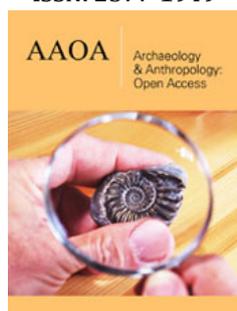


## Should We Fear Time?

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### Abstract

Is time a physical phenomenon? Should we fear it?

**Keywords:** Biological aging; Causes of aging; Innocuity of time

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### Introduction

Time is currently considered a negative factor, including our inexorable aging. The question is therefore worth asking. To answer, we must describe the nature and properties of time, and determine if it was discovered or invented. The contribution of ancient authors will help us all along our investigation. Thanks to archaeology we shall specify when, where and how time emerged, and we shall find out if it poses a physical threat.

### Two Masterpieces

The Epic of Gilgamesh is certainly the earliest magnum opus<sup>1</sup> of literature worldwide. The poem is engraved with a cuneiform writing on eleven clay tablets, which were uncovered in Sumer, current Iraq, and dated back about 2700 BCE<sup>2</sup> [1]. It reveals that the Gods<sup>3</sup> created humans, but that aging, then death, were part of the deal. Gilgamesh is warned that a flood is going to destroy everything as a punishment on humanity; therefore, he is invited to build a boat and take his family and the seed of every species on board; the terrible storm lasts seven days. These ideas will be taken up in the Bible long afterwards. Gilgamesh begs the God Shamash not to let him grow old. The God of the Bible created time on the first day; the firmament<sup>4</sup> on the second day; and the man on the sixth day. The Vulgata Venice (1551), Genesis, I, 1, (5), says: « It was evening it was morning one day » (*fruit vespera fruit que mane dies unus*) [2]: According to a strict technical analyse of this verse the biblical day is half of our present day. Most Gods of antiquity first created man; but feeling threatened by their creatures, they created time, therefore aging, then death. In that time, kings, monarchs, pharaohs are divinities and as such, they benefit from priviledged relations with the Gods. The horn symbolized the divine essence: On the Hittite seals, the monarchs wear a horn-shaped hat [3]. Between c.697 and 1797, the doge of Venice elected, wearred «il corno», the horn-shaped hat, as a divine symbol [4].

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<sup>1</sup>*Magnum opus*: major work, masterpiece

<sup>2</sup>BCE: Before Common Era; CE: Common Era.

<sup>3</sup>God: the first letter must be definitely written in uppercase, as did the translators of Petronius in Satyricon (CXIV) or Tacitus in Annales (Book III, Ch. VI, 2); the Gods of our ancestors were not inferior to ours; we are supposed to respect them.

<sup>4</sup>Firmamentum is translated by « space » instead of « firmament »; it is an unacceptable abuse done by translators, because logographers did not know space.

## The Ancient Authors

In *de rerum naturae*, the Latin philosopher Lucretius (c.96-55 BCE) mentioned 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 added that « time was changing the nature of the world » (Song V, 834). « *Tempus edax rerum* » (Time destroys things), the aphorism of the Latin poet Ovid (43 BCE-18 CE) in *Metamorphoses*, suggests that time is the cause of changes, including aging. In *Epistles*, the Latin poet Horace (65-8 BCE) writes that « during their course, the years strip us of all our advantages » (Book II, II). In *Life of Pericles*, the Greek historian Plutarch (c.46-c.126) observes that « the monuments of Pericles » (including the Parthenon) were preserved from « the ravages of time » (13,5). He cited Pericles when he was faced with the threat of war: « Time is the best advisor » (18,2), thereby discouraging haste. In *Ancient Jewish History*, the Jewish historian Flavius Josephus (37-c.100) noticed that the beauty of the palace, which had been built by Darius (King of Persia, VI<sup>th</sup> century BCE) in Ecbatana (now Hamadan), the capital of Media, was not tarnished by time (Book X, 11). The Roman writer Curtius Rufus (I<sup>st</sup> Century) admired the good condition of the Hanging Gardens of Babylon (*Bab-Illu* means « the door of God Ilu », which were created by Nebuchadnezzar II (604-562), and which had thus escaped the gradual destruction by time. In *Julius Caesar* of the playwright William Shakespeare (1564-1616), 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). By « the tide of times » Shakespeare means: « upheavals in history ». The French writer 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) ... what is confirmed by the irreversible damages suffered in 2019.

## The Invention of Time

Archaeology uncovered a Sumerian clay tablet, dated back 2800-2500 BCE, engraved with a cuneiform sign which means « lunar month » [1]. It is neither more nor less, the outbreak of time; an invention instead of a discovery [5]. The technical analysis of the approach of Sumerians, should be reminded again and again because it allows one to clear up the origin of time:

- The Sumerians uncovered the repetitions of the movements of the Moon (the return to the same place in the same state),
- They call « lunar month » what separates two successive returns,
- They infer how improve their everyday life by using these repetitions.
- In so doing, they invented time and allowed us to define the month as well as time:

« The lunar month is a concept corresponding to what separates two positions of the Moon (same place, same state) »

« Time is a concept corresponding to what separates two states of a system »

## The Nature of Time

It follows from the Sumerian tablet that time is not a physical phenomenon; it does not physically exist. Time was not discovered somewhere in the Universe; instead, it was invented. We can assert that the early stage of temporality does not correspond to the Big Bang. The nature of time is that of a concept.

This conclusion is confirmed by another ascertainment: time has no physical properties [5].

## Illustration with Aging

Time is not a phenomenon; in particular it is not the cause of aging of artifacts or living things [6]. Let us check with the aging of living cells: Cells duplicate by scissiparity; a primary mother turns into two daughters, which in turn become mothers, etc. The doubling at each generation leads to the following exponential growth:

$$1 > 2 > 4 > 8 > 16 > 32 > \dots > N$$

Thanks to the writing of the growth in power of two, each exponent corresponds to the generation number:

$$2^0 > 2^1 > 2^2 > 2^3 > 2^4 > 2^5 > \dots > 2^n$$

For example, at the the 3<sup>rd</sup> generation, we have 8 cells; at the nth generation we have N cells such as:

$$N = 2^n$$

(Note that if the number of cells were to triple instead of double, we would have:  $N = 3^n$ )

In the same situation, the duplication rate «  $\lambda$  » (Greek letter «  $\lambda$  ») can be considered constant: The approximate number « n » of generation is written:

$$n \# \lambda t$$

Therefore, the approximate cell population is:

$$N \# 2 \exp(\lambda t)$$

The active factor of duplication is «  $\lambda$  »; « t » is time given by the clock of the laboratory, it takes no part in the duplication [6]. The duplication rate is activated by the genetic weaknesses and the stressors; a third cause is the possible potentiation of these endogenous and exogenous factors.

The aging of a cell depends on three factors:

$$\text{Genetic Heritage} + \text{Stress} + \text{Potentiation} \ggg \text{Aging}$$

For example, an excessive exposure to the Sun (infrared and ultraviolet rays) shortens the life of the cells.

The gradual exhaustion of the capacity for duplication, limited by the genome to 50-60 duplications [7], leads to a premature appearance of wrinkles; a prodrome of biological aging<sup>5</sup> of cells [6]. Time is not involved. Of course, we have the ability to produce stem cells, but this ability is limited by the genome.

### Conclusion

Gods have created « time » and « aging » in order to force men to age and then die. Time is the cause of chronological aging, and we all age at the same speed; but it is not the cause of biological aging which depends on the innate, the acquired and the potentiation of both. Contrary to a widespread belief, we do not have any reason to fear time. There is innocuity<sup>6</sup> of time.

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<sup>5</sup>Medicine makes the distinction between « chronological age » (how long since birth) and « biological age » (health state). I have introduced the concepts of « chronological aging » (age increases at the same rate) and that of « biological aging » (we age differently, accordingly to the genetic heritage and the lifestyle) [5].

<sup>6</sup>Innocuity: harmlessness.

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