Olga Ast

July 2006

Visualization of Time Flow:

An Artistic Inquiry into the Development of the Visual Metaphor

Edited by Julia Druk

Visualization is one of the first steps in coming to know an object. When we say the word "chair," for example, the first thing that comes to mind is a mental visualization of a chair – not as a single, concrete thing, but as a conglomeration of visual ideas of what the chair should look like. Such an image is a *visual metaphor*. But what is our visual metaphor of time?

Frequently, it is the clock – a time-keeping device invented in the middle of the second millennium. The visual image of the clock is a circle divided into twelve equal parts, containing twelve numbers and two hands. We tend to place most emphasis on the numbered dial, and the twelve-hour period at the end of which one day turns into the next. Many traditional folktales and fairy tales thus situate much of the action at the midnight hour, where various ghouls and ghosts come alive and Cinderella's carriage turns back into a pumpkin.

One of the most recent examples of this is an advertisement from the June 15, 2006 issue of DIRECT magazine (Ill. 1) where an artist exemplifies time as a clock mechanism, adding to it half of a number dial and two moving gears to solidify the metaphor in an age when many people may only be familiar with the digital clock. The artist further "traps" several confused and stressed-out people within the mechanism, and adds word bubbles that read "deadlines" and "you've got mail" to portray the modern man as trapped under the pressures of time management. A less recent example is the famous 1931 painting by Salvador Dali entitled *The Persistence of Memory*, where limp clock faces foreground a vast desert landscape. This demonstrates that even Salvador Dali – who proclaimed, "I am Surrealism!" – could not refrain from using the clock metaphor of time. (Ill. 2–4)

Before the invention of the mechanical clock and the pendulum, however, the human imagination had made use of a variety of other devices, such as sundials, sandglasses, water clocks and candles. Out of all of these, it is my opinion that the sandglass has held the most visual appeal. The device allows us to visualize the separation of time into three distinct chambers or phases. There is the bottom-most portion of the glass, which represents the past; the top chamber, representing the future; and the narrow meeting-point between the two, playing host to the present. The movement of the sand further adds to the metaphoric value of this device, as it allows us to visualize the passage of time as we have come to understand it. For those of you who have read *A Brief History of Time* by Stephen Hawkins, this will also remind you of one of his visualizations of time – as a sandglass filled with an infinite quantity of sand. (Ill. 7–10)

These types of clocks have long served as the direct translation of time into a visual image. When we try to speak of the intrinsic or philosophical nature of time, however, we are inevitably confronted with another set of visual metaphors, not only for how we see time, but for how we experience it. Characteristic of the modern man are the two visualizations of time: as a river and as an arrow. The "river of time" in particular has long captivated the human imagination. The image of the time-river as immutable, eternal in nature, and existing in constant, flowing motion has proved to be one of the most long-lasting conceptions of all time.

It is tempting here to suggest that the original visual parallel between the structure of time and a river originated in ancient Egypt, a river civilization entirely dependent on the Nile for both sustenance and trade. Yet other ancient river civilizations could also take credit for the metaphor. We frequently see, for example, the figure of the mythical boatman who carries dead souls along a river; most notably, the Greek ferryman Charon, who led his charges toward Hades, the realm of the dead. (Ill. 5–6)

No matter the origin, our psychology has proved so well-suited to this philosophic conception that we have become entirely dependent on it in our interaction with the subject of time. This image of a river of time has taken on the role of a powerful cross-cultural metaphor, existing in the basic collective memory of the Western world. Equally important is the recent visualization of time as an arrow, a concept that appeared in the West in the beginning of the XX century. The idea of a so-called "time's arrow" was ostensibly first articulated in Europe by Sir Albert Eddington in 1928 in his work *Nature of the Physical World*. Prior to that date, this metaphor had been conspicuously absent both in *The General Theory of Relativity* by Albert Einstein, and in similar works on the nature of time, such as one dedicated to dissecting the fourth dimension, the *Tertium Organum* by the Russian mysticist Pyotr Uspensky.

In the Eastern world, however, time had been linked to the arrow long before Sir Eddington. A Japanese proverb that appeared first in the XVIII century neo-Confucianist text *Ten Kun* by Kaibara Ekken – "Koin ya no gotoshi" – has been translated and re-translated to English since 1910 as either "time is like an arrow" or, more commonly, "time flies like an arrow." The latter of these has been popularized in the West by the comic Groucho Marx, who famously quipped that "time flies like an arrow, fruit flies like a banana." Today, the link has become so ubiquitous that it has found its way into the annals of literature, philosophy and scientific work.

The important thing to glean from both of these visual representations of time is their intrinsic unidirectionality and irrevocability. There is an original point in both images – either a riverbed or a bow – from which all of the movement emanates and continues in a unique, set direction. There is also no point of return once that movement has begun. Just as one cannot enter the same river twice, one cannot retrieve an arrow from its flight.

If we go back to looking at prehistoric symbols, however, we can find a competing vision of time to the linear conceptions of the arrow and the river. Though both images appear in the ancient world, they are not wholly representative of the ancient visualization of time. Indeed, traditional societies largely viewed time as a cyclical process dependent not on linear progress, but on the eternal repetition of daily, annual and lifetime patterns.

For such ancient societies, the future did not hold the unique mystical quality that we attach to it, but was a symmetrical reflection of both the past and the present. Such belief in the cyclical repetition of patterns was the basis for the Buddhist "wheel of rebirth," which uses the closed circular wheel as the direct representation of time. Such wheel symbolism is characteristic to most ancient Eastern societies, and has been preserved to this day in the astrological "wheel of fortune" and the circular representations of the zodiac. (Ill. 11–15)

One of the most fascinating early symbols portraying the cycle of time is the Uroboros – a depiction of a snake eating its own tail. We can trace it back to neolithic China in 6000 B.C., as well as the mythologies of such diverse societies as the Egyptians, the Aztecs and the Greeks. At the epoch during which the Uroboros first made its appearance, it was one of the many symbols considered to have possessed a magical or religious function. This sense of the symbol was assimilated into the Western world through the imaginings of the medieval alchemists, whose visual language incorporated the cyclical figure, and relied heavily on its magical properties. More recently, however, the Uroboros lost its association with time and became an esoteric emblem divorced from its original significance. (Ill. 16–19)

In the age of the trademark and the computer icon, our relationship with prevalent social symbols has changed. While primitive societies ascribed mystical powers to their drawings, we view them today as largely decorative elements. It will thus make more sense to the modern reader to see the Uroboros reinvented from its original magical form of a self-devouring snake to fit our scientific, utilitarian conception of the symbol.

In 1953, the artist M.C. Escher, known for his complex geometric illustrations and paradoxical visual games, has done just that. His drawing of the Uroboros does not rely on the traditional form of the snake. Rather, he draws a spiral coil that winds around itself in a seemingly endless pattern. (Ill. 20–22) As Escher demonstrates, the Uroboros remains a perfect visual metaphor for any repeated cyclic process. It is the logical continuation of the spiral – a winding circle that collapses in on itself. It seems to have a beginning and an end. At the same time, it does not.

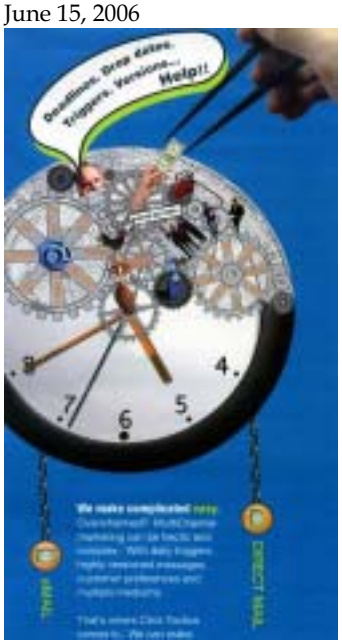
In my opinion, the cyclical understanding embodied in the Uroboros is a much more precise visual metaphor of time than the unidirectional and the irreversible images of the river and the arrow. There are few straight lines in nature; it is we who superimpose the Cartesian plane onto circular and elliptical shapes and trajectories. Our perception of time is no different. We view history as a record of linear progress, and we visualize time as an eternal line from point A to point B. To illustrate this, we can use an example of a fish that has spent its life in a river with a strong directed current. The fish considers the current as an intrinsic characteristic of its environment, but we know that it is instead determined by gravitation, the earth,s relief and numerous other factors, and that therefore it is not a necessary attribute of water. Our perception of time is thus parallel to the fish's view of the current – having lived within an environment that seems to be subject to the forces of a unidirectional time, we have accepted it as intrinsic to our world.

While modern history has been based on such a linear understanding of time, modern science has rather relied on seeking out recurring patterns and repetitions, codifying this search in the scientific method of observation and experimentation. One of the fundamental tenets of this method is that a hypothesis can be proved only if its conclusion can be reliably repeated in similar conditions. We can infer from this that given a set of identical circumstances any observable process will repeat itself in a cyclical fashion. I suppose that any process must then have a "life trajectory" that, in ideal conditions, can be visualized as a perfect circle.

Outside of tightly controlled experiments, such individual circular trajectories can interact and intersect. Imagine the human body, where each organ and cell has their own life cycles, and each exists at different stages within those cycles. In an alcoholic's body, for example, the liver will reach the end of its life span first, while the rest of the body may well be able to outlive it by years or decades. In an even larger system, we can then see that each element will have its own life trajectory and that these trajectories will each experience time in their own way. Therefore, time is less a river than an ocean, with its wide array of competing currents and directions, each following their own cyclic patterns.

ILLUSTRATIONS

1. Advertisement. Magazine "Direct"
June 15, 2006



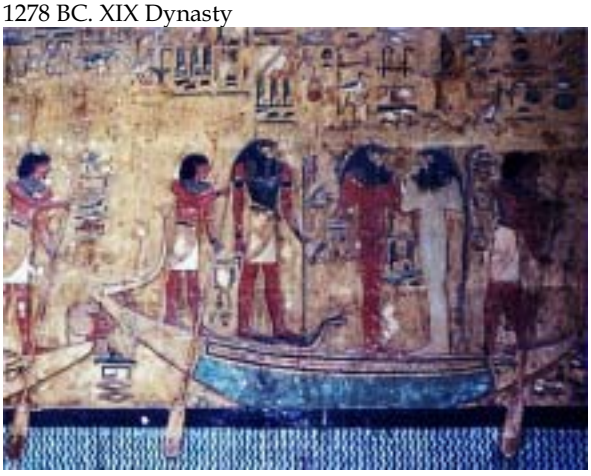
2. Rene Magritte. Time Transfixed. 1938

3. Salvador Dali. Searching for 4 th Dimension. 1979

4. Salvador Dali.
The Persistence if Memory. 1931

5. Charon crossing the Styx.
Painting by Joachim Patenier
1515-24..Museo del Prado, Madrid

6. Tomb of Seti I, Son of Rameses I.
The Valley of the Kings.
1278 BC. XIX Dynasty

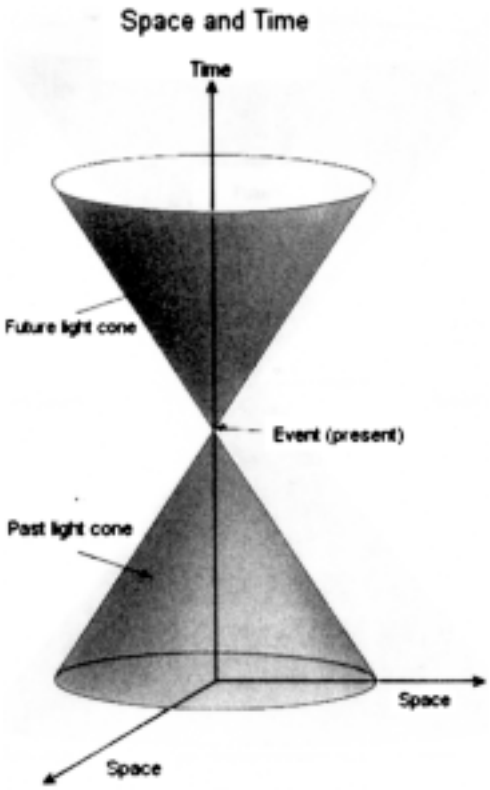


7. Philippe de Champaigne. Vanity.
XVII century. Musée de Tessé, le Mans, France.

8. Figure of Time. The Henniker tombs in the North Aisle of Rochester Cathedral.
XVIII century. Kent, England

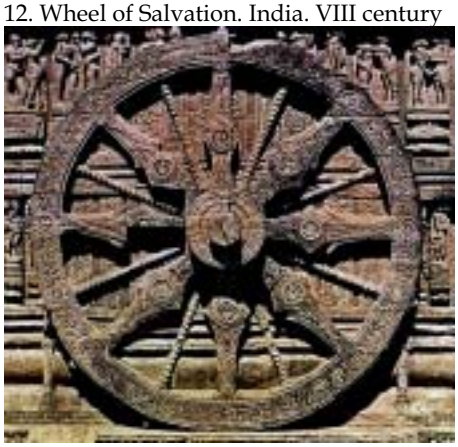
9. Chronos. Recoleta Cemetery. XIX century.
Buenos Aires. Argentina.

10. Stephen Hawkins. A Brief History of Time.
XX century.



11. The Phaistos Disk from the Palace of Phaistos. XVII century BC. Archaeological Museum of Herakleion. Crete.

12. Wheel of Salvation. India. VIII century

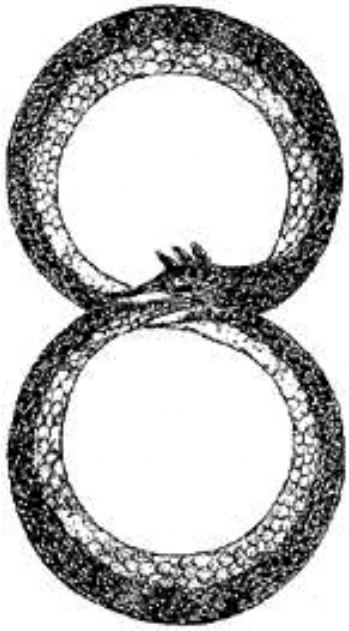


13. Aztec Sun Stone-Calendar. XV century. Mexico City. Anthropological Museum.

14. Missal. XIII century. Germany

15. Wheel of Fortune, miniature. France. XIV century

16. Ouroboros from Medieval Alchemy Manuscripts

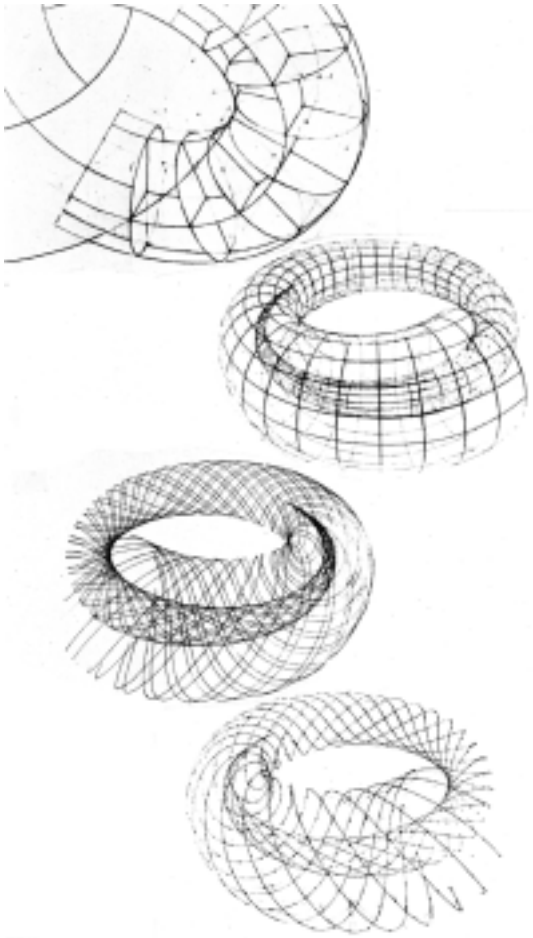


17. Brown Jade pig-dragon (Coiled Zhulong) Neolithic Hongshan culture. IV millennium BC

18. Ouroboros from papyrus of Dama Heroub. Egypt. XXI dynasty. X century BC.

19. The Temple of the Feathered Serpent – Quetzalcoatl, Xochicalco. VIII century

20. M.C. Escher. Spiral. Trial sketches.



21. M.C. Escher. Spiral. 1953

22. Frontispiece of "La practica della perspectiva" by Daniel Barbaro. Venice. 1569.