

# MENON

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Journal Of Educational Research

A National and International Interdisciplinary Forum for Scholars,  
Academics, Researchers and Educators from a wide range of  
fields related to Educational Studies

Ἐχεις μοι  
εἰπεῖν, ὦ  
Σώκρατες, ἄρα  
διδάκτον ἢ  
ἀρετή; ἢ οὐ  
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φύσει  
παράγινεταί  
τοῖς ἀνθρώποις  
ἢ ἀλλοτρίῳ  
τρόπῳ

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# Depicting time: Visualizing the duration of existence and facts in past, present and future

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## Abstract

Time as duration, as a unit of measurement of duration, as a natural unit to express the depiction of individual moments, phenomena and events, has constituted a philosophical and scientific challenge to humanity. The conversion and organization of the notion of time into a visual form is a continuous experimental process. This study presents a theoretical and historical overview of the depiction of time, and addresses the visualization of duration from analog to digital form, and the everyday, commercial and conjectural mapping of time by analyzing specific audiovisual examples from a theoretical and visual-arts historic perspective. Through philosophy, religion, fine and applied arts, as well as modern audiovisual communication, various ways of signaling time are selectively presented and discussed.

**Keywords:** *Time, visualization, depiction, visual arts history*

## 1. Background information

It is rather ambitious – and certainly time-consuming – to attempt to define time fully, accurately and comprehensively. Why is such a notion, which is fundamental and vital to the existence, so clumsily defined? Why attempting to define time becomes awkward and difficult to accomplish although our existence is governed by the principles of time? Perhaps because time itself is practically “timeless” as it has no beginning and no end, and lasts for eternity. Theodosiou and Danezis wonder: “Is the essence of time a countable magnitude in the traditional sense of the word or does any method of counting it – regardless of how much it facilitates our pace of life – limit and basically downgrade the broadness of its real dimension?” (Θεοδοσίου and Δανέζης 1994: 17).

However, although defining time in absolute terms on a theoretical and philosophical level seems unattainable – exactly like time is – its visualization from antiquity to contemporary creative expression presents a great variety and particular interest with respect to form, aesthetics and type.

## 2. Aims of the Research and Sample

The existing study aims in providing a general historic review on the visualisation of time as well as analyzing the way that this notion is represented and formed through selected examples from Fine and Applied Arts. The samples are taken from various historical periods of western civilization as well as contemporary ones, looking at Music, Sculpture, Painting, Advertisements, Interior spaces, Products, Cinema and Film.

### 3. Research Methodology

Purposive Sampling was used for the selection of the sample, a method which aims to provide rich information for the issues we needed to discuss. Artworks, advertisements, objects and films were not selected randomly, but with reference to the manner that time is intensively visualised to convey its meaning and presence.

### 4. Historic review

#### 4.1 Time in antiquity: symbolism and philosophical quest

In Ancient Greece, time and time-related natural phenomena were personified as Deities. Cosmic time is symbolized by Titan Cronus, father of the Gods, who devours his children. In mythology, Chronos appears, who is placed in the beginning of time according to the Orphic myth, and occasionally Chronos is depicted with wings on his back since he never stops moving.

The Horae (fig. 1), goddesses of seasons and the natural portions of time, are the daughters of Zeus and Themis who “come and go in accordance with the firm law of the periodicities of nature and of life” (Kerenyi 1951: 101f). Primogenitor Helios, who creates all the days of human life, has two daughters who guard his three hundred and fifty cows each of which correspond to the days of the year. The multiform lunar deity Selene with its obvious transformations and the stars appearing as children diving into the sky in front of Helios’ chariot are some of the symbolic illustrations of time in Greek mythology (Kerenyi, 1995).

figure 1: The Horae



Time has preoccupied many philosophers and scholars since antiquity. For Plato, time is the reflection of eternity, and his perception of time is presented in the work *Timaeus*: “he [the creator] resolved to have a moving image of eternity, and when he set in order the heaven, he made this image eternal but moving according to number, while eternity itself rests in unity; and this image we call time.” (Plato, *Timaeus* 37d)

Aristotle’s perception of time relates to movement. So he defines time as “a number of motion with respect to the before and after” (*Physics IV* 219b1–2 quoted in Roark, 2011: 1). It is Aristotle who first established that the movement and direction of time is from

past to future, through present, and the relation of time with movement (*Physics VI* 234a10, 234a16, 234a31, 234b20 quoted in Roark, 2011: 2).

#### **4.2 Time in Christian religion: symbolism, cyclic sequence and religious practices**

In the 4<sup>th</sup> century A.D., Saint Augustine, father of the Catholic Church and philosopher, influenced by Plato and Aristotle's theories, defines the notion of time as past, present and future. In his *Confessions*, he states that "there be three times; a present of things past, a present of things present, and a present of things future" (Augustine, *Confessions* XI-XX), and that without this clear division we cannot define time. However, "if nothing passed away, time past were not; and if nothing were coming, a time to come were not; and if nothing were, time present were not" (Augustine, *Confessions* XI-XIV), so the present is the only point linking past to future. This difficulty is overcome by reference to intellectual memory where all areas of time are found. Thus, time acquires its real dimensions in length and shortness. Nevertheless, eventually, time itself is not satisfied by time-related theories, and acknowledges its weakness to solve the conundrum of time, acting ignorant of the reply to the question "what is time?".

As it seems, not even religion managed to clearly define time, although in almost all religions worldwide there is the symbolism of creation, i.e. the beginning of time and re-creation on another level, the relief that comes with the end of finite time. The symbolism of time in the Holy Scriptures is vital. The original sin delineates the end of eternal time and at the same time the beginning of the finite – mortal time with a specific beginning and a predetermined end. On the other hand, doomsday and the Second Advent define the end of mortal time and the beginning of eternal time. The symbolism of time in religion has been abundantly illustrated in visual communication throughout the centuries.

Time in the ritual of orthodox Christian faith is delineated by successive recurrent fasting periods that correspond to religious events and festivities, and are also determined by nature's season practices, such as the nurturing of newborn animals. In this framework, Lady Lent (Kyra Sarakosti) constitutes a peculiar calendar for the period of the Lent. Lady Lent usually has the form of a nun without a mouth so as not to eat because she fasts, with her hands folded in prayer, and seven legs each for each week of Lent before Easter.

#### **4.3 The organization of time in calendars**

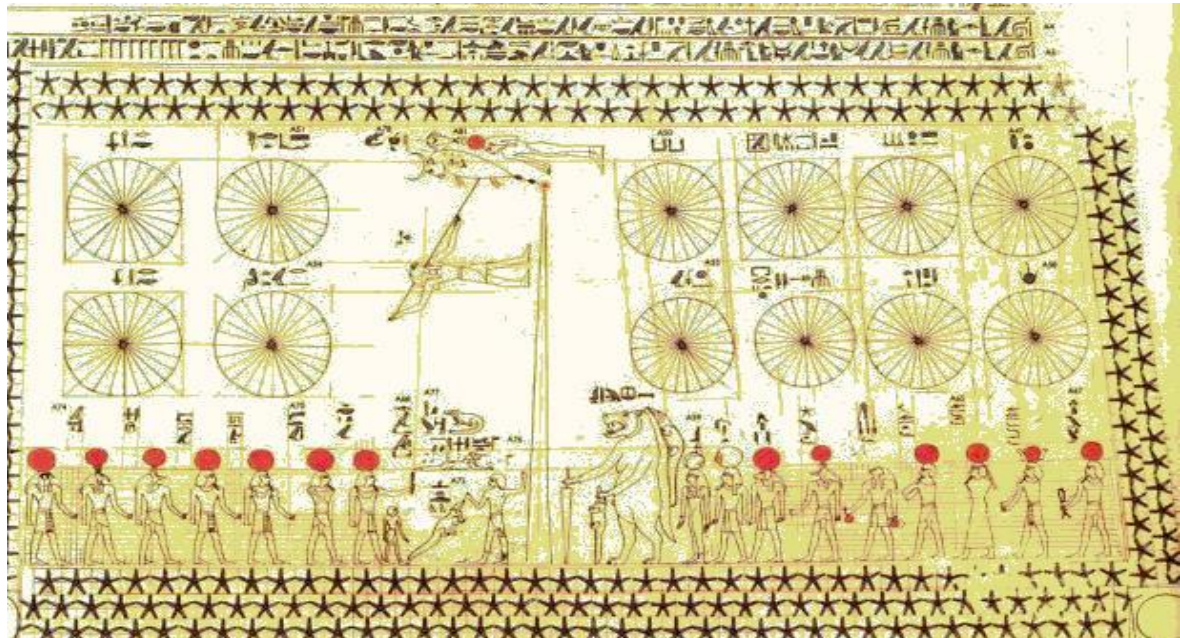
Humans, from the very early stages and clearly for practical reasons, attempted to define, delineate, calculate, even control time in the framework of their own frame of mind. By monitoring natural phenomena and the course of nature, they soon realized the alternations, cyclical sequence, and patterns which emerge through the course of time. The organization, visualization and partition of time into equal intervals aiming to create a common pattern to formulate time reference and continuity, were one of the most complex conundrums in the history of human civilization. As Falk (2009) mentions: "Over the millennia, different civilizations tried every possible trick for reconciling these incongruent cycles."

Since Prehistoric Age, there have been indications of lunar calendars, represented as notches carved on bones or sticks of wood (LaViollette, 2005).

Samples of the visualization of time organization in relation to astronomy come from ancient Egypt, as the astronomical ceiling of Senenmut private tomb TT 353 (fig. 2), built

in year 16 of Hatshepsut's reign. It is the mapping of a lunar calendar, representing northern and southern skies, decanal stars, planets, also marking the hours of the night. (Leser, 2006)

**figure 2:** Part of the Astronomical Ceiling in Senenmut's tomb TT 353



The most important functional calendars, such as the Babylonian, the Maya calendar, the Julian or Old calendar dated back to Julius Caesar's era, 46 B.C., superseded by the Gregorian or Modern calendar in 1582 A.D., the Hebrew calendar or the new Islamic calendar, are all based on the movements of planets, the Sun, the Moon and the Earth, and the relations with each other. (Robinson, 2007)

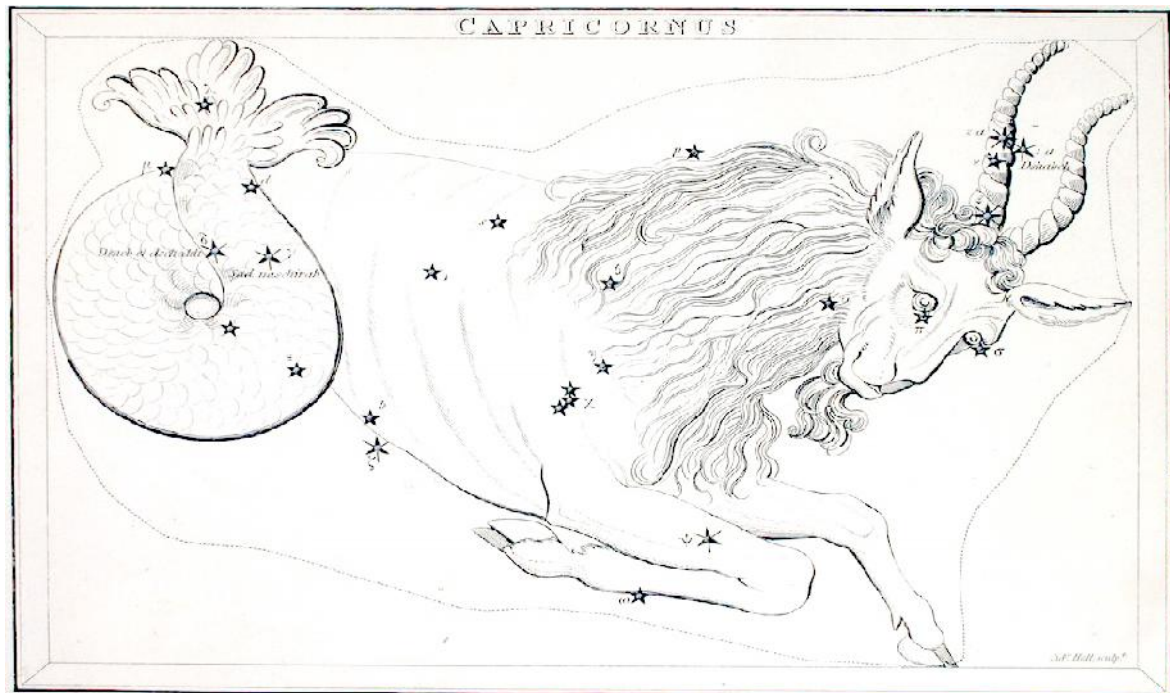
The Gregorian or Modern calendar which superseded the Julian or Roman or Old Calendar managed to compromise the difference in the duration of a lunar month and a solar month, and to balance the analogies and inconsistencies of the time periods caused by the movement of the Earth and the Moon. (Robinson, 2007)

Modern graphic design offers remarkable works of the visualization of time, through monthly/yearly calendars, with humour, creativity and other insightful ways of presenting and literally depicting time, such as the calendar which is painted slowly as time passes, or the scratch calendar where the days over are scratched off.

A calendar from the perspective of astrology visualizes time using interesting symbolisms. Time is depicted cyclical, divided in seasons with names and symbols which are based on the movement and relation of the planets. The astrological symbols correspond to specific time periods, and have been standardized on an abstracted design, creating standard visual conventions. However, their stylistic design allows more creativity. The symbol of Capricorn, for instance (fig. 3), besides the specific features of the character assumed to assign to the person who is born under the sign of Capricorn, also refers to a specific relation among the planets and their movements in a given interval as this is determined by the calendar followed. Moreover, the symbol refers to the different ideological, social, age groups as these are expressed through the design and aesthetics of each sign separately. So its symbolism reflects many levels of signification and content.



**figure 3:** Capricorn sign



## 5. Historical time

As time is depicted mainly as cycle in the calendars so, in history, it emerges from cyclical movement, and its visualization achieves the synchronization of calendar time with historical time. Expressions such as “history repeats itself” or “the end of a cycle” inspire a sense of cyclic continuity through recurrence, rhythm, “historical rhyming” as Zerubavel calls it. Zerubavel (2004: 47) also notes that “despite the difficulty of compressing thousands of years of history into a 365-day holiday cycle, we nevertheless try to combine our linear and circular visions of time in an effort to somehow “synchronize” our annual holidays with the historical events whose memory they are designed to evoke.”

According to Dohrn-van Rossum (1996: 3), “[t]he various ways in which historical change is perceived –as cyclical movement, as rise and fall, as unending progress, as accelerated or delayed change– all contain different notions about the relationship between past, present, and future.”

There are many ways to depict historical time: vertical or horizontal arrangement, cyclical or spiral arrangement, combination of text and image, images, symbolic representations, or graphs.

Family historical time is symbolically represented by visualizing verbal symbolisms related to origin. Family roots relate to plant kingdom, so there are more or less decorative, stylish, pompous or serious genealogical trees. At the same time, representing kinship schematically allows further design processing to illustrate genealogical proximity in relation to time. (fig. 4)

figure 4: Carolus Magnus genealogy tree, from the Nuremberg Chronicle, by Hartmann Schedel (1440-1514)



## 6. Mechanisms and depiction of time calculation

Ancient civilizations made a great contribution to the deciphering of the mystery called Time by inventing astronomical artifacts such as astrolabe, protractor, hourglass, sun clock, and other inventions that have foregrounded one of the most important inventions in the history of technology, the clock.

Special reference is made to the Antikythera mechanism, an accurate artifact of time calculation, of the 1<sup>st</sup> century B.C. It is one of the most famous artifacts of the antiquity, which, according to its then contemporary representations, seems to have important information engraved on it in letters. It is considered the father of all mechanical clocks since its operation is based on a 30-gear system. According to Professor De Solla Price, it is a calendar mechanism which calculates exactly the movements of the Sun, the Earth and the Moon in its different phases. (Theodosiou-Danezis, 1994)

As the experience, perception and realization of time are broad concepts, there are also some peculiar cases of time illustration: a first token is the biological clock (fig. 5) of Carolus Linnaeus (1707-1778), botanist, physician and zoologist. It is a flower clock which takes advantage of flowers, that open and close at particular times of the day to predict the time.

**figure 5:** Illustration of Carolus Linnaeus botanical clock



Graphs of the circadian rhythms of the human organism are also another case of visual illustration of time based on its natural course.

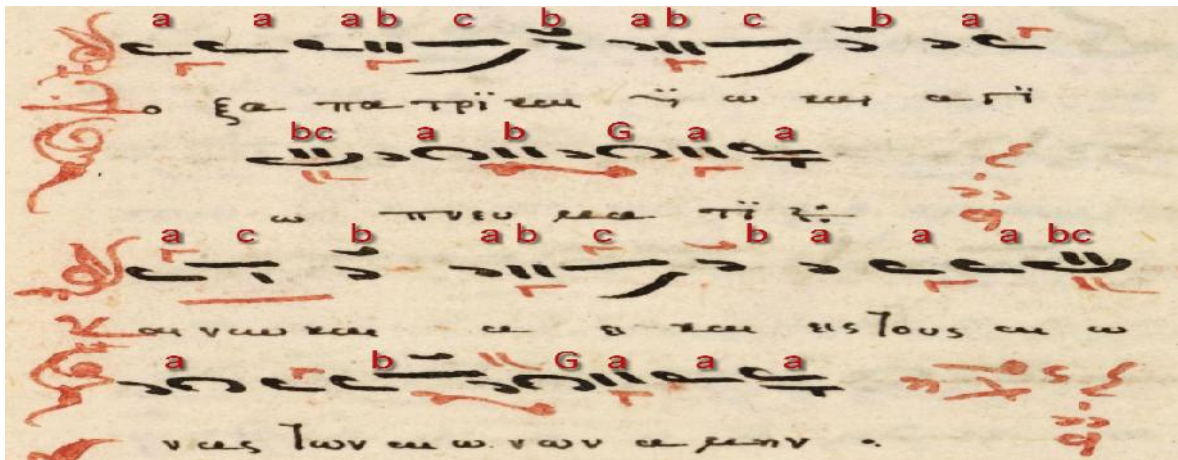
## 7. Depicting time in Fine Arts

In music, time does not express only sound but also the lack of sound. The design of a note as a graphic character in relation to the positive-negative space it includes, its ascenders and descenders, the size and stroke weight, corresponds to a specific time and its subdivisions (fig. 6) . In the same framework, special symbols are designed for pauses that define the lack of sound in a specific time. These are visual conventions which we recognize and understand after receiving special education. Similar visual conventions to visualize time are found in Byzantine music (fig 7). They are designed differently and constitute a special language of communication in written discourse.

**figure 6:** Music notes



**figure 7:** Transcription of psalmody of echos protos in the Anastasimaron of Panagiotes the New Chrysaphes (17th century)



In static art, time is symbolically indirectly illustrated. On *Laocoön and His Sons* (or “Laocoön Group”) – a monumental sculpture in marble of the Hellenistic period depicting the myth of the Trojan priest and his sons being killed by snakes sent by goddess Athena to avoid exposing the ruse of the Trojan Horse – the sequence of events is displayed indicating a time sequence in less immediate time (fig.8). The male figure on the right is fighting for his life and seems to still have hopes for survival when the central figure expresses the peak of the drama and the anguish of death, while the son on his left is already dead. This passage from life to death indicates the time sequence by purely sculptural means.<sup>1</sup>

**figure 8:** Laocoön Group, Vatican Museums



In Pieter Bruegel the Elder’s work *Temperance* of 16<sup>th</sup> century (fig. 9), various activities are depicted in relation to measurement, which, according to Robinson (Ρόμπινσον, 2007: 194), is a new psychosis that has dominated society and testifies to the existence of a particular purpose and self-control which derives from the respect of society for

<sup>1</sup> Thanks to Dr. Antonis Danos, art historian, for bringing it to our attention.

measurements in each era. Starting from bottom left and clockwise, various groups of people representing arithmetic, music, rhetoric, astronomy, geometry, dialectic and grammar are observed whereas in the centre there is Temperantia depicted with “five significant symbols”, which, among others, “on her head is supported the most advanced, sophisticated machine of his [Bruegel’s] era: the clock, which measures passage of time” (Klein, 1974: 19).

**figure 9:** Bruegel the Elder’s “Temperance”



Nicolas Poussin in 17<sup>th</sup> century depicts time sequence on his paintings integrating past, present and future into different levels of perspective within the same landscape. Typical examples are his works *Burial of Phocion* (fig.10 ) and *Landscape with Orpheus and Eurydice*. Steefel (1991) suggests that “...Poussin images are not really landscapes, even *paysages parlantes*, rather they are *istoria* or human actions in a visual mode *set into* landscapes which are their matrices but not their ends.” And again, commenting on the depicted narrative in *Orpheus and Eurydice*, he integrates: “Similar gestures transform themselves over time and space covering the range from eloquent music-making to surprise and loss.” (Steefel, 1992). The perception and comprehension of time sequence in two dimensional depictions emerge from the decoding of the meaning of the conjectural narrative.

**figure 10:** Burial of Phocion



The Italian futurists of the 20<sup>th</sup> century attempt eagerly to depict the experience of

movement and time. Typical examples are Giacomo Balla and Umberto Boccioni's works. These artists convey the sense of time in a dynamic way through the study and illustration of light, speed and movement<sup>2</sup>.

In his famous book on photography *Camera Lucida*, Roland Barthes states that a typical characteristic of photography is its reference to a specific moment. That is, photography does not seem to be a representation of some "reality" but its genuine depiction: thus, photography seems to bypass the signifier allowing us to directly contact the signified. As Barthes (1993: 76) highlighted, such reality has above all a time dimension, so photography captures "...that the thing has been there" proving the past without the mediation of historical discourse.

If there is a real document in the photograph, this is that it never conveys what time and distance have abolished, but confirms what happened in the past. "It has been here, and yet immediately separated; It has been absolutely, irrefutably present, and yet already deferred" (ibid).

Static photography "freezes", "captures" and "depicts" time at a specific moment, and depending on its theme and perspective can motivate the viewer to make a journey to personal moments in present, past or future time. Taking into account the various ways to communicate connotative messages as proposed by Barthes (1977) (that is, to impose a second meaning on the photographic message proper) such as trick effects, pose, objects, photogenia, aestheticism and syntax, the notion of time in terms of what may have happened or what is going to happen is, for instance, one of the main characteristics of the themes in the works of Cindy Sherman, photographer. This applies especially in her photographic representations of motion pictures.

In the exhibition *Time in Motion* (1991) in the Macedonian Museum of Contemporary Art, the theme was the illustration of duration throughout the history of photography, based on the depiction of motion and time. According to the organizers, time-lapse photography based on the moment aims at taking a sequence of successive photographs at a short interval, which altogether compose a particular idea of motion.

Time-lapse photography uses different frames on the same negative as in Eadweard J. Muybridge's (1878) work and Albert Londe's (1858-1917) work or successive poses gathered on the same negative as in Étienne-Jules Marey's work or Thomas Cowperthwait Eakins' work (July 25, 1844 – June 25, 1916). Time-lapse photography foregrounds technically the appearance of motion pictures, and is a sensational picture of reality, integrated and multifaceted at the same time, which conveys the interrupted development through a different space every time, and a translation of the notion of time into image.

Duchamp in his work *Nude descending a staircase #2*, 1912, manages to convey motion in the painting in a way that approaches a futuristic (but also partly cubic) technique and the operation mode of time-lapse photography. He achieved that through overlapping layers of motion of a body climbing down stairs.

Both technically and visually, cinema depicts time through successive (time-lapse) pictures in motion. At any moment, viewers can watch the visualization of time through a story or an event in various frameworks, that is, in 'real' – or not – time broadcasting. Naturally, the depiction of time itself in an already audiovisual application running at

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<sup>2</sup> Thanks to Dr. Antonis Danos, art historian, for bringing it to our attention.

specified time, such as motion pictures or videographs, is expressed in other ways too. For instance:

- a. alternation of a frame between colour and black & white
- b. fast leafing through a diary
- c. writing the date or the number of years back to the past, or
- d. fast alternation of an image or a clock forward or backward where reference is made to past or future depending on the direction of the movement.

According to Aristotle's philosophy (*Physics IV* 201a9-11), if we depict an object that moves from point A to point B, the passage and duration of time are inevitably integrated, visualized and implied in a literal and clear manner.

Paradoxically, the illusion of motion and change in a static picture assigns, integrates and depicts the notion of time. In this way, a sense of a beginning of time with respective duration recurring every time we see the picture is created.

### 8. Visualizing time, semiotic and graphic communication

**figure 11:** Adolphe Mouron Cassandre's poster of Dubonnet liquor (1932)



The illusion of motion and change to portray time is often used in advertising. A classic example is Adolphe Mouron Cassandre's famous poster of *Dubonnet* liquor (1932), where the depiction of motion and inevitably time is used to convey a commercial advertising message (see fig. 11). Every time we see the poster from left to right, the sequential imagery repeats the idea of liquor fulfillment, not just through the man's figure but also through typography. Another similar technique would be to compare two images, one before using a product or a service and the other after. This before-after approach often shows the passage of time with reference to ageism.

**figure 12:** Detail from a Cyprus Bank advertisement 'Freeze time with our house-loans'



Time in contemporary societies has now been established as a valuable commodity with monetary value: time is money. Man hours, annual budgets, duration of access to the

internet, monthly compound interest on loans, parking meters, peep-shows and numerous other charges are based on time. The figurative use of time is often translated from language into image to communicate advertising messages. Time is money, waste of time, spending time, saving time, killing time, or freezing time, are only some of the examples advertisers use. see for example in fig.12 an advert with a headline ‘freeze time with our house loans’ from a Bank of Cyprus campaign in 2009. In the specific example we can also note the use of grey, white & a light-blue colours that contribute to this notion of time frost.

**figure 13:** Rolex logo’



Advertisements for watches are also very interesting to examine as they often target various age, status or gender groups. In Rolex watches the golden logo of the crown and the classic slab-serif noble font used make time look more ‘valuable’ and ‘aristocratic’. It is worth mentioning that typography as a separate semiotic system on its own, contributes to the aesthetics and the idea that is expressed linguistically through lettering. For example, we often see time-related linguistic messages in OCR-A fonts to be futuristic, in Times New Roman to be classic or refer to the present time and in gothic fonts to represent the past/old-times. TAGHeuer watches (see campaign ‘what are you made of’) depends a lot on the selection, photogeny and pose of the participated models. The linguistic messages in combination with famous icon-personalities, create a pun that connotes style, looks, finesse, fame and popularity. In contrast to the previous examples, a different visual language is usually used by Swatch campaigns which are targeted to a different audience who considers time to be “fun” and “cheap”. Swatch uses a more modern typography and aesthetics, nearer to the language of youth.

**figure 14:** Vintage Religion, Jesus Christ Praying, Gethsemane Round Wall Clocks



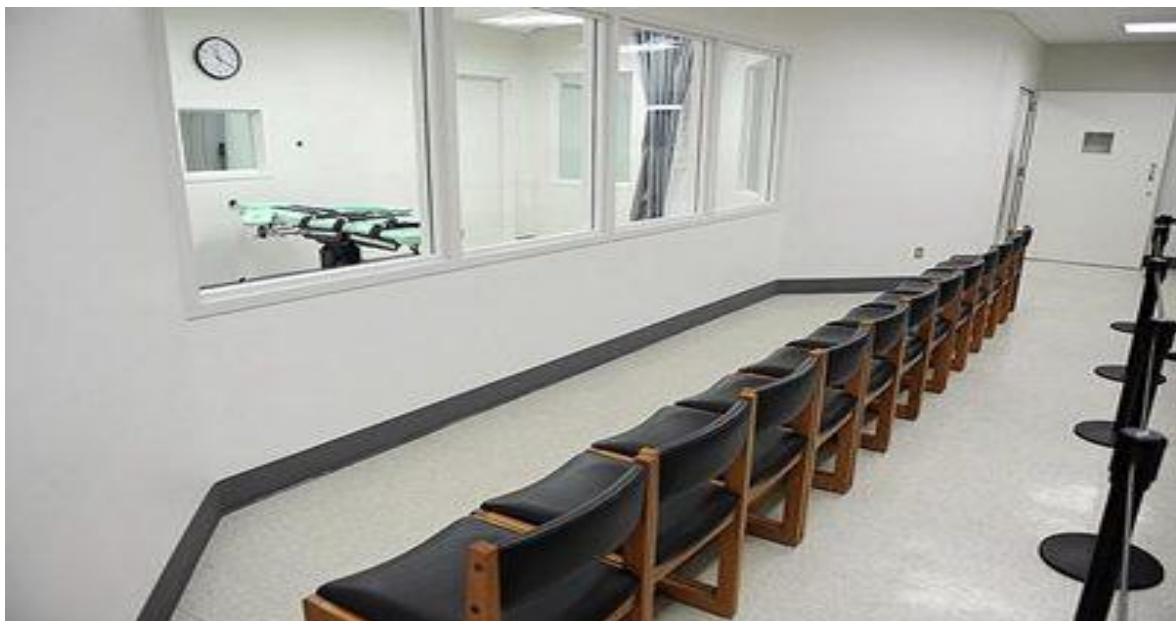
Although there are different factors which contribute to the formulation and perception



of what we see, traditional visualization of time is universal and does not require special conventions to learn how to do it. On a typical, analog, round clock, interpreting time is known worldwide and very often used as a means to promote messages with a variety of themes. Aesthetics and the design of a clock are usually adjusted to the place for which the clock is destined (restaurants, children's rooms, kitchens etc). Interestingly we often come across with clocks that use religious imagery on an attempt to remind us about the spiritual aspects that 'end or passing of time' might have (see fig.14).

Contemporary traditional visualization of time appears mainly in two forms, analog and digital. These two audiovisual depictions assign grace to time in completely different ways: the perception of time on analog, round clocks is wider; we can see the hours, the minutes, the seconds that passed and those that follow not only in relation with past, present, future but also with how much time passed or how much time is left. The digital representation of numbers depicts only the present and the specific moment 'now'. According to Hall (2007), the main difference between the two forms of depicting time is that the sense of "continuity" dominates analog depiction whereas in digital depiction there is no visual reference to "before" or "after", and thus time is depicted "discontinuous".

**figure 15:** Execution chamber with clock and outside seats



Depicting time on analog clocks in execution chambers (see fig.15) connotes in a cold manner that the flow of life stops for a human being at a particular moment, whereas for the audience attending the execution it continues and is indirectly related with what happens before and after death. So there is an apparent visual reference to time, space and the events that take place. This may confirm the sense of "continuity" reflected by analog representation. The same framework applies for analog time depicting and signaling time in labour rooms where babies come to life.

In the second form of time, digital depiction connotes the moment, the present and the most immediate. It is also used in accurate timing or countdowns assigning a sense of "expectation", "immediateness" or "emergency" to the notion of time. Typical examples are countdown to missile launch, new-year, bomb explosion in movies etc.

## 9. In lieu of a conclusion

Time is running, is chasing after us, is relentless, vain but also valuable; we gain time, we lose time, we make time, we kill time, we waste time in no time. Time is analog or digital, counts human life and activity physically or virtually, provides us with pace, and we attach value to it. We experience time, we perceive time, we visualize time in many different ways. Our topic as a whole is interdisciplinary and non-exhaustive, because the endless interpretations of time are founded on scientific, philosophical or social frameworks depending on cultural and scientific backgrounds. It is integral to and inevitable in our existence. There are multiple ways of perceiving and visualizing the notion of time, based mainly on practical and organizational criteria. In the current research we present just a general idea of the many aspects about the visualisation of time that exists. What is worth mentioning from our study is that the illusion of motion and change in a static 2D or 3D applications assigns, integrates and depicts the notion of time. Interestingly, there are cultural and genre codes that allude to time visualization like the switch from colour to black & white in films, the lines drawn behind cartoon characters in comics or the harp sounds in music programs.

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