

# The Philosophical Odyssey of Temporality

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## Abstract

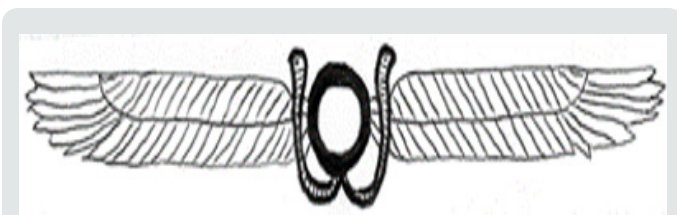
During their research of the explanation of the world, most authors were, and still are, concerned about temporality. However, the literature of the subject is dominated by a proliferation of opinions and a dramatic absence of demonstrations, the tenacity of historians, poets and philosophers deserves praise. In his *Annales*, the Latin poet Tacitus (c.55-c.120) notices that there is little distance between art and error (*Book IV, Ch. LVIII, 3*).

**Keywords:** Precursor; Event; State of a System

## Introduction

Since antiquity, the main trends of thought have developed from the idea of eternity: in many cultures, man in his anguish refuses death by attributing himself an eternal destiny. The idea of eternity can be considered a prodrom of temporality; a major precursor of time observed as soon as the writing was invented about 5000 years ago. This study reviews the main concepts of temporality, according to their appearance in history, and through over fifty major authors.

## Eternity and Rebirth



**Figure 1:** A sacred precursor of time and space.

Eternity is a theological precursor of time that has first appeared in Mesopotamia and in Egypt. An Egyptian hieroglyph (Figure 1) symbolizes the cycle of the Sun God Re, in which the disc represents Re, creator of living beings. The spread wings of the Goddess Nephthys symbolize the Sun's path, with the alternation of day and night, and with rebirth after death: a life *post mortem* in an imaginary hereafter, a life that is sustainable, perpetual; hence the

idea of eternity, the idea of eternal duration. This sacred symbol of motion spread across a large part of western Asia, but no trace has been observed in Greek and Roman architecture and numismatics.

In most theogonies, Gods created humans with the purpose of being served and venerated; but, as they were afraid of being overwhelmed by these creatures of their own making, an idea which may seem strange to us, they made them mortals. They could then exert their occult Uranian influence by using aging and subsequent death. God must be written with a capital letter, as the Latin poet Petronius (?-c.65 CE) (*CXIV*) did in *Satiricon*, and as Tacitus did in *Annales* (*Book III, Ch. VI, 2*); indeed, their Gods were not inferior to ours. (CE for Common Era; BCE for Before Common Era). The *Gilgamesh Epic* (Sumer, c.2700 BCE) reveals that the Gods created humans, but that death was part of the deal. The legendary king was protected by the sun God Shamash, requesting that neither he nor his double Enkidu should be required to age: they wanted eternal life.

Pharaoh Narmer, c.3000 BCE, *Menes* in Greek « the one who is eternal » [1], p. 37), was the first pharaoh of unified Egypt. The name of pharaoh Menkaou-Re (c.2500 BCE), *Mikherinos* in Greek means « the solar God Re is eternal » [1], p. 46). The Pharaoh Khety, c.2070 BCE, gave his opinion: « Man survives after death, his deeds in a heap at his side. We are here for eternity; he who does not take

care of that is a total fool! » [2], p. 62). The *Djed* (Figure 2) is a pillar-shaped amulet which was intended to allow the pharaoh to live on « for ever in the next world » [3], *Ch. III*). The *Djed* appears on the side of the throne of Sesostris I (1970-1928 BCE) which was found in Karnak (Museum of Egyptian Antiquities in Cairo). It reminds the backbone of Osiris [4], p. 27), the God of rebirth after death. In his hypogeum, Amenophis II receives the cross of life *Ankh* (Figure 2) from the Goddess Hathor, thus conferring the gift of immortality [4], p. 121). In *Odes*, the Latin poet Horace (65-8 BCE) writes « we shall take the barque for the eternal exile » (*Book II, III*). For the polytheists (early 1<sup>st</sup> century), *αιων* (*aion*) is the eternal duration, associated with change. The fourth century Greek philosopher Euhemerus made a rational study of the *post mortem* divination of monarchs and prophets, called euhemerism, which is today lost in part. Medieval Judeo-Christians used the expression eternal time [5], p. 522).



Figure 2: Djed and Ankh.

### The Day

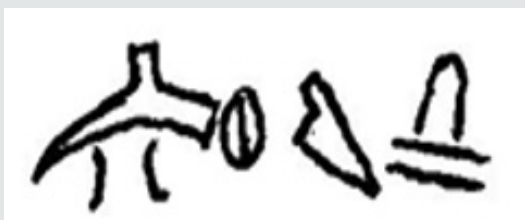


Figure 3: Hittite hieroglyph for « day ».

The Hittite pictographic writing appears during the 15<sup>th</sup> century BCE, as does their first hieroglyphs: they use the day in their everyday life as a kind of unit (Figure 3) [6]. In *Odyssey*, the Greek poet Homer (9<sup>th</sup> century BCE) writes: « when Zeus brought the seventh day » (*Song XII*). « Then Helios was falling (in the *Okeanos*), and it was the end of this war of one day » (*post-Homeric song*). In *Cratyle*, the Greek philosopher Plato (428-348) notices that for Socrates (470-399), (the Sun) « is continuously rotating around the Earth ». The Latin poet Virgil (70-19 BCE), refers to *volvenda dies*: the rolling out of the *days*; what let suppose he considered that time is an active phenomenon. In *de rerum natura*, the Latin poet Lucretius (99-c.55 BCE) mentions the revolutions of the Sun (*Song V, 931*). In *Manuel des Poids et Mesures*, published in 1840,

A. Tarbe gives an exemplary definition: « the returns (of the Sun) to the meridian mark the days » (*Titre IV, §8*). This is the rigorous semantic of an Avocat General at the Court of Cassation who was not, however, an astronomer.

### The Month

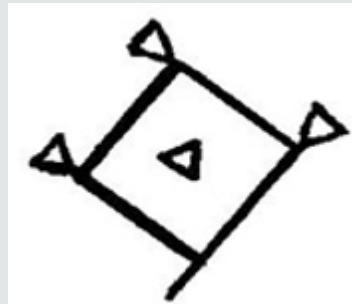


Figure 4: The invention of temporality.

From 2800 BCE, Sumerians have developed a cuneiform writing [7]. An unexpected clay tablet has been uncovered: it is engraved with a cuneiform sign (Figure 4) which means « lunar month » (6, *Ch. II*). It is the oldest proven reference to temporality (2800-2500) in the history of thought. The foregoing analysis demonstrates that the lunar month was not discovered somewhere in Nature or in the Universe, unlike a virus or an exo-planet. The Sumerian savants observed the Moon alternations, they named it *arhue*, which corresponds to the lunar month, and they used it as a unit in their everyday life. The lunar month is the invention of the first parameter of time, knowing that the word time does not exist yet. In *Odes*, the Latin poet Horace (65-8 BCE) wrote: *Luna volvit menses* (the Moon rolls out the months). In *Aeneid*, Virgil, who assumes that time is active, ventures the following expression: *volvendis mensibus* (the course of the months).

### The Year

The year was used in Mesopotamia from the late 3<sup>rd</sup> millennium (7, *Ch. IV*): it comprised 360 days. During the Assyrian period (12<sup>th</sup>-7<sup>th</sup> century BCE), the *limmu* was an important person whose name was used to indicate the year (5, p. 239). In *Odyssey*, Homer writes: « when time comes with the course of years » (*Song I*). « when the fourth year came, and when the seasons began again » (*Song II*). « after days and months have passed and the year being performed, seasons come again » (*Song IV*). « at the end of the year, when the hours have accomplished their round trip, when the months have gone by and when long days have elapsed » (*Song X*). In *Histories*, the Greek historian Herodotus (484-425) reports his travel in Egypt during which Egyptians claimed that they were the first to identify the annual cycle of seasons, this being divided into twelve months (*Book II, 4*). In *Georgics*, Virgil uses *Volventibus annis* (the years roll out). In *Epistles*, Horace complains: « During their course, the years strip us all our advantages » (*Book II, II*). In *Life of Numa*, the Greek philosopher Plutarch (c.46-c.126) writes about the year: « It only

has three months among certain barbarians. Among Egyptians, the year had one month at first, and later it had four months » (18, 6 & 7). The Consul Ausonius, in *The other prayer to the calends of January* (379 CE), was the first in Rome to associate the regular advent of seasons with *Annus* (5, p. 553). The calends was the first day of the lunar month.

## Past, Present and Future

Homer refers to what has passed using the word *παρωξημενοζ* (5, p. 547). In *Odyssey*, he writes: « So that we sang them in the future days » (*Song VIII*). The Greek poets Aeschylus (c.525-456) and Pindar (518-438) talk about future time: *μελλων* (5, p. 547). For the Greek Stoic Zeno (335-264), *ομελλων* means the future. The present is initiated with *οενεστωζ*, but its reality is denied (5, p. 551). They were right, because present time is a concept. In *Common Conceptions against the Stoics*, Plutarch criticizes them with an unjustified reproach: « it is contrary to the notion that we have a future time and a past, but no present » (5, p. 549). In *Isis*, he mentions Rhea, the mother of Gods, spouse of Cronus (or Kronos), and the source of duration [8].

In *Pyrrhonian Hypotyposes*, the philosopher Sextus Empiricus (c.160-c.210) mentions the three divisions of *time*. He wonders if time exists or not. Is it finite or infinite? Divisible or indivisible? Perishable if it was created, or imperishable if it was not created? (5, p. 548). In *the Peloponnese War*, the Greek founder of historical science, Thucydides (c.465-c.395), reports the conflict which opposes Athena and Sparta from 431 to 404, pulled into conflict by their various alliances. He does not study present time, but present events. He follows the sequence of events in order to understand, and to accomplish his work as a historian (*Book V, 26*). In his conference *La Conscience et la Vie* (in *L'Energie Spirituelle*) at Birmingham University in 1911, the French philosopher Henri Bergson (1859-1941) described the present, as a duration thickness located between our immediate past and our imminent future. The physicist J. M. Levy-Leblond claims about present, that there is a width and a thickness between future and past [9]. In fact, if present designates present event, its duration is measured with a timer; if it designates present time, the duration of time is an obvious sophism.

## The Seasons

Thucydides talks about the season (August) during which people's health grows weaker (*Book VII, 47*). He avoids the confusion between the seasonal climatic impact and time. His translator Denis Roussel notes that physicians of the Cos School, that of Hippocrates (c.460-c.377) were taking the influence of climate and seasons into account. In the early fourth century AD, during Roman times, winged women were used to represent the four seasons, as in the Mosaic of the Seasons which was discovered near Antioch [10], *Ch. V*), and is now in the Musee du Louvre. In *Histoire du temps* (Fayard 1982), the French intellectual Jacques

Attali reports an investigation carried out by Reinberg and Halberg about people suffering from brain death in France between 1962 and 1967, from which it results a greater fragility during winter seasons. Attali takes this as an action of time on individuals (*Ch. 4*), whereas in fact there is no action of time, merely a seasonal climatic impact. DAYS' WALK

Herodotus frequently specifies the distance travelled (or to be travelled) in « days' walk », in « days' sail », or in « months' sail » (*Book I, 203; Book II, 19 and 31*: « The distance is not short, it's three days' walk » (*Book III, 6*). In *Anabasis*, the historian and strategist Xenophon (c.428-c.353) uses « days' walk » (*Book I*), like Plutarch does in *Life of Timoleon* (25, 5). Considering how slow walking armies could be, for Persian, Greek, and Phoenician strategists, and especially for the foot soldiers and sailors who carried out these maneuvers, these expressions had the advantage of indicating both the « distance » and the « duration » of the travel. « distance walked in one day », « distance sailed in one day » and « distance sailed in one month » can be considered the first speed units. The British physicist Issac Newton (1643-1727) formalizes the distance travelled according to speed, with the equation: (distance travelled) = (velocity) x (duration of the travel) (9, p. 67).

## The Clepsydra

The Latin writer Cicero (106-43) uses *ad clepsydrum*, which means: under the control of the clepsydra, which is a water clock. Plutarch says that he's measuring the water of clepsydra (*Life of Alcibiades, 19, 5*): he measures how much water has flowed, not the duration of an event.

## Duration

The Queen Hatshepsut (1504-1483 BCE) says « So that my name is durable and perpetual ». Hatshepsut's high priest: « I went towards my place of infinite duration ». Amenophis I « Amon is satisfied » (1558-1530 BCE) adds « Amon whose monuments are long-lasting » [11], *Ch. II*). Ptahhotep begs his pharaoh Isesi (c.2400 BCE) to discharge him of his functions: he complains of « the long-lasting of life » (12, *Ch. III*). Was the concept of duration known at this epoch? Instead, Ptahhotep probably said « the many years of life ». The physicist Michel Paty points out that the philosopher Alfred North Whitehead (1861-1947) thought that a duration had a temporal thickness [9].

## Time

In Tell el-Amarna, on the tomb of Ai, who was the second husband of Nefertiti « the beautiful one has come » (second half of XIV<sup>th</sup> BCE), there appears a poignant anthem to the Sun composed by the Pharaoh Akhenaten, instigator of the first monotheism: « You are time itself, you last with it. In you, we all live eternally thanks to your splendour » [12], *Ch. II*). Eternity was subsequently referred to as the father of time by the Greek philosopher Proclus (412-485) (5, p. 540). In the *Heracleidae* by the Greek poet Euripides (480-

406 BCE), eternity was given the nickname son of time. According to Plato, the Demiurge has created a mutable copy (time) of the immutable model (eternity) (5, p. 537); in other words, Plato considers time to be a reality, without defining it. In *Timaeus*, he notes: « the Sun, the Moon and the five other planets were born to define the numbers of time » (5, p. 559). This is correct, given that the numbers of time correspond to our time units. However, he adds: « days, nights, seasons, are time divisions »; which shows that he did not see the need to distinguish phenomena (days, nights and seasons) and concepts (time divisions).

Philosophy treats time and physical space as primordial categories of understanding, although Philosophy does not explain what time and space are. For the Greek philosopher Aristotle (384-322), time and place are two out of his ten categories of understanding. In his cosmological treatise *On the Heavens*, the tutor of Alexander the Great, uses  $\alpha\omega\nu$  (*aion*) for duration; the tripartition of time is not clearly established (5, p. 537). In *De rerum natura* Lucretius notices « the immensity of time » (*Song V, 427*) and « the infiniteness of time » (*Song II, 574 et Song V, 378*); he uses *spatium tempus* for space of time. *Fugit irreparabile tempus* (Time flies irremediably): this aphorism due to Virgil in *Georgics* represents all the metaphors of the presumed dynamics of time. In *Geography*, the historian and geographer Strabon (c.64-c.22 EC) reminds that the Egyptian priests of Thebes, who also dealt with philosophy and astronomy, decided to connect the course of time to the Sun and no longer to the Moon. The Roman historian Titus Livius (c.59-17 CE) used *spatium tempus* for space of time. In *The art of loving*, the Latin poet Ovid (43- 18 CE) asserts that « with time you will conquer Penelope » (*Book I*). He rejoices: « Others praise the past; for myself, I am pleased to be born in this century » (*Book III*). « Time flows like water » (*Book III*). *Tempus edax rerum* (Time destroys things), the aphorism of Ovid in *Metamorphoses*, suggests that time is the cause of change, including aging.

Plutarch was careful enough to say he had « leisure » instead of « free time » (*Life of Cesar, 11, 5*). Petronius describes « a clock near which a bucinator warns us of the flight of the days, and time gone by » (*XXV*). Days and hours cannot be measured; it is changes observed by Petronius that are measured. In *Annals*, Tacitus uses the expression « succession of times » instead of « succession of events » (*Book XII, Ch. XL, 5*). He uses *distanti tempore* for space of time. The Mosaic of Antioch (150 x 350 cm) was brought to light in 1939 in the lower valley of the Orontes river. Dated from Roman times (3rd Century) it carries the inscription XPONOI (plural of time). The mosaic represents three allegories at a banquet: ΠΑΡΩΣΗΜΕ// NOE (past), ΕΝΕΣΤΩΣ (present), ΜΕΔΔΩΝ (future). Outside the symposiac scene, the fourth allegory, ΑΙΩΝ (*Aion*), God of eternity, exhibits the ring of the zodiac, which symbolizes the uninterrupted and eternal duration of cosmic cycles (5, p. 517). Proclus proposes a truly constructive definition: « Time is the measure of the common return of all motions to the same point » (5, p. 557). This definition is interesting, even though Proclus does not differentiate between a

phenomenon and the corresponding concept. Strictly speaking, it's the observation of the return of motions that defines the concept of time.

The Roman bishop Aurelius Augustinus (354-430) complained in his *Confessions* (398) that time was familiar to him, but otherwise totally elusive if ever he attempted to explain it. In *La Magie Orientale*, Idries Shan observes that the Qutub was the supreme and invisible head of Sufism who managed to reach the degree of Wasl (Union with the infinite); he used to communicate with chiefs of the Order through telepathy, by abolishing time and space (p. 83). In *As you like it*, the British playwright William Shakespeare (1564-1616) has Rosalind say: « the lazy foot of Time as well as a clock. Time travels in divers' paces with divers' persons » (*Act III, Scene II*). He uses heterochrony to express the illusive heterogeneity of durations; asserting that time passes quickly or that it flows slowly assigns a speed to time, but with respect to time, which is a sophism. In *Julius Caesar*, Mark Antony speaks to Caesar who has just been murdered: « Thou art ruins of the noblest man That ever lived in the tide of times » (*Act III, Scene I, 256*). For Newton, time determines phenomena (9, p. 33). « I saw the customs of my time », the Swiss philosopher Jean-Jacques Rousseau (1712-1778) writes in the preface to *La Nouvelle Héloïse* published in 1761: Rousseau used the word time instead of the word epoch. The German philosopher Emmanuel Kant (1724-1804) considers time and space as two out of his twelve philosophical categories: Kant asserts that time and space are pure intuitions, cognizable by intellect.

## Time as a Phenomenon

Lucretius asserts that « time does not exist » (*Song I, 459*), but he later refers to « the strong forces of time » (*Song III, 451*), and « the eternal stretching of time » (*Song V, 216*). Lucretius mentions « the strong laws of time » (*Song V, 58*), « the ravages of time » (*Song V, 317*), and « the forces of immense time » (*Song V, 379*). He adds that « time is changing the nature of the world » (*Song V, 834*). In *Ancient History of the Jews*, the Jewish historian Flavius Josephus (37-c.100) noticed that the beauty of the palace built in Ecbatana, the capital of Media, now Hamadan, in the sixth century BCE by Darius King of Persia, was not tarnished by time (*Book X, 11*). Flavius recalls that « The Temple of Jerusalem was taken (by Pompey) on a day of fasting during the 179<sup>th</sup> olympiad » (*Book VIII, 2*), which would have been about 60 BCE. The Roman historian Curtius Rufus (1<sup>st</sup> century) admired the good condition of the Hanging Gardens of Babylon (*Bab-Ilu* means the door of God Ilu), which were created by Nebuchadnezzar II (604-562), and which had thus escaped the gradual destruction by time.

Plutarch observed that the monuments of Pericles (including the Parthenon) were preserved from « the ravages of time » (*Life of Pericles, 13, 5*). He cited Pericles when he was faced with the threat of war: « Time is the best advisor » (17: 18, 2), thereby discouraging haste. The French poet Victor Hugo (1802-1885) quotes the inscription on the façade of Notre Dame cathedral in Paris, which

refers to damage done to the monument during the Revolution: *Tempus edax, Homo edacior* (Time destroys, humans more so). In *L'Evolution Creatrice* (1907), the French philosopher Henri Bergson (1859-1941) asserts that time is a *flux* and a *kind of force*, however flux and force are mutually exclusive. In *La Fin des Certitudes* (Odile Jacob, 1996), the Belgium Ilya Prigogine, Nobel Prize in chemistry in 1977, is convinced that time must necessarily play an active role in physical laws (*Ch. I*): The French philosopher Gilles Deleuze (1925-1995) thinks that time keeps dividing itself into before and after with the motion of the instant.

## Events

In *Bibliotheca historica*, the Greek historian Diodorus of Sicily (c.90-30) stresses the fact that history has valuable lessons to teach us: the history that Diodorus is talking about concerns past events and present events, rather than past time and present time. In *Ars Poetica*, Horace mocks the *laudator temporis acti* (the old man who praises past time); of course, Horace means past life or past events, instead of past time as such. In *Odes* he writes: *Luna volvit menses* (The Moon rolls out the months). *Fugaces labuntur anni!* (The years pass quickly!) (*Book II, XIII*).

## The Physical State of a System

The Greek philosopher and mathematician Pythagoras (c.570-c.480) considers that « everything changes, nothing disappears ». In *de Natura*, the Greek philosopher Parmenides (c.504-450) explains that the Universe is stationary. On the other hand, the Greek philosopher Heraclitus (c.541-c.480) has an intuition of impermanence: Πάντα ρεῖ καὶ οὐδὲν μένει (everything flows, nothing remains) [5]. In *de Rerum Natura*, Lucretius writes that « nothing stays the same as it is now » (*Song V, 830*). In *on the E at Delphi*, Plutarch pointed out the impossibility of « observing a deadly substance twice in the same physical state » (5, p. 555).

Time and duration will be defined from the concept of state of a system [13].

## The Existence of Time

In *Sein und Zeit* (1927), the German philosopher Martin Heidegger (1889-1976) postulates the existence of time and the phenomenology of time. He thinks of time as a being, and confused time, events, and historicity; he wondered why the flux of time could not be reversed. Despite his baroque phraseology, he could

not explain the nature of time. The Austrian physicist Ernst Mach (1838-1916) thought that space and time did not exist, and that they were used to relate together certain phenomena (9, p. 130). In other words, Mach considered that time and space were only parameters. In 1953, the French poet Louis Aragon (1897-1982) proclaims without hesitation that Stalin, who had just died, was « the greatest philosopher of all time » (*L'Express*, Feb. 22<sup>nd</sup>, 2012). Naturally, we should understand here: in the whole history of philosophy, as the poet did not know the meaning of the word time. The *Dictionnaire General du Surrealisme* (P.U.F 1982) reports that the grave of the surrealist poet André Breton (1896-1966) in Batignolles cemetery in Paris carries the epitaph: « I seek the gold of time ». In Princeton in 1954, the Swiss physicist Albert Einstein (1879-1955) did a statement wherein he was in favour of a theory with no space and no time; « although we do not know how to do », Einstein added (9, p. 44).

## Conclusion

Tacitus reminds us that « The habits were modified, according to needs; also, today's innovation would soon happen in the manners » (*Book XII, Ch. VI, 3*). The long and rich odyssey of time, from eternity to Einstein's interrogation, offers an unexpected illustration of Titus's aphorism.

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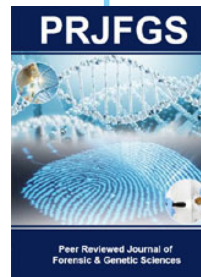
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