

Islam and the Perennial Significance of Time: Exploring its Role in Human Existence and Cultural Perspectives

İslam ve Zamanın Daimi Önemi: İnsan Varoluşundaki Rolünü ve Kültürel Perspektifleri Keşfetmek

Hüseyin Gökalp 

Assistant Professor, Selçuk University, Faculty of Theology, Islamic History and Arts, Konya, Türkiye
Dr. Öğr. Üyesi, Selçuk Üniversitesi, İslami İlimler Fakültesi, İslam Tarihi, Konya, Türkiye
huseyin.gokalp@selcuk.edu.tr | <https://orcid.org/0000-0002-7954-083X>

Davut Baş 

Ph.D Student, Necmettin Erbakan University, Faculty of Theology, Islamic History and Arts, Konya, Türkiye
Doktora Öğrencisi, Necmettin Erbakan Üniversitesi, İlahiyat Fakültesi, İslam Tarihi, Konya, Türkiye
davut42bas@gmail.com | <https://orcid.org/0000-0002-5106-6355>

Article Type / Makale Tipi
Research Article / Araştırma Makalesi

DOI: 10.31591/istem.1464271

Article Information / Makale Bilgisi
Received / Geliş Tarihi: 03.04.2024
Accepted / Kabul Tarihi: 28.06.2024
Published / Yayın Tarihi: 30.06.2024

Cite as / Atıf: Gökalp, Hüseyin.- Baş, Davut. "Islam and the Perennial Significance of Time: Exploring its Role in Human Existence and Cultural Perspectives". *İstem* 43 (2024), 357-380.
<https://doi.org/10.31591/istem.1464271>

Plagiarism / İntihal: This article has been reviewed by at least two referees and scanned via a plagiarism software. / Bu makale, en az iki hakem tarafından incelendi ve intihal içermediği teyit edildi.



Copyright / Telif Hakkı: "This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution-NonCommercial 4.0 International License. Authors retain the copyright of their works published in the journal, and their works are published under the CC BY-NC 4.0 license. / Bu makale Creative Commons Atıf-GayriTicari- 4.0 uluslar arası Lisansı altında lisanslanmıştır. Yazarlar dergide yayınlanan çalışmalarının telif hakkına sahiptirler ve çalışmalarını CC-BY-NC 4.0 lisansı altında yayımlanır."

Islam and the Perennial Significance of Time

Abstract

Time, a universal concept deeply intertwined with human existence, has been the subject of contemplation and exploration in various belief systems and cultures. However, the relativity of time leads to difficulties in making a comprehensive definition of time. Each civilization has developed its own unique way of defining and using time. This article emphasizes the quest to examine and understand the fundamental role of time in human life, which has shaped human experience even before its birth. Human beings want to know and define the time in which they live. Since ancient times, people have analyzed the planets, stars and celestial bodies created by Allah in an orderly manner to determine the time and obtained various data as a result of their movements. According to these data, they have determined the time, its position and directions on Earth and organized their lives. Each society has its own historical trajectory and temporal perception. Due to this difference, societies have created different definitions of time in accordance with their own culture, civilization and perceptions. This difference has caused problems for societies to create a common perception of time and as a result, standardized time measurement tools have been created. People have developed various units such as year, month, week, day, hour, minute and second to facilitate their daily lives. Islam, in particular, attaches special importance to the value of time, as reflected in many verses and hadiths. The development of time units and calendars by civilizations throughout history further exemplifies the human need for a common temporal framework. In this context, Muslims have also used the Hijri calendar to fulfil their specific temporal requirements. They organized their worship times and daily affairs according to the Hijri calendar. This article sheds light on the multifaceted nature of time from an Islamic time perspective and its significance in different cultural and social contexts.

Keywords: Time, Human Existence, Islamic Perspectives of Time, Time Measurement, Calendars.

İslam ve Zamanın Daimi Önemi: İnsan Varoluşundaki Rolünü ve Kültürel Perspektifleri Keşfetmek

Öz

İnsanın varoluşuyla derin ve iç içe geçmiş evrensel bir kavram olan zaman, çeşitli inanç sistemleri ve kültürlerde tefekkür ve keşif konusu olmuştur. Bununla birlikte, zamanın göreceliği, zaman hakkında kapsamlı bir tanım yapmakta zorluklara yol açmaktadır. Her medeniyet zaman hakkında kendine özgü bir tanımlama ve kullanım biçimi geliştirmiştir. Bu makale, doğumundan önce bile insanın deneyimlerini şekillendiren zamanın, insan hayatındaki temel rolünü inceleme ve anlama arayışına vurgu yapmaktadır. İnsan yaratılışı gereği içinde bulunduğu zamanı bilmek ve tanımlamak ister. Çok eski dönemlerden beri insanlar zamanı tespit edebilmek için Allah'ın bir düzen içerisinde yarattığı gezegenleri, yıldızları ve gök cisimlerini incelemiş, onların hareketleri sonucunda çeşitli veriler elde etmiştir. Bu verilere göre zamanı, yeryüzündeki konumunu ve yönlerini tespit etmiş ve hayatını düzenlemiştir. Her toplumun kendine özgü tarihsel bir yörüngesi ve zamansal algısı vardır. Bu farklılık sebebiyle toplumlar kendi kültür, medeniyet ve algılamalarına uygun farklı zaman tanımları oluşturmuşlardır. Bu farklılık toplumların ortak bir zaman algısı oluşturması konusunda problemlere yol açmış bunun sonucunda standartlaştırılmış zaman ölçüm araçları oluşturulmuştur. İnsanlar günlük yaşamlarını kolaylaştırmak için yıl, ay, hafta, gün, saat, dakika ve saniye gibi çeşitli birimler geliştirmiştir. Özellikle İslam, pek çok ayet ve hadise de yansıdığı üzere, zamanın değerine özel bir önem vermektedir. Tarih boyunca medeniyetler tarafından zaman birimlerinin ve takvimlerin geliştirilmesi, insanların ortak bir zamansal çerçeveye olan ihtiyacını daha da örneklendirmektedir. Bu bağlamda, Müslümanlar da kendi özel zamansal gereksinimlerini karşılamak için Hicri Takvimi kullanmışlardır. İbadet vakitlerini ve günlük işlerini Hicri Takvime göre düzenlemişlerdir. Bu makale, İslami zaman perspektifinden zamanın çok yönlü doğasına, farklı kültürel ve sosyal bağlamlardaki önemine ışık tutmaktadır.

Anahtar Kelimeler: Zaman, İnsanın Varoluşu, İslami Zaman Perspektifleri, Zaman Ölçümü, Takvimler.

Introduction

Time is an Arabic noun used to indicate the scarcity and abundance of time.¹ Throughout history, humans have continuously strived to comprehend and make sense of the concept of time.² The remembrance or forgetting of individuals, societies, states, and the various events they have caused are intricately tied to the passage of time. The feelings of nostalgia or trauma stemming from the past, which hinder reconciliation with the realities of the present, as well as the utopian or melancholic aspirations towards the future, are also deeply intertwined with the notion of time. Essentially, human beings exist within the confines of a single day, or more precisely, a fleeting moment, which separates them from both the past and the future. It is for this reason that humans are referred to as "ibn al-waqt" - meaning the children of time. Time itself is not subject to the influence of humans; rather, it is humans who are subject to the relentless flow of time. The intricate relationship between time and mankind has been a subject of contemplation and inquiry throughout the course of human history.³

Each civilization possesses its unique perspective on comprehending, utilizing, and categorizing time. The significance attributed to time within a civilization serves as a reflection of its core essence, wherein crises and deviations concerning time give rise to social predicaments within said civilization.⁴

Throughout history, societies in the pendulum of ifrāṭs and tafrits⁵ have represented extremes in their relations with time. Time has sometimes been perceived as an omnipotent deity, such as the Ancient Greek Khronos⁶ or the Ancient Persian Zurvan⁷, and at other times, as in Parmenides and later Kant, it has been reduced to a concept that exists in the human imagination.⁸ In the history of sects, these different perspectives clustered in Jabriyya and Qadariyya are important in exemplifying the two opposite ways of comprehension that humans can establish over time.⁹

¹ Murat Ađarlı, "Zaman Kavrami: Nedir-Ne Deđildir?", *Karabük Türkoloji Dergisi* 6/1 (2023), 125.

² Ertuđrul Döner, "Bazı Kültürlerde ve Dinlerde Zaman", *Çukurova Üniversitesi İlahiyat Fakültesi Dergisi* 17/1 (2017), 227.

³ Mehmet Yıldız, "Geleceđin Korkusunu Geçmişin Hüznünü Taşımayan İnsan: İbnü'l-vakt", *Sufiyye* 11 (2021), 91.

⁴ Mustafa Demirci, "Batı Medeniyetinin Zaman Algısının İslam Medeniyetinde Uygulanabilirliđi Problemi: Gündelik Zaman ve Devirler Meselesi", *Uluslararası İslam Medeniyetinde Zaman Sempozyumu* (Konya: Necmettin Erbakan Üniversitesi Yayınları, 2015), 1/379.

⁵ Increase and decrease, excess and paucity, going to the extremes, unbalanced views or opinions, and lack of balance.

⁶ Khronos is believed to be the father of Zeus. See: Seyyid Hüseyin Nasr, *Bilgi ve Kutsal* (İstanbul: İz Yayınları, 2013), 240.

⁷ In Avesta it is referred to as "Zrvan", in Pahlavi as "Zaravan". Zurvan means time and is the name of the highest God and gave Zoroastrianism its name. See: Arslan Topakkaya, *Felsefe, Din ve Kültür'de Zaman* (İstanbul: Paradigma Yayınları, 2013), 42; Mehmet Alıcı, "Kadim İran'da Din: Monoteizm'den DUALİZM'e Mecusi Tanrı Anlayışı", *İslâm Araştırmaları Dergisi*, (2012), 237.

⁸ Döner, "Bazı Kültürlerde ve Dinlerde Zaman", 229-230.

⁹ Mehmet Ödemiş, "İslam Mezheplerinde İnsan Hürriyeti Hakkındaki İlk Tartışmaların Teo-Politik

Throughout history and in the present, most individuals have focused on practical matters and meeting their basic needs rather than engaging in theoretical sciences and constructing abstract concepts. Their perception of time is similarly practical, grounded in everyday life and its current, past, and future dimensions. To fully explore the nature of time, it is insufficient to compare only the era of the Prophet with the present day, as this approach may lead to conceptual misconceptions. Therefore, it is essential to incorporate an examination of ancient societies understanding of time in these comparisons. Moreover, this inclusion allows for a critical examination of the contemporary concepts of time that we currently regard as unquestionable.

The Concept of Time and Time Zones in Daily Life

An implication of the notion that the present is definitive and accurate, while the past is uncertain and unfinished, is connected to the concept of time, as exemplified by the evolving comprehension of history. The process of dividing the day into equal parts and achieving our current state is said to have taken a considerable duration.¹⁰ Furthermore, other flawed and inaccurate assumptions exist, such as the notion that contemporary computations are flawless, such as the fixed duration of a minute being 60 seconds, or the assumption that a year is constant in duration each year, or the opinion that all nations worldwide presently adhere to the same calendar system. Nevertheless, from the most ancient periods, individuals have partitioned time into distinct intervals and assigned them diverse designations. Currently, several calculation techniques are still employed, and recommendations for improving existing computations are proposed. By setting aside these considerations and adopting a broad perspective, we come to the realization that the shared essence of humanity lies in the concept of time, specifically the day.

Since the advent of humanity, a correlation has existed between the concept of time and the natural world. The notion of a day commences with the ascent and concludes with the descent of the sun. The measurement of time is determined by the presence of daylight, rather than by the position of clocks.¹¹ It is universally accepted that a day is composed of the presence of the Sun, followed by a period of daylight and a period of darkness. The points of contention are around the allocation of time within a day and the calculation of larger units of time, such as weeks, months, seasons, years, and centuries. Their disagreement stems from divergent social, economic, and political needs, rather than a lack of computational competence. Now, let's examine the frequently utilized time zones that are prevalent in

→

Eleştirisi", *EKEV Akademi Dergisi* 88 (2021), 301.

¹⁰ Neşet Çağatay, "Eski Çağlardan Bu Yana Zaman Ölçümü ve Takvim", *Ankara Üniversitesi İlahiyat Fakültesi Dergisi* 22 (1978), 106.

¹¹ Döner, "Bazı Kültürlerde ve Dinlerde Zaman", 228.

different eras and cultures.

Century: A century may span a duration that is either shorter or longer than 50, 150, or 200 years.¹² Although the terms "century" in Turkish, "Jahrhundert" in German, and "century" in English all originate from the Latin word "centum" and denote a period of one hundred years, Romance languages like Italian, French, and Spanish prefer words derived from the Latin concept of "saeculum," which encompasses the ideas of generation and period without specifying a precise limit. The term "karn" in Arabic is used to denote a generation, much like the Latin term "saeculum".¹³ A century is a duration of either 80 or 100 years. Conversely, in earlier times, the Aztecs employed a 52-year cycle while the Indians utilized a 60-year cycle.¹⁴

Year: While there exist uncommon calendars that rely on the star Sirius, the majority of people typically determine the length of a year by using either the Sun or the Moon, and occasionally both when necessary. When civilizations devised their calendars, they designated significant days as the starting point of their calendars. The Jews designated 3760 B.C. as the recognized year of creation, the Greeks acknowledged 776 B.C. as the established date of the inaugural Olympics, the Romans recognized 753 B.C. as the year of Rome's liberation, the Christians designated the birth of Jesus as the milestone of zero, and the Muslims recognized the year 622 as the starting point of their calendar, marking the Hijrah of the Prophet (peace be upon him).¹⁵

Ancient Egypt followed a calendar system where a year included of 365 days, divided into 3 seasons, with each season consisting of 4 months. Agricultural activities were guided by the lunar calendar, while state matters were regulated by the solar calendar. Europeans, having gained access to the scientific knowledge of Mesopotamia and Egypt, embraced the Julian calendar in 46 BC under the rule of Julius Caesar. Julius Caesar shifted the commencement of the year to the initial day of January in 45 BC. The calendar was named the Julian Calendar due to the numerous modifications made by him.¹⁶

During the Council of Nicaea convened in 325, certain modifications were made to the calendar. However, throughout the course of many years, discrepancies began to emerge in the calendar. Hence, a new calendar regulation was necessitated. Pope Gregory XIII, who held the papacy from 1572 to 1585, implemented a calendar reorganization in 1582. Upon discovering a time discrepancy of ten days between the years 325-1582, it was established that Thursday, October 4, 1582

¹² Çağatay, "Eski Çağlardan Bu Yana Zaman Ölçümü ve Takvim", 108.

¹³ Diehl, Ernst. "Das saeculum, seine Riten und Gebete: Teil I. Bedeutung und Quellen des saeculum. Die älteren saecula". Rheinisches Museum für Philologie. n.s. 83 (3) (1934), 255-272.

¹⁴ "Aztec Calendar | Mesoamerican, Tonalpohualli & Sun Stone | Britannica" (Erişim 28 Haziran 2024).

¹⁵ Belgin Tezcan Aksu, "Sekizinci Yüzyıldan Günümüze Takvimlerimiz", *Uluslararası Türk Lehçe Araştırmaları Dergisi* 2/1 (2018), 383.

¹⁶ Çağatay, "Eski Çağlardan Bu Yana Zaman Ölçümü ve Takvim", 121.

corresponded to Friday, October 15. As per the Gregorian calendar, a year was determined to be 365 days, 5 hours, and 47 minutes. During this period, Murad III held the position of ruler of the Ottoman Empire, while Soğollu Mehmed Paşa served as the Grand Vizier.¹⁷

Turkey implemented the Gregorian calendar on January 1, 1926, by enacting two distinct laws: "The Law on the Change of the Date in the Calendar"¹⁸ and "The Law on the Division of the Day into 24 Hours".¹⁹ These laws introduced the average solar day on December 26, 1925. Similar to ancient Egypt, both the Hijri Calendar, which is based on the Moon, and the Gregorian calendar, which is based on the Sun, are currently in use. However, they are used in distinct contexts. Additional instances of distinct computations include the Jalali Calendar, which utilizes the Sun as its basis and commences from the Hijrah, the Sun-based Ethiopian Calendar, which determines the birth of Jesus based on the Coptic Church, and the Hebrew Calendar, which incorporates both the Moon and the Sun in its calculations. The Assyrians had a dual calendar system, using both lunar and solar measurements concurrently. In instances where the alignment of seasons did not correspond with the lunar months, they occasionally adjusted the year to consist of 13 months.²⁰

Hijri year is determined by the completion of 12 lunar orbits around the Earth, which amounts to 354 days, 8 hours, 48 minutes, and 36 seconds. Gregorian year is defined as the time it takes for the Earth to complete one orbit around the Sun, which amounts to approximately 365 days, 5 hours, 47 minutes, and 48 seconds. Hence, there is a time difference of 10 days, 20 hours, 59 minutes, and 12 seconds between the Hijri year and the Gregorian year. Approximately 33 Hijri years correspond to 32 Gregorian years.²¹

Month: The term "month", denoting a time span of 28-31 days, derives its origin from the Moon. The months have been determined by tracking the lunar motion throughout history. The English words "month" and "moon", the German words "Monat" and "Mond", and the Persian word "māh" are all interconnected and used to refer to the same concept. The term "arkh", which serves as the etymological basis for the Arabic word "tarikh", has the meaning of "moon" in Hebrew and South Arabian Arabic. It is understood that the term "tarikh/history" in Arabic also encompasses the concept of moonisation, specifically referring to the process of calendaring based on the moon.²²

¹⁷ Çağatay, "Eski Çağlardan Bu Yana Zaman Ölçümü ve Takvim", 122.

¹⁸ Takvimde Tarih Mebdeinin Değiştirilmesi Hakkında Kanun (Takvimde Tarih Mebdeinin Değiştirilmesi Hakkında Kanun), *Resmî Gazete* 698 (26 Aralık 1925).

¹⁹ Günün 24 Saate Taksimine Dair Kanun (Günün 24 Saate Taksimine Dair Kanun), *Resmî Gazete* 697 (01 Ocak 1926).

²⁰ Çağatay, "Eski Çağlardan Bu Yana Zaman Ölçümü ve Takvim", 109.

²¹ Çağatay, "Eski Çağlardan Bu Yana Zaman Ölçümü ve Takvim", 107.

²² Muhammed Hamîdullah, *İslâm Tarihine Giriş*, çev. Ruhi Özcan (İstanbul: Beyan Yayınları, 2015), 16.

The Moon completes one orbit around the Earth in a period of 27 days, 7 hours, 43 minutes, and 25 seconds. However, due to the Earth's simultaneous orbit around the Sun, the Moon completes its orbit in a duration of 29 days, 12 hours, 44 minutes, and 2.8 seconds. Since a partial day is impossible, a month is precisely 29 days, 12 hours, 44 minutes, and 2.8 seconds in duration. Due to the inability to have a partial day, a month alternates between 29 and 30 days.²³ In ancient Egypt, a month comprised precisely 30 days. In the Hebrew calendar, certain months were determined to have a duration of 29 days, while others were assigned a duration of 30 days. Additionally, the length of the year varied, ranging from 12 months to 13 months. Nevertheless, not all nations measured time in terms of years; instead, they regarded months as the primary unit of time. In the past, the moon was used to determine time. However, nowadays, the year is calculated based on the sun. The moon's calculation is now done arbitrarily, such as in the Gregorian calendar, to provide a standard for timekeeping. Presently, the Moon's movements hold significance mostly for farmers and sailors. The current lunar phases are readily accessible to those with an interest, particularly through NASA.²⁴

Week: The Arabic phrase "usbū'" refers to a continuous span of seven days, generally referred to as a week. The Turkish phrase for week, "hafta," is etymologically derived from the Persian word "haft," which signifies the number seven. Multiplying 52 weeks in a year by 7 results in 364. Dividing both the year and the month into seven-day weeks does not yield accurate results. Ancient China and ancient Greece both had a ten-day week. France adopted a decadi system, consisting of a ten-day week, from 1793 to 1802. The ancient Baltic peoples employed a nine-day week, while ancient Rome utilized an eight-day week. The Assyrians followed a five-day week, which they named "hamushtym," sharing the same etymological root as the Arabic term "khamisa," meaning the number five.²⁵ The Babylonians devised a system where the week consisted of seven days, each named after one of the seven observable planets.²⁶ Due to the absence of a cosmic calculation, the week is considered relative, and its interpretation has varied among cultures over time. Nonetheless, the practice of considering a week as consisting of seven days has remained the prevailing choice, both in contemporary times and throughout history.

Day: The term "yawm" is frequently employed in the Holy Quran to denote a unit of time, specifically referring to a day.²⁷ Yawm refers to the time from sun-

²³ Kasım Şulul, *Hicri Takvim ve Siyer Kronolojisi Etütleri / Makaleler* (İstanbul: Siyer Yayınları, 2012), 56.

²⁴ "Nasa" (03 Ekim 2023). <https://www.nasa.gov/>

²⁵ Çağatay, "Eski Çağlardan Bu Yana Zaman Ölçümü ve Takvim", 108.

²⁶ Arslan Topakkaya, "Zaman ve Takvim İlişkisi", *Uluslararası İslam Medeniyetinde Zaman Sempozyumu* (Konya: Necmettin Erbakan Üniversitesi Yayınları, 2015), 1/274.

²⁷ İlhan Kutluher, "Zaman", *Türkiye Diyanet Vakfı İslâm Ansiklopedisi* (İstanbul: TDV Yayınları, 2013), 44/111.

rise to sunset.²⁸ Sunday marks the start of the week. It begins with the setting of the sun on Saturday. For this reason, the beginning of the months starts with the appearance of the crescent moon in the evening.²⁹ The commencement of the week and the nomenclature assigned to each day have been a subject of dispute. The Romans assigned the names of the days to the deities they believed represented the visible planets during that period. The first day was devoted to the deity associated with the Sun (Sunday), the second to the deity associated with the Moon (Monday), the third to the deity associated with Mars (Mardi), the fourth to the deity associated with Mercury (Mercredi), the fifth to the deity associated with Jupiter (Jeudi), the sixth to the deity associated with Venus (Vendredi), and the seventh to the deity associated with Saturn (Saturday).³⁰

In the Jāhiliyya period, the Arabs designated the days of the week as follows: the first day was termed "Awwal", the second day "Ahwan", the third day "Jubar/Jabbar", the fourth day "Doobar/Dabbar", the fifth day "Mu'nis", Friday "Aruba", and Saturday "Shiyar/Shayyar".³¹ The Christians differentiated themselves from the Jews by consecrating Sunday as a holy day in lieu of Saturday. Christians consider this day a commemoration of the resurrection of the Son of God.³² The Teutons and Anglo-Saxons perpetuated the Roman tradition and designated it as Sunday, Sonntag, while Romance languages opted for terms such as Domingo, Domenica, etc. to signify "Lord's Day". Throughout the world, Jews maintain the practice of revering Saturday as a sacred day and a festive occasion.

Clock: The Babylonians pioneered dividing the day into 12 equal hours.³³ In ancient Greece, the daytime was divided into 12 hours, while the nighttime was divided into three.³⁴ According to Greek poet Nonnus, the term "hour" did not refer to a 60-minute duration. The Greeks viewed the clock as division of the day into 12 hours. During longer days, the hours were longer, while in winter, they were shorter. Additionally, clocks were not designated by numbers, as they are today, but by names, similar to the Arabs. The 12 divisions of the day were: "Auge"

²⁸ Ebü'l-Fazl Cemälüddin Muhammed İbn Manzûr, *Lisânü'l-Arab* (Beyrut: Dâru Sadır, ts.), 4974.

²⁹ Yavuz Unat, *al-Fargânî'nin Kitab el-Fusûl Adlı Astronomi Eseri Üzerine Bir Araştırma* (Ankara: Ankara Üniversitesi, Sosyal Bilimler Enstitüsü Felsefe (Bilim Tarihi) Anabilim Dalı, Doktora Tezi, 1996), 95.

³⁰ Before the telescope was invented, people only knew about planets in the sky that they could see with their eyes. At that time, in addition to Mercury, Venus, Mars, Jupiter and Saturn, they also considered the Moon and the Sun as planets. Today, the Sun is considered a star and the Moon is considered a satellite. When Egyptian, Mesopotamian, Indian and Chinese sources were examined, no record of any planet other than these planets could be found, which is quite natural. Because it is not possible for Uranus and Neptune to be seen with the naked eye without using a telescope. See. Yavuz Unat, "Antik Uygarlıklar, Uranüs, Neptün ve Plüton Gezegenlerini Biliyorlar mıydı?", *Bilim ve Ütopya* 272 (2017), 64-67.

³¹ Ebu'l-Hasen Ali b. Hüseyin Mesûdî, *Murûcu'z-Zehab ve Meâdinu'l-Cevher*, thk. Muhammed Muhyiddin Abdülhamid (Beyrut, ts.), 2/276.

³² Çağatay, "Eski Çağlardan Bu Yana Zaman Ölçümü ve Takvim", 109.

³³ Topakkaya, "Zaman ve Takvim İlişkisi", 1/272.

³⁴ James Evans, *The History & Practice of Ancient Astronomy* (Oxford: Oxford University Press, 1998), 95.

(dawn), "Anatole" (sunrise), "Mousike" (morning work and music), "Gymnastics" (morning exercise), "Nymphs" (morning cleansing), "Mesembria" (midday), "Sponde" (post-lunch drinks), "Elete" (time for prayer), "Akte" (time for meals and entertainment), "Hesperis" (afternoon), "Dysis" (evening), "Arktos" (nightfall).³⁵ The concept of dividing the day and night into 24 hours is attributed to Hipparchus of Nicaea, who made significant contributions from 147-127 BC.³⁶ In the Jewish Calendar, a day consists of 24 hours, with each hour equivalent to 1080 rings. Each ring is equivalent to 1/3 of a second. Another approach was to divide the day into 12 hours and the night into 12 hours.³⁷ In ancient India, a day was divided into 30 units, each lasting 48 minutes.³⁸

In the present era, individuals utilize smartwatches for making phone calls, sending text messages, monitoring their physical activities, and measuring their heart rate. However, watches underwent numerous stages prior to reaching their current state. The sundial is one of the first examples of timekeeping devices. This device is a basic apparatus comprised of a rod that projects a shadow, with markings etched on a surface, typically crafted from stone or metal.³⁹ The ancient Egyptians were the first to introduce sundials. Islamic sundials are renowned for their unparalleled precision and accuracy throughout history. The need of Muslims to accurately identify the prayer hours necessitated the adjustment of sundials accordingly. Islamic sundials can be classified into three categories: horizontal, vertical, and cylindrical. In Islamic culture, the terms "ruhama" or "basita" were employed to refer to the horizontal variations of sundials, while "munharifa" was used for the vertical varieties.⁴⁰

Due to the limitations of sundials, which could only function during daylight hours, the Egyptians endeavored to find a clock that could accurately estimate time during the night as well. Through much research, water clocks were developed, wherein water is transported from one container to another, and the markings on the flowing container indicate the passage of time. It is believed that Ammenemes I is the inventor of this clock.⁴¹ While sundials indicated a precise time, water clocks also provided a measure of elapsed time. There are two categories of water clocks: one that operates by discharging water and the other that operates by sinking. Water clocks were extensively utilized throughout the Roman Empire. Hārūn al-Raṣhīd reportedly delivered an intricate water clock to Charlemagne, the monarch

³⁵ "Family of the Hours", *Horai* (01 October 2023).

³⁶ Michael A Lombardi, "Why is a minute divided into 60 seconds, an hour into 60 minutes, yet there are "only 24 hours in a day?", *scientificamerican* (01 October 2023).

³⁷ Otto Neugebauer, *Astronomy of Maimonides oath Its Arabic Sources* (Hebrew Union college Annual, 1949), 22/321-363.

³⁸ Saradha Srinivasan, *Mensuration in Ancient India* (Delhi: Ajanta Publications, 1979), 119-122.

³⁹ Çağatay, "Eski Çağlardan Bu Yana Zaman Ölçümü ve Takvim", 115.

⁴⁰ Nusret Çam, "Güneş Saati", *Türkiye Diyanet Vakfı İslâm Ansiklopedisi* (İstanbul: TDV Yayınları, 1996), 14/298.

⁴¹ Çağatay, "Eski Çağlardan Bu Yana Zaman Ölçümü ve Takvim", 114.

of France.⁴²

The hourglass is another time-measuring device. Hourglasses are comprised of two glass lanterns stacked on top of one another. The sand in the upper container gradually descends into the bottom container over a specific duration. Thus, a certain duration is quantified. Therefore, the English term "hourglass" is used. The hourglass, initially introduced in Europe during the 8th century, found widespread usage in several domains like as games, competitions, churches, and ships. Its origin can be attributed to a priest. Hourglasses were utilized by the Arabs, Chinese, and Asian Turks.⁴³

Mechanical clocks were developed based on the dial mechanism observed in water clocks. Taqi ad-Din Muhammad ibn Ma'ruf, the founder of the Istanbul Observatory, became the first individual in the Islamic world to demonstrate an interest in mechanical clocks in 1579. The sundials, water clocks, and sand clocks invented thus far were designed to measure certain durations of time. In contrast, mechanical clocks were employed within monasteries to quantify specific time intervals and ascertain the timing of religious observances by the emission of sound at designated moments. During that era, clocks would alert individuals at specific intervals by sounding bells. Hence, the etymology of the English term "clock" can be traced back to the Latin word "clocca" which denotes a bell. Nevertheless, this term was subsequently employed to refer to all timepieces in a generic sense.

Minute: The division of an hour into 60 minutes, the division of a minute into 60 seconds, and the division of a second into 100 salisa/tertia was originally introduced by al-Birūnī (d. 453/1061).⁴⁴ In 1267, Roger Bacon employed this computation to partition the hour into 60 segments, namely horae, minuta, secunda, tertia, and quarta. The application of these computations in daily life commenced solely subsequent to the invention of the clock. The English watchmaker Thomas Tompion is credited with the invention of the spring, which led to the widespread use of clocks. Between 1793 and 1795, the French attempted to partition the day into 10 hours, but eventually discontinued the practice. Clocks are synchronized based on Coordinated Universal Time (UTC), a time standard that has been utilized since 1963. Nevertheless, the duration of a minute is not always limited to exactly 60 seconds; it might vary slightly to either 59 or 61 seconds. A leap second is a temporal discrepancy resulting from the variation in the duration of the Earth's rotation. For instance, as reported by time.gov, the discrepancy at the conclusion of 2016 amounted to 1.4 seconds.

⁴² Çağatay, "Eski Çağlardan Bu Yana Zaman Ölçümü ve Takvim", 114.

⁴³ Çağatay, "Eski Çağlardan Bu Yana Zaman Ölçümü ve Takvim", 116.

⁴⁴ Muhammad İbn Ahmad Birūnī, *The Chronology of Ancient Nations*, çev. Eduard Sachau (London: William H. Allen & Co, 1879).

Conception of Time in the Pre-Nubuwwah Jāhiliyya Society

The Jāhiliyya society held the concept of a divine creator alongside their practice of idol worship. They held the belief that God was the creator of the world, while also asserting themselves as God's earthly representatives and ascribing divine qualities to others. The circumstance described in Surah al-‘Ankabūt is as follows: If you asked them, "Who created the heavens and earth and subjected the sun and the moon?" they would surely say, "Allāh." Then how are they deluded?⁴⁵ They believed that Allāh would not interfere in their mundane matters and that it was the passage of time that would ultimately pass judgment on them in this earthly realm.⁴⁶ Surah al-Jāthiyah draws attention to this point: And they say, "There is not but our worldly life; we die and live, and nothing destroys us except time." And they have of that no knowledge; they are only assuming.⁴⁷

Throughout history, individuals have attempted to rationalize their ego by ascribing the outcomes to insufficient information or inconsequential factors, rather than acknowledging their hardships or pursuing remedies for redemption. Similar to Zurvanism, the pre-Islamic Arabs magnified the influence of time and submitted to its authority rather than controlling it. This surrender caused them to become so preoccupied that it diverted their attention from their obligations, such as worshipping Allāh and rejecting the concept of the hereafter.

The pre-Islamic Arabs possessed knowledge of the sun's movements in the desert, utilized celestial bodies such as the moon and stars for navigation during nighttime, and made weather forecasts based on observations of the sky.⁴⁸ The poetry of the al-Jāhiliyya Arabs provides evidence of their understanding of astronomy. Several poems list over 300 names of stars.⁴⁹ The presence of astronomical references in the Qur'an, such as the stars being guides, the planets being illuminators and adornments, and the zodiac signs being guiding stars, indicates that the Jāhiliyya Arabs possessed a fundamental understanding of astronomy.⁵⁰

Nevertheless, in the Jāhiliyya period, there was a lack of a precise comprehension regarding the calendar. Specific years were designated based on significant events that transpired throughout specific years. For instance, they designat-

⁴⁵ "Kur'an-ı Kerim" (Erişim 28 Aralık 2023), al-‘Ankabūt 29/61.

⁴⁶ Taha Çelik, "Dehre Sövmeyiniz ... " Rivayeti Çerçevesinde Zaman Algısı", *Uluslararası İslam Medeniyetinde Zaman Sempozyumu* (Konya: Necmettin Erbakan Üniversitesi Yayınları, 2015), 1/70-71.

⁴⁷ Al-Jāthiyah 45/24.

⁴⁸ Ziya Kazıcı - Mehmet Şeker, *İslam-Türk Medeniyet Tarihi* (İstanbul, 1982), 129.

⁴⁹ Fuat Sezgin - Eckhard Neubauer, *İslam'da Bilim ve Teknik* (Ankara: Kültür ve Turizm Bakanlığı Yayınları, 2008), 2/3.

⁵⁰ Seyfettin Kaya, "Ortaçağ'da Arap-İslam Dünyasında Astronomi Bilimi", *Bitlis Eren Üniversitesi Sosyal Bilimler Enstitüsü Dergisi* 6/2 (2017), 357.

ed the year of scarcity, the year of the elephant episode, the year of calamity and the year of disease.⁵¹

Conception of Time in the Prophet's Period⁵²

When we examine the hadiths describing the time, we find statements such as: the sun moves from the zenith to sunset, the shadow is the length of a human being or twice its length, the dawn disappears, the first or second redness appears, the sun rises first, reaches the zenith and sets⁵³ when an arrow is shot and it is bright enough to see where it falls.⁵⁴ Additionally, we understand from the information that the prayers have a wide range of intervals, each with a first and last time⁵⁵ indicating that a time interval that does not require precise minute and second settings is defined for prayers. Apart from these, the Prophet also highlighted the virtue of an obscure time of the night, such as the Night of Laylat al-Qadr, and encouraged Muslims to spend the night in worship and to seek this night.⁵⁶

The Qur'an and the hadiths of the Prophet (pbuh) contain several references to time. The Qur'an does not explicitly employ the term "time,"⁵⁷ although it contains numerous references to temporal concepts, including night⁵⁸, day⁵⁹, fajr (dawn)⁶⁰, Sun⁶¹, Moon⁶², full moon⁶³, morning⁶⁴, evening⁶⁵, and asr (afternoon)⁶⁶. In Sūrat al-Isrā', verse 12, Allāh states that "And We have made the night and day two signs, and We erased the sign of the night and made the sign of the day visible that you may seek bounty from your Lord and may know the number of years and the account [of time]. And everything We have set out in detail." The verse highlights that the universe was deliberately designed with a quantifiable struc-

⁵¹ Muhammed Hamîdullah, "Hicri Takvim ve Tarihi Arka Planı", çev. Kasım Şulul, *Uludağ Üniversitesi İlahiyat Fakültesi Dergisi* 9/9 (2000), 676.

⁵² This chapter utilizes the findings from the paper "Thoughts on the Concept and Perception of Time During the Prophet's Period," presented by Hüseyin Gökalp on June 25, 2022, at the session "Concepts and Issues Regarding Sīrah" as part of the "From Sīrah to Sunnah" National Congress Series on the Eras of Islamic Sciences and Thought, organized by the Faculty of Theology at Burdur Mehmet Akif Ersoy University.

⁵³ Müslim, "Şalâtü'l-müsâfirîn", 293; Ebû 'İsâ Muḥammed b. 'İsâ et-Tirmizî, *es-Sunen*, thk. Beşşâr 'Avvâd Ma'rûf (Beyrut: Dâru'l-Ğarbi'l-İslâmî, 1998), "Salât", 1.

⁵⁴ Muslim, "Masajid", 217.

⁵⁵ Abu Dâwûd, "Salat", 2; Bukhârî, "Mawâqit", 1.

⁵⁶ "There is an hour during the night at which no Muslim man will ask God for good in this world and the next without His giving it to him; and that applies to every night." Tirmidhi, "Vitr", 16; Nasa'i, "Mawakit", 35.

⁵⁷ Kasım Şulul, "Hicrî Takvimin Ortaya Çıkışı", *Harran Üniversitesi İlahiyat Fakültesi Dergisi* 10/4 (2002), 154.

⁵⁸ Baçara. 1/164.

⁵⁹ Âl 'Imrân, 3/27

⁶⁰ Al-Fair. 89/1

⁶¹ Al-An'âm, 6/96.

⁶² Yûnus. 10/5.

⁶³ Al-Inshîâa. 84/16.

⁶⁴ Al-Muddaththir, 74/34.

⁶⁵ An-Nâzi'ât, 79/46.

⁶⁶ Al-'Asr, 103/1.

ture, which can be computed for the advantage of humanity.⁶⁷

The polytheists during the Jahiliyya period occasionally altered the timing of the three consecutive forbidden months (Dhu'l-Qa'dah, Dhu'l-Hijjah, and al-Muḥarram) due to their inability to engage in raiding and looting during these months. Additionally, they wanted to ensure that the pilgrimage season and the fair did not occur simultaneously. In the Quran, Allah says about this: "Indeed the number of months with Allah is twelve [lunar] months in the register of Allah [from] the day He created the heavens and the earth; of these, four are sacred. That is the correct religion [i.e., way], so do not wrong yourselves during them. And fight against the disbelievers collectively as they fight against you collectively. And know that Allah is with the righteous [who fear Him]." The number of months is twelve, and four of them (Dhu'l-Qa'dah, Dhu'l-Hijjah, Muharram, Rajab) are forbidden months. Trade was conducted in the fairgrounds during the forbidden months while all forms of violence were prohibited.

In the Jāhiliyya period, the polytheists occasionally altered the timing of the three consecutive forbidden months (Dhu'l-Qa'dah, Dhu'l-Hijjah, and al-Muḥarram) due to their inability to engage in raiding and looting during these months. Additionally, they wanted to ensure that the pilgrimage season and the fair did not occur simultaneously.⁶⁸ In the Qur'an, Allāh says about this: "Indeed, the number of months with Allāh is twelve [lunar] months in the register of Allāh [from] the day He created the heavens and the earth; of these, four are sacred. That is the correct religion [i.e., way], so do not wrong yourselves during them. And fight against the disbelievers collectively as they fight against you collectively. And know that Allāh is with the righteous [who fear Him]."⁶⁹ The number of months is twelve and four of them (Dhu'l-Qa'dah, Dhu'l-Hijjah, Muharram, Rajab) are forbidden months. Trade was conducted in the fairgrounds during the forbidden months, while all forms of violence were prohibited.

The Hijri months were initially given the name after significant events that occurred during certain months. Muharram is classified as one of the prohibited months, and it derives its name from the Arabic word "Muharram," which translates to "forbidden." During this month, combat and warfare are strictly prohibited. The month of Safar derives its name from the Arabic word (اصفر), which signifies the hue yellow. In the Jāhiliyya period, individuals had a discoloration of their facial complexion, turning yellow, as a result of the plague occurring in this particular month. Consequently, this month came to be known as Safar. Prior to the division of a year into twelve, it was divided into four halves. The months of Rabi' al-Awwal and Rabi al-āhir were named from the Arabic term (ربيع), which means one-fourth

⁶⁷ Diyanet İşleri Başkanlığı, *Kur'ân Yolu*, (2024), 3/467-468. (Erişim 20 Haziran 2024).

⁶⁸ Veli Kayhan, "Son Zaman Ayari-II: 'Nesî' Ya Da Haram Aylara Müdahale", *Bilimname* 1/28 (2015), 10-11.

⁶⁹ At-Tawbah, 9/36.

or quarter. The months of Dhamāz al-'Awwal and Dhamāz al-'Akhir correspond to the winter season, during which the water bodies freeze. The names of these months are taken from the Arabic term (جمود) which means lack of brightness or excitement. Rajab, one of the sacred months in Islam, signifies a state of fear or apprehension about something. The event of Miraj occurred during this month. The reason for naming this month in such a manner is due to its significant worth. Shaban denotes the state of being distinct or isolated. The name was derived from the practice of individuals venturing to different locations in search of water during this arid month and subsequently dispersing. Ramadan refers to a period of exceptionally high temperatures. This month aligned with the summer season and the weather was exceedingly scorching. Consequently, this month was designated as Ramadan. Shawwal refers to the action of a pregnant camel lifting its tail. Dhu'l-Qaddah is one of the months during which certain activities are prohibited. The term "Arabic" refers to the act of sitting. Dhu'l-Hijjah is referred to as such because it is a month dedicated to peaceful activities and abstaining from conflict. It is classified as one of the prohibited months. Hajj, being conducted during this month, is sometimes referred to as 'the month of pilgrimage'.⁷⁰

Islam has eradicated the significance of time attributed to it by the Jāhiliyyah Arabs. The Qur'an and Sunnah have consistently promoted the need for time awareness. Imam Shāfi'ī's comment sheds light on this matter, stating that he has formed friendships with Sufis and has derived benefit from them solely through two phrases. I overheard the statement: Time is like to a sword; if you fail to wield it, it will wield power over you. Failure to engage your soul with the truth will result in its preoccupation with lies."⁷¹ The Prophet said in a hadith: "Some people of the period of ignorance used to say, 'None destroys us but the night and the day. It is he who destroys us, kills us and gives us life,' and they cursed time (dahr)."⁷² In this regard, Allāh Almighty says: The son of Adam abuses Dahr (the time), whereas I am Dahr since in My hand are the day and the night.⁷³ The concept of cursing time can be seen as harboring resentment towards one's circumstances and defying one's predetermined fate. Conversely, continuous and unbroken time, sometimes referred to as genius, was viewed unfavorably by the polytheistic Arabs. However, it appears to have been elevated to the level of a deity, despite the fact that it does not actually exist.⁷⁴ Just like in Zurvanism, the pre-Islamic Arabs exaggerated the power of time and surrendered to it instead of managing it. This submission evolved to such an extent that it freed them from their duty to serve

⁷⁰ İnci Koçak, "Arapların Ay Takvimindeki Ay Adları", *Ankara Üniversitesi Dil ve Tarih-Coğrafya Fakültesi Dergisi* 37/1-2 (1995), 400.

⁷¹ Muhammed İkbāl, *İslam'da Dinî Düşüncesinin Yeniden İnşası*, çev. Rahim Acar (İstanbul: Timaş Yayınları, 2016), 104.

⁷² Dehr is generally used to mean time of more or less length. Bkz. İbn Manzûr, *Lisânü'l-Arab*, 4/292.

⁷³ Bukhārī, "Tafāsīr" 316; Muslim, "Al-Alfāz" 1.

⁷⁴ Döner, "Bazı Kültürlerde ve Dinlerde Zaman", 239.

Allāh and denied the Hereafter. The verse on this subject reads as follows: "And they say, "There is not but our worldly life; we die and live, and nothing destroys us except time." And they have of that no knowledge; they are only assuming."⁷⁵ Throughout history, individuals have attempted to absolve themselves by assigning outcomes to factors that may or may not be connected to their ignorance, rather than acknowledging the adverse events they have had or actively pursuing remedies for redemption. This was the temporal disposition of the Arabs prior to the advent of the Prophet Muhammad.

During the time of the Prophet, there were certain days apart from Ramadan that were considered virtuous for fasting. These included days of prayer, fasting, zakat, pilgrimage, the forbidden months, the period of iddah, days specifically recommended for fasting, and the most virtuous times of the night for the *tahajjud* prayer. Additionally, there were specific days considered virtuous for naming a newborn child. The measurement of time has played a crucial role in various aspects of worship and transactions, including determining the appropriate times for embarking on or returning from a journey, the timing of optional prayers, the specific times for performing the *qaramah*, and the decision to delay the noon prayer during excessively hot weather. Furthermore, time was partitioned and labeled for the sake of commerce, military operations, and political affairs, as well as to facilitate individuals in determining specific moments in their daily routines. The division was established in response to specific requirements. In ancient times, the division of the day was not based on precise measurements of seconds or minutes as we understand them now. Instead, different names were used to denote different periods of the day based on the location of the sun, similar to how it was done in Ancient Greece.

The day length in Medina on June 21 is 13 hours and 39 minutes, while on December 21 it is 10 hours and 37 minutes. During the Prophet's time, the day was divided according to the position of the sun, regardless of whether it was summer or winter. For the day, the words *ishaqr*⁷⁶, *bukūr*⁷⁷, *gadwa*⁷⁸, *duḥā*⁷⁹, *zahira*⁸⁰,

⁷⁵ Al-Jāthiyah, 45/24.

⁷⁶ "Indeed, we subjected the mountains [to praise] with him, exalting [Allāh] in the [late] afternoon and [after] sunrise." *لَا سَخْرَنا الْجِبَالُ مَعَهُ يُسَبِّحُنَ بِالْعَشِيِّ وَالْإشْرَاقِ* Sād, 38/18.

⁷⁷ "And mention the name of your Lord [in prayer] morning and evening." *وَاذْكُرْ اسْمَ رَبِّكَ بُكْرَةً وَأَصِيلاً* Al-Insān, 76/25.; "O Allāh, make the early hours of my ummah blessed!" *بُكُورِها* see. Ebū Muhammed Abdullah b. Abdurrahman b. Fazl ed-Dārimī, *Sūnen-i Dārimī*, thk. Abdullah Aydınlı (İstanbul: Madve Yayınları, 1994), "Siyer" 1.

⁷⁸ Going out before noon or after noon, in the cause of Allāh, the Mighty and Sublime, is better than this world and everything in it! *وَمَا فِيها* *عَزَّ وَجَلَّ أَفْضَلُ مِنَ الدُّنْيَا وَمَا فِيها* Ebū Abdurrahmān Ahmed b. Şu'ayb Nesāi, *Sūnenū'n-Nesāi*, thk. Abdūlfettāh Ebū Gudde (Haleb: Mektebū'l-Matbū'ati'l-İslāmiyye, 1986), "Cihad" 11.

⁷⁹ "By the morning brightness", *بِالصُّحَى*, Ad-Duhā, 93/1.

⁸⁰ "There were three times at which Allāh's Messenger forbade us to pray, or bury our dead: When the sun begins to rise till it is fully up, when the sun is at its height at midday till it passes over the meridian, and when the sun draws near to setting till it sets. *ثَلَاثَ سَاعَاتٍ كَانَ رَسُولُ اللَّهِ ﷺ يَنْهَانَا أَنْ نَصَلِّيَ فِيهِنَّ أَوْ أَنْ نَقْبُرَ فِيهِنَّ* مَوْتَانَا جِئْنَا تَطْلُعُ الشَّمْسُ بَارِعَةً حَتَّى تَرْتَفِعَ وَجِئْنَا بِقَوْمٍ قَانِمِ الطَّهِيْرَةِ حَتَّى تَمِيلَ الشَّمْسُ وَجِئْنَا تَصْبِيغَ الشَّمْسِ لِلْعُرُوبِ حَتَّى

ravāh⁸¹, ‘aṣr⁸², and maghrib⁸³, were used. For the night, the words dawn⁸⁴, asil⁸⁵, mesa⁸⁶, gasag⁸⁷, iṣhā⁸⁸, atamah⁸⁹, sahar⁹⁰ and fajr⁹¹ were used. These times were also known to Arabs by custom.⁹² For this reason, in order to avoid confusion about the times of prayer, the Prophet (pbuh) forbade the Bedouin Arabs to use the word "atamah" instead of the word "iṣhā", which is used for the night prayer. He also forbade them to use the word "iṣhā" for "maghrib", which is used for the evening prayer.⁹³ This was because "atamah" was a time of night when the Arabs milked their camels and this time could extend until the first third of the night. Rather than prolonging the time, it interfered with the habitualization of the time, the change in terminology, and the shift of the exact time of 'iṣhā, which is the exact time of 'Isha', to 'atamah'.

A day, according to Islamic tradition, spans from sunset to the next sunset, known as the shar'i day, while contemporary convention marks it from midnight to the next midnight.⁹⁴ A week consists of seven consecutive days, a month is one full orbit of the moon around Earth, and a year is twelve lunar months. The Arabs once used a method called nesi to synchronize with the solar year, which led to arbitrary rearrangement of forbidden months and pilgrimage timings, practices prohibited during the Farewell Pilgrimage.⁹⁵ Time calculations relied on the sun's

→

تَغْرِبَ. Müslim, "Salât'ül Müsâfirîn ve Kasruhâ", 293.

⁸¹ عبد الرزاق عن ابن جريج عن عطاء قال: إذا اغتسل أول النهار يوم الجمعة قبل الرواح ثم أحدث، فإنما يكفيه الوضوء Abdurrezzak, III, 201.

⁸² Once Allāh's Messenger remained behind us in a journey. He joined us while we were performing ablution for the 'Asr prayer which was over-due. We were just passing wet hands over our feet (not washing them properly) so the Prophet addressed us in a loud voice and said twice or thrice, "Save your heels from the fire. تَخَلَّفَ رَسُولُ اللَّهِ ﷺ فِي سَفَرٍ سَافَرْنَا فِيهِ فَأَنْزَلْنَا صَلَاةَ الْعَصْرِ وَنَحْنُ نَتَوَضَّأُ، فَجَعَلْنَا نَمْسُخُ عَلَى أَرْجُلِنَا، فَتَنَادَى بِأَعْلَى صَوْتِهِ "وَيْلٌ لِّلْأَعْقَابِ مِنَ النَّارِ". M. Bukhari, "Ilm", 30.

⁸³ Süleyman b. Eṣ'as b. İshak el-Ezdi es-Sicistani Ebu Dâvud, *Sünen-i Ebu Dâvud*, thk. Muhammed, Abdulaziz el-Halidi (Beyrut: Daru'l-Kutubi'l-İlmiyye, 2001), "Salat", 2.

⁸⁴ Ebû 'Abdurrahmân Ahmed b. Şu'ayb el-Ḥorâsânî en-Nesâ'î, *es-Sunenu'l-Kubrâ*. thk. Ḥasen 'Abdulmun'im (Beyrut: Mu'essesetu'r-Risâle, 1421/2001), "Mevâkit", 6.

⁸⁵ Al-İnsân, 76/25.

⁸⁶ Ar-Rûm, 30/17.

⁸⁷ Al-İsrâ 17/78.

⁸⁸ Ar-Rûm, 30/18.

⁸⁹ Sahih-i İbn Hibban, "Salât", 2628, 6/356.

⁹⁰ Buhari, "Salat", 89; Āl 'Imrân 3/17.

⁹¹ Al-Fajr, 89/1.

⁹² Bukhari, "Mawâkit al-ṣalât", 19.

⁹³ Muslim, "Masâjid", 229.

⁹⁴ M. Kâmil Yaşaroğlu, "Vakit", *Türkiye Diyanet Vakfı İslâm Ansiklopedisi* (İstanbul: TDV Yayınları, 2012), 42/488.

⁹⁵ "Indeed, the number of months with Allāh is twelve [lunar] months in the register of Allāh [from] the day He created the heavens and the earth; of these, four are sacred. That is the correct religion [i.e., way], so do not wrong yourselves during them. And fight against the disbelievers collectively as they fight against you collectively. And know that Allāh is with the righteous [who fear Him]. Indeed, the postponing [of restriction within sacred months] is an increase in disbelief by which those who have disbelieved are led [further] astray. They make it lawful one year and unlawful another year to correspond to the number made unlawful by Allāh and [thus] make lawful what Allāh has made

→

and moon's movements, as emphasized in the Quranic verses highlighting their roles in marking time for rest and worship, including hajj."⁹⁶ The word "yawm" is used when pointing out that in the cosmic order, the clock calculations are not as they are in the world. "It is Allah who created the heavens and the earth and whatever is between them in six days; then He established Himself above the Throne. You have not besides Him any protector or any intercessor; so will you not be reminded? He arranges [each] matter from the heaven to the earth; then it will ascend to Him in a Day the extent of which is a thousand years of those which you count." In another verse, it is said, "And indeed a day with your Lord is like a thousand years of those which you count."⁹⁷ This highlights the vast difference between human and divine perceptions of day/time.

The Islamic tradition incorporates a seven-day week, a system that aligns with the broader historical context of week structuring. According to Ibn 'Abbās, Allāh created the initial day and designated it as "one". Subsequently, He proceeded to establish the second day, designating it as "second". He continued this pattern by creating the other days and assigning them the names "third", "fourth", and "fifth". "Friday" is the designated day for the assembly of many beings. "Saturday" marks the day of Adam's inception, which was subsequently disrupted."⁹⁸

Jumu'ah is a noun from the root "jam" meaning "to gather, to bring together". In the pre-Islamic period, the sixth day of the week was called "aruba". Dictionaries state that this word is not Arabic, and researchers have determined that it is of Aramaic origin. In the Aramaic language, "aruba", which means "the day of 'arafa", was a day on which the Jews prepared for Saturday and set up a market in Medina from morning until noon.⁹⁹ During the early period of Islam, there is no historical evidence indicating the designation of any certain day of the week as an official holiday. The timing of zakat is also expected to be calculated in terms of days and months in matters such as the passage of one year after the income reaches the nişāb amount, i.e. hawalān al-ḥawl¹⁰⁰, fasting for two months in a row as atonement for dhīhār and breaking the fast¹⁰¹, waiting time of divorced women for three periods¹⁰², ilā, those who cannot complete the hajj for various reasons fasting for a total of ten days, three on the hajj and seven on their return¹⁰³, fasting

→

unlawful. Made pleasing to them is the evil of their deeds; and Allāh does not guide the disbelieving people." At-Tawbah, 9/36-37

⁹⁶ Al-An'ām, 6/96; Al-Baqarah, 2/189; Ar-Rahmān, 55/5.

⁹⁷ As-Sajdah, 32/4-5.

⁹⁸ Ebū'l-Hasan Ali b. Hüseyin b. Ali Mes'udī, *Mürûcü'z-zehab ve me'âdinü'l-cevher*, thk. Muhammed Muhyiddin Abdülhamid (Kahire: el-Mektebetü't-Ticaretü'l-Kübra, 1964), 2/206-207.

⁹⁹ Hayreddin Karaman, "Cuma", *Türkiye Diyanet Vakfı İslâm Ansiklopedisi* (İstanbul: TDV Yayınları, 1993), 8/85.

¹⁰⁰ Ebū 'Abdullāh Muḥammed b. Yezîd el-Ḳazvîni İbn Mâce, *Sunenu İbn Mâce*, thk. Muḥammed Fuâd 'Abdülhâkî (b.v.: Dâru 'İhyâ'î'l-Kutubi'l-'Arabîyye, ts.), "Zekât", 5.

¹⁰¹ Al-Mujādalah 58/2-4.

¹⁰² Al-Baqarah, 2/228.

¹⁰³ Al-Baqarah, 2/196.

for three days as atonement for oaths.¹⁰⁴

Certain days and times, apart from the obligatory ones, were regarded as virtuous for various actions during the Prophet Muhammad's (pbuh) time, shaping the time sensitivity of his Companions. For instance, Ali would pray after sunset during journeys, emulating the Prophet. The Prophet advised against returning home from long journeys at night and maintained specific routines, such as not sleeping before or after Isha prayers, praying night prayers in the later third of the night, and engaging in various community and personal tasks throughout the day. His daily routine included prayers, visiting the sick, resolving disputes, checking the market and interacting with his followers.¹⁰⁵ He also managed military and political responsibilities, leading over 20 battles and dispatching 70 seriyahs, indicating a busy and dynamic lifestyle. The Prophet emphasized the value of health and free time, warning that many people fail to appreciate these blessings.

The Concept of Time in the Four Caliph Period

When we examine the period of Abu Bakr, we observe a lack of institutional innovation. This period does not provide information about the calendar and clocks used. The majority of institutional activities occurred during the reign of Caliph 'Umar. Prior to 'Umar time Muslims named years based on events such as the Elephant Incident, the Battle of Fijar, the Year of the Earthquake, the Farewell Pilgrimage and the deaths of significant figures. However, this practice led to confusion in dating.

While 'Umar was consulting with other Companions to resolve this confusion, events that took place revealed the necessity of setting a calendar: "Ya'la b. Umayya, the governor of Yemen, sent a letter to 'Umar in which the day, month and year were not clear. Likewise, a promissory note was brought to Abū Mūsā al-Ash'arī, the governor of Basra, whose due date was recorded as the month of Sha'bān. When it was not clear which year the month of Sha'ban in the deed belonged to, this date and deed caused a dispute. These events revealed the necessity of determining a calendar. Although the idea of adopting the calendars of countries such as Iran, Greece, etc. was put forward, these proposals were not accepted. Ali argued that the beginning of the calendar should be the Hijrah. His view was adopted and the beginning of the Hijri calendar was accepted as the year 622, the date of Hijrah.¹⁰⁶ It is reported in the sources that when the Prophet came to Medina in the month of Rabi' al-Awwal, he himself asked for the date of his arrival to be determined.¹⁰⁷ The Prophet had migrated to Medina in the month of Rabi' al-

¹⁰⁴ Al-Mā'idah, 5/89.

¹⁰⁵ M. Mahfuz Sözlomez, "Hz. Peygamber'in Bir Günü Üzerine", *İslami İlimler Dergisi* 1/1 (01 Nisan 2006), 77.

¹⁰⁶ Tezcan Aksu, "Sekizinci Yüzyıldan Günümüze Takvimlerimiz", 389.

¹⁰⁷ Ebū'l-Fazl Şihâbüddîn Ahmed b. Alî b. Muhammed İbn Hacer Askalânî, *Fethü'l-bari bi-şerhi Sahihi'l-Buhari*, thk. Muhammed Fuâd Abdülbâkî - Muhibbüddin el-Hatîb (Kahire: Dârür-Reyyan li't-Türas, 1987), 7/268.

Awwal. However, since the lunar year began with the month of al-Muḥarram, the date was moved back by two months and eight days and the beginning of the Hijri Calendar was fixed as July 23, 622.

Hijri Calendar is divided into two as Hijri Shams (solar) and Hijri Qamar (lunar) Calendar. The calendar system that accepts September 20, 622, the day of the Prophet's arrival in Kuba, as the beginning of the Hijri year and is based on the circulation of the Earth around the Sun is called the Hijri Shams Calendar. With a decision taken in the 17th year of the Hijrah during the reign of Umar, the date 622 was accepted as the 1st year of the Hijri Calendar and the month of Muharram of that year was accepted as the beginning of the Hijri Lunar Calendar, and July 16, 622, which coincided with 1 Muharram that year, was accepted as the beginning of the Hijri Lunar Calendar. The calendar we call the Hijri Calendar is actually the Hijri Lunar Calendar.

During the reigns of 'Uthman and Ali, the Hijri Calendar, which had been introduced during the reign of 'Umar, was used in the same way. Due to the internal turmoil and rebellious movements during this period, the works and arrangements related to the calendar slowed down.

Astronomy Activities in the Umayyad and Abbasid Periods

The translation movement that started in the Umayyad period reached its peak during the Abbasid period and many works on astronomy were translated into Arabic. In the field of astronomy, Khālid b. Yazīd's (d. 102/720) translation of Ptolemy's "Kitab al-Samere" is recorded as the first translation activity in this field.¹⁰⁸ During the Umayyad period, muwaqqithanes were built to determine the times of worship. These institutions not only led to the development of astronomy but also caused many astronomical terms to enter the Arabic language.¹⁰⁹ Astronomy also manifested itself in the field of architecture, and about 400 stars and constellations were depicted on the dome of the baths of the Qusayr 'Amra Palace built during this period.¹¹⁰

The Abbasid period can be described as the peak period in the history of Islamic astronomy. Especially with the construction of Bayt al-Hikma in this period, many astronomical works were translated into Arabic. Especially with the translations made, works of Mesopotamian, Greek-Roman, Iranian-Indian cultures in the fields of astronomy, mathematics, medicine, chemistry and philosophy were translated into Arabic.¹¹¹ Many observatories and observatories were built during this period.

The negative repercussions of the massive translation movements that took

¹⁰⁸ Ali Bakka, "İslam Astronomi Tarihinde İbn Rüşd", *Diyanet İlmî Dergi* 48/3 (2012), 198.

¹⁰⁹ Kaya, "Ortaçağ'da Arap-İslam Dünyasında Astronomi Bilimi", 359-360.

¹¹⁰ Sezgin - Neubauer, *İslam'da Bilim ve Teknik*, 2/3-4.

¹¹¹ Zeki Tez, *Ortaçağ İslam Dünyasında Bilim ve Teknik* (Diyarbakır: Dicle Üniversitesi Fen-Edebiyat Fakültesi Yayınları, 1991), 2.

place during the Abbasid period were the introduction of astrology into Islam. Astrology (‘Ilm al aḥkām al-nujūm) is the belief that the stars and planets form a system and that it is possible to obtain information about the future through this system.¹¹² The person who provides this information is called a munajjim. This belief entered Islam through the translation of Iranian and Indian texts. During the Abbasid period, army commanders had munajjims with them, and commanders and caliphs consulted munajjims in wars and administrative affairs.¹¹³

In the field of astronomy, Muslims adopted the Earth-centered universe model of Ptolemy and Aristotle.¹¹⁴ According to this model, the Earth is fixed at the center and the Sun and other planets orbit around the Earth.¹¹⁵ Until Nikolaus Copernicus (d. 1543), it was believed that the Earth was the center of the universe and the planets orbited around the Earth. With Copernicus, the heliocentric model of the universe was accepted. In this model, the Sun is at the center and the other planets orbit around the Sun in specific orbits.

Evaluation and Conclusion

Time is a universal concept in every faith and culture. People have always tried to understand and make sense of time. Time, calendars, measuring time, naming time and managing time are all related to human needs. For this reason, each society has its own historical process as well as a unique perception of time. For example, in ancient Egypt, the lunar calendar was used for agriculture, the solar calendar was used for state affairs, and in ancient Egypt and Mesopotamia, calculations similar to today's were used. In some periods, some societies calculated time to the smallest units, while in other periods there was no need to do so. In general, people divided time into units such as period, year, season, month, week, day, time, hour, minute, second, moment. While the seasons were not very important to people living in the equatorial region in the past, ancient Egypt divided the year into three seasons, and the Romans preferred to divide the year into four seasons. Similarly, while the clock in some societies was 24 or 48 minutes, some societies divided the day into 12 hours and the night into 3 hours.

Remembering or forgetting people, societies, states or various events caused by them is related to time. Nostalgia or traumas from the past that prevent reconciliation with today's realities, or utopian or melancholic relationships with the future, are also related to time. Man, lives in the moment, which is why he is called “ibn al-waqt”. Since the first man, there has been a relationship between time and nature. The concept of the day begins with the rising and ends with the

¹¹² Tevfik Fehd, “‘Ilm-i Ahkām-ı Nücûm”, *Türkiye Diyanet Vakfı İslâm Ansiklopedisi* (İstanbul: TDV Yayınları, 2000), 22/124.

¹¹³ Davut Baş, *Nizâmeddin En-Nîsâbûrî'nin Şerhu Sî Fasl Adli Eserinin Tahkik ve Değerlendirilmesi* (Konya: Necmettin Erbakan Üniversitesi, İslam Tarihi Bilim Dalı, Yüksek Lisans Tezi, 2023), 195.

¹¹⁴ Kaya, “Ortaçağ'da Arap-İslam Dünyasında Astronomi Bilimi”, 356.

¹¹⁵ Yavuz Unat, “Tarih Boyunca Türklerde Astronomi”, *Ortaçağ İslam Dünyası'nda Bilim ve Teknik (Makaleler)* (Ankara: Lotus Yayınevi, 2008), 158.

setting of the sun. Daylight, not clocks, determines time. The points of disagreement are how to divide a day within itself and how to value times such as weeks, months, seasons, years, centuries, which are multiples of a day. People have defined these times according to their social, economic and political needs.

In the Jāhiliyya period, people believed in God but thought that time was the one who would judge them in their worldly affairs. During this period, people exaggerated the power of time and surrendered to it instead of managing it. This submission had dragged them into a dimension that would prevent them from their duties, such as serving Allah and denying the Hereafter. Also in this period, some people thought that it was time that gave them life and killed them, and they cursed time.

With Islam, there have been significant changes in the way Muslims understand time. The Qur'an and the Hadiths of the Prophet (pbuh) emphasise that the universe was created with a measure, that it can be calculated for the benefit of human beings, and that people should always be aware of time. In response to people cursing time during the Jāhiliyya period, Allah said that they were wrong and that time was in their own hands. Islam has also set a definite limit on the number of months in a year. In verse 36 of Surat al-Tawbah, Allah has stated that the number of months is twelve and that four of these months are forbidden months. When these months were first named, important events that occurred during these months were taken into consideration.

For Muslims, the determination of time was fundamental to every aspect of life, from basic acts of worship such as prayer, fasting, zakat, pilgrimage and the forbidden months, to determining the appropriate times to travel or return from a journey. In addition, for commercial, military, political or everyday reasons, time was divided in such a way as to allow people to give a time, and these parts were given different names according to the position of the sun. Both Arabs living in the city and those living in the desert had a common language and concept when it came to naming time. For Muslims, the day begins with the setting of the sun, and the period from dawn to sunset is called the *shar'f* day. A week is made up of seven days. A month is calculated from one revolution of the moon around the Earth, so sometimes a month is 29 days and sometimes it is 30 days. A year is made up of twelve lunar months.

Until the time of Hz. Umar, Muslims used to mark the years with events such as the elephant incident, the war of Fijar, the year of the earthquake, the farewell pilgrimage and the death of some important people. But this situation led to confusion about dates. Muslims who wanted to use a common calendar accepted the year 622, the date of the Prophet's (pbuh) migration from Mecca to Medina, as the beginning of the Hijri calendar in order to eliminate this confusion. The translation movement, which began in the Umayyad period, reached its peak during the Abbasid period, and many works on astronomy were translated into Arabic. In addition, *muwaqqithanes* were built in many places. These institutions both ensured

the development of the science of astronomy and introduced many astronomical terms into the Arabic language.

After the industrial revolution, concepts such as productivity, efficiency, shift, overtime have entered human life, and minutes, seconds have gained importance, and in cases where technical calibrations have gained sensitivity, even seconds, milliseconds, microseconds, nanoseconds have become units of measurement for certain specialists. A slogan of the Hitachi brand sums up the age in which we live: Speed is God and time is the devil. As a result, time management has become a necessity rather than an option.

We believe that the generations after us will give a more accurate answer to the question of whether it is more humane to accept the extremes and the extremes of the period from a time when time was deified in ancient Greece and ancient Persia to an age when time was demonized, to put a question mark at the end of the affirmation of truth as truth, and how to slice time, and whether a mediocre point can be caught between these extremes.

Author Contributions / Yazarların Katkısı: In the each of th conceptualization, methodology, software, investigation, writing review, editing and discussion processes, author-1 contribution rate is 51% and author-2 contribution rate is 49%. / Kavramsallaştırma, metodoloji, yazılım, araştırma, metin taslağının hazırlanması, metnin yazılması ve tartışma süreçlerinin her birinde, yazar-1 katkı oranı %51, yazar-2 katkı oranı %49'dur.

Funding / Finansman: This research received no external funding. / Bu araştırma herhangi bir dış fon almamıştır.

Conflicts of Interest / Çıkar Çatışması: The author declare no conflict of interest. / Yazar, herhangi bir çıkar çatışması olmadığını beyan eder.

Bibliography

- Ağarlı, Murat. "Zaman Kavramı: Nedir-Ne Değildir?" *Karabük Türkoloji Dergisi* 6/1 (2023).
- Alici, Mehmet. "Kadim İran'da Din: Monoteizm'den Düalizm'e Mecusi Tanrı Anlayışı". *İslâm Araştırmaları Dergisi*.
- Bakkal, Ali. "İslam Astronomi Tarihinde İbn Rüşd". *Diyanet İlmî Dergi* 48/3 (2012).
- Baş, Davut. *Nizâmeddin En-Nisâbü'rînin Şerhu Sî Fasl Adli Eserinin Tahkik ve Değerlendirilmesi*. Konya: Necmettin Erbakan Üniversitesi, İslam Tarihi Bilim Dalı, Yüksek Lisans Tezi, 2023.
- Bîrûnî, Muhammad İbn Ahmad. *The Chronology of Ancient Nations*. çev. Eduard Sachau. London: William H. Allen & Co, 1879.
- Buhârî, Ebû Abdillâh Muhammed b. İsmail el-. *el-Câmi'ü's-Şahîh*. nşr. Muhammed Zühayr b. Nasr. 8 Cilt. b.y.: Dâru Tavki'n-Necât, 2. Basım, 1422/2001.
- Çağatay, Neşet. "Eski Çağlardan Bu Yana Zaman Ölçümü ve Takvim". *Ankara Üniversitesi İlahiyat Fakültesi Dergisi* 22 (1978).
- Çam, Nusret. "Güneş Saati". *Türkiye Diyanet Vakfı İslâm Ansiklopedisi*. 14/297-299. İstanbul: TDV Yayınları, 1996.
- Çelik, Taha. "'Dehre Sövmeyiniz ...' Rivayeti Çerçevesinde Zaman Algısı". *Uluslararası İslam Medeniyetinde Zaman Sempozyumu*. C. 1. Konya: Necmettin Erbakan Üniversitesi Yayınları, 2015.
- Dârimî, Ebû Muhammed Abdullah b. Abdurrahman b. Fazl ed-. *Sünen-i Dârimî*. thk. Abdullah Aydınli. İstanbul: Madve Yayınları, 1994.
- Demirci, Mustafa. "Batı Medeniyetinin Zaman Algısının İslam Medeniyetinde Uygulanabilirliği Problemi: Gündelik Zaman ve Devirler Meselesi". *Uluslararası İslam Medeniyetinde Zaman Sempozyumu*. C. 1. Konya: Necmettin Erbakan Üniversitesi Yayınları, 2015.
- Diehl, Ernst. "Das 'saeculum', seine Riten und Gebete: Teil II. Die 'saecula' der Kaiserzeit. Ritual und Gebet der Feiern der Jahre 17 v. Chr., 88 und 204 n. Chr.". *Rheinisches Museum für Philologie*. n.s. 83 (4) 1934.
- Döner, Ertuğrul. "Bazı Kültürlerde ve Dinlerde Zaman". *Çukurova Üniversitesi İlahiyat Fakültesi Dergisi* 17/1 (2017), 227-247.
- Ebu Dâvud, Süleyman b. Eş'as b. İshak el-Ezdi es-Sicistani. *Sünen-i Ebu Dâvud*. thk. Muhammed, Abdulaziz el-Halidi. Beyrut: Daru'l-Kutubi'l-İlmiyye, 2001.
- Evans, James. *The History & Practice of Ancient Astronomy*. Oxford: Oxford University Press, 1998.
- Fehd, Tevfik. "İlm-i Ahkâm-ı Nücüm". *Türkiye Diyanet Vakfı İslâm Ansiklopedisi*. 22/124-126. İstanbul: TDV Yayınları, 2000.
- Hamîdullah, Muhammed. "Hicri Takvim ve Tarihi Arka Planı". çev. Kasım Şulul. *Uludağ Üniversitesi İlahiyat Fakültesi Dergisi* 9/9 (2000).
- Hamîdullah, Muhammed. *İslâm Tarihine Giriş*. çev. Ruhi Özcan. İstanbul: Beyan Yayınları, 2015.
- İbn Hacer Askalânî, Ebû'l-Fazl Şihâbüddîn Ahmed b. Alî b. Muhammed. *Fethü'l-bari bi-şerhi Sahihî'l-Buhari*. thk. Muhammed Fuâd Abdülbâkî - Muhibbüddin el-Hatîb. Kahire: Dârü'r-Reyyan li't-Türas, 2. Basım, 1987.
- İbn Mâce, Ebû 'Abdullâh Muhammed b. Yezîd el-Kâzvinî. *Sunenu İbn Mâce*. thk. Muhammed Fuâd 'Abdülbâkî. 2 Cilt. b.y.: Dâru 'İhyâ'î'l-Kutubi'l-'Arabiyye, ts.
- İbn Manzûr, Ebû'l-Fazl Cemâlüddîn Muhammed. *Lisânü'l-Arab*. Beyrut: Dâru Sadır, ts.
- İkbal, Muhammed. *İslam'da Dinî Düşüncesinin Yeniden İnşası*. çev. Rahim Acar. İstanbul: Timaş Yayınları, 2016.
- Karaman, Hayreddin. "Cuma". *Türkiye Diyanet Vakfı İslâm Ansiklopedisi*. 8/85-89. İstanbul: TDV Yayınları, 1993.
- Kaya, Seyfettin. "Ortaçağ'da Arap-İslam Dünyasında Astronomi Bilimi". *Bitlis Eren Üniversitesi Sosyal Bilimler Enstitüsü Dergisi* 6/2 (2017), 354-373.
- Kayhan, Veli. "Son Zaman Ayarı-II: 'Neş' Ya Da Haram Aylara Müdahale". *Bilimname* 1/28 (2015).
- Kazıcı, Ziya - Şeker, Mehmet. *İslam-Türk Medeniyet Tarihi*. İstanbul, 1982.
- Koçak, İnci. "Arapların Ay Takvimindeki Ay Adları". *Ankara Üniversitesi Dil ve Tarih-Coğrafya Fakültesi Dergisi* 37/1-2 (1995).
- Kutluer, İlhan. "Zaman". *Türkiye Diyanet Vakfı İslâm Ansiklopedisi*. 44/111-114. İstanbul: TDV Yayınları, 2013.
- Lombardi, Michael A. "Why is a minute divided into 60 seconds, an hour into 60 minutes, yet

- there are only 24 hours in a day?" *scientificamerican*. 01 Ekim 2023. <https://www.scientificamerican.com/article/experts-time-division-days-hours-minutes/>
- Mesûdî, Ebu'l-Hasen Ali b. Hüseyin. *Murûcu'z-Zeheb ve Meâdinu'l-Cevher*. thk. Muhammed Muhyiddin Abdülhamid. Beyrut, ts.
- Mes'udi, Ebû'l-Hasan Ali b. Hüseyin b. Ali. *Mürûcü'z-zeheb ve me'âdinü'l-cevher*. thk. Muhammed Muhyiddin Abdülhamid. Kahire: el-Mektebetü't-Ticaretî'l-Kübra, 4. Basım, 1964.
- Nasr, Seyyid Hüseyin. *Bilgi ve Kutsal*. İstanbul: İz Yayınları, 2013.
- Nesâî, Ebû Abdîrrahmân Ahmed b. Şu'ayb. *Sünenü'n-Nesâî*. thk. Abdülfettâh Ebû Gudde. Haleb: Mektebü'l-Matbû'âtî'l-İslâmiyye, 1986.
- Nesâî, Ebû 'Abdurrahmân Aḥmed b. Şu'ayb el-Ḥorâsânî en-. *es-Sunenu'l-Kubrâ*. thk. Ḥasen 'Abdulmun'îm. 10 Cilt. Beyrut: Mu'essesetu'r-Risâle, 1421/2001.
- Neugebauer, Otto. *Astronomy of Maimonides and Its Arabic Sources*. Hebrew Union College Annual, 1949.
- Ödemiş, Mehmet. "İslam Mezheplerinde İnsan Hürriyeti Hakkındaki İlk Tartışmaların Teo-Politik Eleştirisi". *EKEV Akademi Dergisi* 88 (2021).
- Sezgin, Fuat - Neubauer, Eckhard. *İslam'da Bilim ve Teknik*. Ankara: Kültür ve Turizm Bakanlığı Yayınları, 2008.
- Sözlemez, M. Mahfuz. "Hz. Peygamber'in Bir Günü Üzerine". *İslami İlimler Dergisi* 1/1 (01 Nisan 2006), 69-84.
- Srinivasan, Saradha. *Mensuration in Ancient India*. Delhi: Ajanta Publications, 1979.
- Şulul, Kasım. *Hicri Takvim ve Siyer Kronolojisi Etütleri / Makaleler*. İstanbul: Siyer Yayınları, 2012.
- Şulul, Kasım. "Hicrî Takvimin Ortaya Çıkışı". *Harran Üniversitesi İlahiyat Fakültesi Dergisi* 10/4 (2002).
- Tez, Zeki. *Ortaçağ İslam Dünyasında Bilim ve Teknik*. Diyarbakır: Dicle Üniversitesi Fen-Edebiyat Fakültesi Yayınları, 1991.
- Tezcan Aksu, Belgin. "Sekizinci Yüzyıldan Günümüze Takvimlerimiz". *Uluslararası Türk Lehçe Araştırmaları Dergisi* 2/1 (2018).
- Tirmizî, Ebû İsâ Muhammed b. İsâ et-. *es-Sunen*. thk. Beşşâr 'Avvâd Ma'rûf. 6 Cilt. Beyrut: Dâru'l-Ğarbi'l-İslâmî, 1998.
- Topakkaya, Arslan. *Felsefe, Din ve Kültür'de Zaman*. İstanbul: Paradigma Yayınları, 2013.
- Topakkaya, Arslan. "Zaman ve Takvim İlişkisi". *Uluslararası İslam Medeniyetinde Zaman Sempozyumu*. C. 1. Konya: Necmettin Erbakan Üniversitesi Yayınları, 2015.
- Unat, Yavuz. *al-Fargânî'nin Kitab el-Fusûl Adlı Astronomi Eseri Üzerine Bir Araştırma*. Ankara: Ankara Üniversitesi, Sosyal Bilimler Enstitüsü Felsefe (Bilim Tarihi) Anabilim Dalı, Doktora Tezi, 1996.
- Unat, Yavuz. "Antik Uygarlıklar, Uranüs, Neptün ve Plüton Gezegenlerini Biliyorlar mıydı?" *Bilim ve Ütopya* 272 (2017).
- Unat, Yavuz. "Tarih Boyunca Türklerde Astronomi". *Ortaçağ İslam Dünyası'nda Bilim ve Teknik (Makaleler)*. Ankara: Lotus Yayınevi, 2008.
- Yaşaroğlu, M. Kâmil. "Vakit". *Türkiye Diyanet Vakfı İslâm Ansiklopedisi*. 42/488-491. İstanbul: TDV Yayınları, 2012.
- Yıldız, Mehmet. "Geleceğin Korkusunu Geçmişin Hüznünü Taşımayan İnsan: İbnü'l-vakt". *Sufiyye* 11 (2021).
- "Aztec Calendar | Mesoamerican, Tonalpohualli & Sun Stone | Britannica". Erişim 28 Haziran 2024. <https://www.britannica.com/topic/Aztec-calendar>
- Horai. "Familiy of the Hours". 01 Ekim 2023. [https://www.theoi.com/Titan/Horai.html#:~:text=%22The%20names%20of%20the%200Horae,Orthosie%2C%20Thallo%20\(Bud\).](https://www.theoi.com/Titan/Horai.html#:~:text=%22The%20names%20of%20the%200Horae,Orthosie%2C%20Thallo%20(Bud).)
- Günün 24 Saate Taksimine Dair Kanun, Günün 24 Saate Taksimine Dair Kanun. *Resmî Gazete* 697 (01 Ocak 1926).
- Kur'ân Yolu*, 2024. <https://kuran.diyanet.gov.tr>
- "Kur'an-ı Kerim". Erişim 28 Aralık 2023. <https://kuran.diyanet.gov.tr/mushaf>
- "Nasa". 03 Ekim 2023. Erişim 03 Ekim 2023. <https://www.nasa.gov/>
- Takvimde Tarih Mebdeinin Değiştirilmesi Hakkında Kanun, Takvimde Tarih Mebdeinin Değiştirilmesi Hakkında Kanun. *Resmî Gazete* 698 (26 Aralık 1925).