on this event during his exile in *Barla*:

> "For years, I pondered this childhood experience. I thought about it and would say, 'How could such a superstitious notion be uttered by someone as firm-minded as my mother?'" (Nursi, 2009)

In *The Gleams* (2008), Al-Nursi revisited the eclipse phenomenon after gaining a more scientific understanding, clarifying that what was once regarded as superstition was, in fact, a metaphor used by classical astronomers to help the general public grasp the concept of astronomy. He explained the phenomenon as follows:

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> "During a lunar eclipse, the moon passes through part of the Earth's shadow. This only happens during a full moon when the sun, Earth, and moon are aligned or nearly aligned. The shadow consists of two cone-shaped components, one within the other. Another cause of an eclipse is when the moon is near one of the two points where its orbit intersects with the Earth's orbit. Using metaphor, classical astronomers referred to these two components as 'the two great dragon tails'. They named these points of intersection the 'head' and 'tail'. When the moon nears the head and the sun approaches the tail, the Earth stands between them, causing the lunar eclipse. The metaphor above depicts the event as if 'the moon has entered the mouth of a dragon'. This scientific metaphor, once understood, permeated common language, leading to the belief that a dragon so large could swallow the moon." (Nursi, 2008)

*Life Experiences Leading to Astronomy and Geographical Interpretation of Quran and Hadith*

Nursi's life experiences, which took him from one region to another, greatly enhanced his reasoning and broadened his understanding of natural science within the framework of Qur'an and Hadith. During World War I, after the fall of Gewash, the last stronghold of Muslims in the East, Nursi was captured and taken to Kostroma, Siberia. However, he managed to escape following the Bolshevik Revolution (Mohamad et al., 2017). From Siberia, Al-Nursi had to traverse at least four European regions to return to Istanbul, passing through the Russian border. In Al-Lama'āt, Nursi recounts how his geographical skills, which he used during his journey through Warsaw (Poland), Vienna (Austria), and Sofia (Bulgaria) to Istanbul, made the journey remarkably easy—something he believed could not be achieved even by the most courageous of men (Al-Nursi, 2011a). This significant journey not only tested his geographical knowledge but also deepened his understanding of the world and, in turn, enhanced his interpretation of scientific concepts within the framework of the Islamic tradition. His travels gave him first-hand exposure to the diverse environments and intellectual climates of different regions, enriching his comprehension of the natural world and its relationship to divine revelation.

The journey from Kostroma to Warsaw, Vienna, Sofia, and Istanbul was undertaken by Al-Nursi alone. During his time in Kostroma, Nursi interpreted a Qur'anic verse, which mentions a condition that could make children age prematurely, referring to experiences of war, alienation, and extreme sorrow. He added that such effects could also be caused by geographical factors (Al-Nursi, 2011). Moreover, Nursi's participation in World War I (1914-1916) led to his capture by Russian forces on March 3, 1916, after which he was sent to a detention camp in Kostroma, Russia, where he was held for two years. However, the political turmoil that followed allowed Nursi to escape and return to Istanbul. The map detailing Nursi's

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journey from Kostroma to Istanbul is illustrated in the following figure:

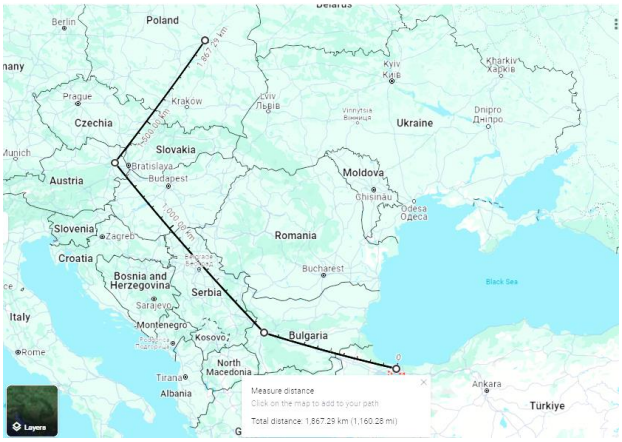

Figure 1: Maps showing Nursi's journey from Kostroma to Istanbul alone
Source: Google Maps

In his treatise *Asyrāṭ al-Sā'ah*, Nursi recounts his experience escaping from Russian captivity during World War I. He writes in the treatise:

> "If someone travels from there towards us by train for an entire day, they will witness the sun not setting for an entire month during the summer. If they travel by car at another time, they will see the sun shining. I was once in an area near this place when I was a prisoner of war in Russia." (Al-Nursi, 2023)

According to this account, Nursi witnessed an annual astronomical phenomenon that occurs near the North Pole. This experience was later studied by Salahuddin et al. (2018) who developed their findings into a geographic and astronomical analysis to validate Nursi's observations. Their research led to the conclusion regarding the movement of the Dajjal when emerging from his hiding place. The appearance of the Dajjal at the North Pole, as theorized by Nursi, highlights how astronomical knowledge was integrated with the prophetic hadith, yielding insights beyond conventional human understanding.

While the hadith mentioned in this context had never previously been interpreted scientifically, this study demonstrates that Nursi was the first scholar to boldly interpret the Hadith based on astronomy, geography, and local factors. This approach marked a significant advancement in reconciling religious texts with scientific phenomena.

*The Beauty of Türkiye as a Strategic Green Region in Understanding Biology*

The natural beauty of Türkiye, with its four distinct seasons, mountainous landscapes, and rich fauna, greatly contributed to Nursi's ability to comprehend and reflect upon the natural world. During his exile in Van, Nursi often isolated himself on Mount Ararat, the highest mountain in Türkiye, for contemplation and worship (Dewdney & Yapp, 2023). Additionally, he frequently visited other mountainous regions such as

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Başid, Feraşin, and Baytüşşebab (Vahide, 2010).

While exiled in Barla, Nursi wrote and revised sections of the Risale-i Nur in the mountainous areas. In the pine forests of Barla, he constructed two treehouses atop pine and cedar trees. From his observations of natural phenomena, Nursi drew on scientific principles to encourage others to contemplate and understand the existence of Allah SWT. Through his profound connection with nature, Nursi integrated his spiritual reflections with a deep appreciation for the natural world, using it as a means to inspire faith and intellectual thought.

Evidence indicating Nursi's understanding was influenced by these conditions is evident in his frequent connections between the natural world and human biology. This can be seen when Nursi imagines and correlates the structure of human bones with that of dry tree branches, draws analogies between the human circulatory system and the roots of trees that extend deep into the earth, and compares the leaves of trees to a mother's womb during pregnancy. Nursi's statements are quoted as follows:

> "[...] You see the dead trees come to life and grow green, but you draw no conclusions from their bones springing to life when like dry fire-wood, and so deem man's rising again unlikely." (Nursi, 2008)

> "[...] formation of trees in the air, orderly water channels and veins, like the circulation of blood in veins, occur with the same ease and order and with perfect wisdom in those hard, deaf rocks under the earth." (Nursi, 2008)

> "[...] Suddenly the huge tree turns its leaves into a mother's womb and a cradle for the eggs, and into a store full of a food like honey. Simply, in that way the tree, which is not fruit-producing, produces fruits bearing spirits." (Nursi, 2008)

*Cultural Background of Turkish Society Facilitating Scientific Exploration*

The culture of Turkish society under the rule of the Ottoman Empire was closely linked to Sufism and spiritual traditions, also significantly influenced Nursi's exploration and understanding of biology and astronomy. In biology, he stated that the movement of white blood cells fighting harmful bacteria is akin to the Mevlevi dance, where the dancers form beautiful patterns as they whirl. He stated this in The Gleams as follow:

> "[...] As for blood, created within it are two sorts of corpuscles. One of them, known as red corpuscles, distributes nutrients to the cells of the body; it conveys sustenance to the cells according to a Divine law (like merchants and food officials). The other sort are white corpuscles, which are fewer in number than the former. Their duty, like soldiers, is defence against enemies, such as illness. Whenever they undertake that

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> defence, with their two revolutions like Mevlevi dervishes, they take on a swift and wonderful state." (Nursi, 2008)

> "[...] We see that in particular the cells known as red corpuscles and white corpuscles in the blood, which are formed of minuscule particles, move, like the planets, with two well-ordered motions like Mawlawi (Mevlevi) dervishes." (Nursi, 2008)

Additionally, this dance, which symbolizes the Solar System in sufis's understanding according to Schimmel (1975). This, indirectly, reinforces Nursi's reasoning that the Earth's rotation around the Sun leads to remarkable natural phenomena, particularly those occurring on Earth, such as earthly seasons, daily changes, heavenly maneuvers, alternation of day and night and others. He also stated that this awesome phenomenon could never happen to another stars or planets even if they're larger or exist million years before Earth showing that all these bounties are from the Most Gracious and the Most Merciful; Allah SWT. He expressed this as follows:

> "[...] If not attributed to an All-Independent, Single One Whose rule of Divinity and sovereignty of Lordship encompass the entire universe, and whose command and rule dominate all beings, these results—these heavenly maneuvers, earthly seasons, and daily changes—could only be obtained by millions of stars and spheres a thousand times larger than the earth traveling the long distance of millions of years every twenty-four hours and every year. Thus, the achievement of these majestic results through the two Mevlavi-like motions of a single official—the earth—on its axis and in its orbit, is an example that shows the infinite ease in Divine Unity. It also demonstrates what falsities and impossibilities are entailed by unbelief and association of partners with God, which would require endlessly long and millions of times more difficult ways to obtain the same results." (Nursi, 2008)

This movement is likened to that of two Mevlevi dancers spinning. As the dancers twirl on the dance floor, which is regarded as the cosmos, the heads of the dancers lean in the figure below:

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Figure 3: Comparison of the Mevlevi dancers whirling and solar system rotation
Source: https://www.truebluetour.com/tour/whirling-dervishes-show/ and https://www.pinterest.com/pin/492018328017529193/

In the Solar System, all planets, including Earth, revolve around the Sun (Zeebe, 2022; Van, 2011). This rotation and revolution give rise to two natural phenomena: the change of seasons and the alternation of day and night. The tilt of the Earth on its axis while orbiting the Sun, akin to the head of a dancer, is crucial for these phenomena. This tilt is typically cited as 23.5° in most scientific literature, while some sources indicate it as 23.44°. The Earth's revolution around the Sun occurs counterclockwise with a tilt of 23.5°, as can be observed in the figure below:

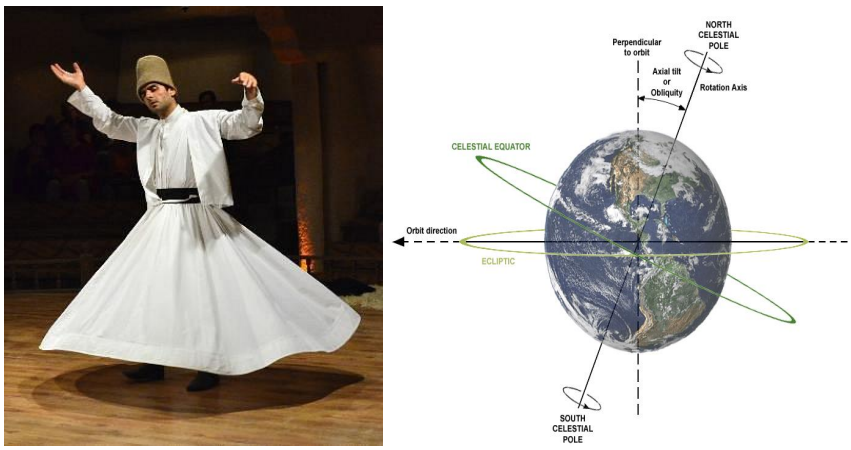


Figure 4: Comparison of Earth's axial tilt angle to the head of Mevlavi dancers
Souce: https://www.universetoday.com/47176/earths-axis/ and https://www.tripadvisor.com/Attraction_Review-g297983-d3547520-Reviews-Dervis_Evi_Whirling_Dervishes-Goreme_Cappadocia.html

## Conclusion

This article successfully analyze Nursi's background in learning natural science

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during the transitional and post-Caliphate era, making him mastered of both Islamic studies and modern science. His unique ability to integrate secular scientific knowledge with the concept of tawhid exemplifies a groundbreaking paradigm in pre-modern Islamic thought. Nursi were not recognized as a reformer who revived Islamic science back then in the Ottoman modern era. However, subsequent studies have found that the natural science approach presented by Nursi in Risale-i Nur is worthy of being adopted as a model for the integration of science and tawhid. This emphasizing the importance of STEM education in regaining the ummah's faith and engaging with global advancements like artificial intelligence (AI). The article also underscores the need for Muslim societies to align technological progress with Islamic values by incorporating tawhidic principles into STEM curricula. This approach fosters a balance between spiritual and scientific knowledge, promoting ethical engagement with technology. Future research should develop practical models for integrating faith and science to prepare generations capable of maintaining Islamic values while contributing to global progress.

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