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## THE BEGINNING AND THE END: IMAGES OF THE COSMOS

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**ABSTRACT.** The beginning and the end: Creation and Last Judgment, or big bang and gravitational collapse? Explanations and interpretations have been attempted since time immemorial and visual representations of these cosmological concepts are also to be found from the ancient Mediterranean civilisations, to the present day - varying from the great medieval mosaic cycle in St Mark's Venice to works by Blake, Brancusi or modern scientific diagrams. Similarly, images of 'the end' range from traditional *Last Judgment* scenes and apocalyptic images founded on the Book of Revelation, to modern spacescapes and diagrams of black holes and final collapse. Visual images are used by informed specialists (whether theologians, philosophers or scientists) to elucidate complex theoretical concepts, and may achieve artistic status over time.

Step by step, science has gradually explained away the phenomena of the universe which have been the cause of spiritual faith in one form or another of most of humankind, but explanations of the beginning and the end - of mankind, the planet and the universe - are still being sought. Creation myths abound, as do scientific studies on the beginning and possible ending of the universe, but the literature contains relatively few visual images. With the exception of illustrations of the Judao Christian vision, as described in Genesis 1 and Revelation (especially 22:13), artistic or scientific visual images of the beginning and the end of the universe are often hard to find, and seldom considered in relation to one another.

Images of 'the beginning' may be grouped thematically and demonstrate a clear change in approach, over time, varying from early Judao-Christian representations which depict the creation of the universe, the planet and mankind as being virtually contemporaneous (taking place over a six day period), to modern images which reflect contemporary thought by relating to a vastly different time scale ranging from analysis of the first three minutes or less to the process which has continued to take place over some fifteen billion years since the 'Big Bang' - a term coined by Fred Hoyle in 1950 (see Weinberg, 1983). Depictions of the beginning or creation tend to fall naturally into several distinct groupings many of which, although ancient in origin, also have some correspondence with modern scientific theory. Images may be found of the universe as emerging out of chaos or created out of nothing (*ex nihilo*), as a measured and mathematical vision, as a narrative, as an abstract symbolic approach (such as use of the egg motif), or with a more strictly scientific or astronomical approach. One major theme is the contrast between concepts of the beginning as either structured and mathematical or as chaotic. The specific measuring out of the universe possibly

indicates a sense of purpose as opposed to chance occurrence; and of course the relation with religious, spiritual and scientific explanations is paramount (Peacocke, 1979).

Similarly, analysis or description of 'the end' varies from an emphasis on the end of mankind and/or the planet, or the end of universe itself. While 'the beginning' appears now to be more commonly associated with the beginning of the universe (the planet and humanity having subsided into insignificance), it seems that concern with 'the end' still focuses on the end of the planet, or rather mankind, since destruction of the species or planet appears now to be at risk through mankind's own treatment of the habitat rather than because of any exterior force (deity, stray comet, or gravitational collapse). The end of the universe in its entirety is scarcely raised as a possibility.

An astronomical or cosmological approach is frequently fundamental to visual images as well as in oral mythology. Modern physics and cosmology provide scientific solutions, but earlier interpretations more often rendered causation as attributable to the benevolent or violent actions of one or more deities. Visual expressions in one place of the beginning and the end of the universe and of time are relatively rare but 'the beginning and the end' is clearly the overriding theme of Michelangelo's frescoes in the Sistine Chapel, Rome with the *Creation* (1508-1512) on the ceiling and the *Last Judgment* (1536-41) on the altar wall. The beginning and end are also treated together in the great stained-glass east window at York Minster, 1405-08 (French 1995). The overall aim of such examples is to explain the beginning and the end in simplified visual terms to large numbers of non-specialist viewers, in a way that bears comparison with diagrams in modern popular space books (such as Gribbin, 1994). It is interesting to consider whether modern scientific images of the beginning and end are thus any different in essence from ancient spiritual or religious drawings, or whether they aim in basically the same way to explain in visual terms what might otherwise be conveyed in words or symbols, so that 'experts' or those in the know may communicate ideas to the wider uninitiated masses or, on occasion, to fellow experts. There is often a fine line to be drawn between what may be viewed as a scientific diagram and an 'art work', since many scientific diagrams used to elucidate theoretical concepts achieve artistic status over time, even though they were rarely intended as such, for example Renaissance drawings of the universe (Heninger, 1977).

Early visual images of the beginning of the universe are rare. Few images relating to the Babylonian creation myth of the *Enuma Elish* survive except those relating to individual deities or participants in the drama (Brandon, 1963) but in Egyptian art images of the creation are represented by cosmic events like the separation of the earth and sky, personified in the form of the sky goddess Nut arched over the earth god (Geb) with the sun king Rah in between (Durham and Purrington, 1983). Owing to an emphasis on mankind's importance in the classical world, the various classical explanations of the origin of the universe and planet (in Homer, Hesiod and the Pelasgian, Orphic and Olympian creation myths) appear seldom to have been expressed in visual rather than verbal terms, although the Pelasgian concept of the universal egg (also related to the Egyptian God Ptah) has formed the basis for many myths and visual interpretations (Guthrie, 1957; Ehrhardt, 1968). The egg as symbol of birth/beginning has continued to play a major influence on artists of many periods (Franz,

1972), including works by Salvador Dali (*Geopoliticus Child Watching the Birth of the New Man*) and the sculptor Brancusi (most notably *The Beginning of the World*, 1924). The idea of creation spilling out of the egg after some cataclysmic event continues to attract attention even in terms of modern scientific creation theory. Analogies have been drawn with the Big Bang, as shown in the cover illustration for Steven Weinberg's *The First Three Minutes*, where the artist has used an ancient symbol in order to conceptualise complex modern scientific theory. (No images seem to relate to the steady state model as proposed in the late 1940s by Herman Bondi and others, which lends itself less well to visual interpretation). Images may be used individually by artists attempting to explain the inexplicable, reflecting in each case the time and context of creation. Just a cursory comparison, for example of a medieval creation cycle such as that at St Mark's Venice and Brancusi's 'Egg' immediately provides us with information about contemporary approaches to the problem - on the one hand the reliance on Church dogma, on the other the freedom of the artist influenced by contemporary scientific developments but including atavistic throwbacks to the 'cosmic' egg derived from the ancient creation myths. The same problem is afforded different interpretations.

Another group of images relates to the contrasting theories of the creation as occurring either completely out of nothing or from the ordering of pre-existing chaos (see also Ovid, *Metamorphoses* 1). The concept is explored in visual images from medieval manuscripts to modern illustration, for example, the so-called Serajevo Haggadah, 12th century (Maclagan, 1997) which clearly shows order resulting from the separation of light and dark, or the altarpiece c. 1488 by Fernando Gallego (collection of the University of Arizona) which, carefully labelled as 'Chaos', was almost certainly heretical at the time, *ex nihilo* being the preferred model for the Catholic Church since 1215. The concept of pre-existing chaos was derived from Plato who emphasised the scientific basis of the view of creation through rational philosophy based on mathematical principles and number as part of world view (*Timaeus* 48A-B). Together with the writings of Aristotle (*Metaphysics* x.2), such ideas exerted enormous influence on medieval writers such as St Augustine (see *City of God*, VIII, 11; *Confessions*, 11). Later Renaissance examples were also influenced by such writings, for example, the treatise of the philosopher and astronomer Robert Fludd (*Utriusque cosmi, maioribus, scilicet ...*, 1617) which was illustrated with images of the resolving of primeval disorder. By contrast, another group of examples demonstrate a very measured and scientific approach to the creation, as the idea of underlying science becomes emphasised. Scientific and mathematical aspects demonstrate a very geometric approach (such as the *Creation*, Monreale, 12th cent.), and the actual use of scientific instruments by God as architect or geometer according to Proverbs 8:27 occurs in notable examples such as the French *Bible Moralisée* (13th cent), the *Historia Scholastica* (1411-12) or Blake's *The Ancient of Days* (1793) which symbolise the imposition of rationality and mathematics in the bringing of order (Lippincott, 1999).

Less scientific and more purely narrative versions are to be found amongst the wealth of visual images relating to the Judao-Christian religious tradition, where humanity is the focal point of creation and a major emphasis is often laid on the narrative aspects, rather than the

symbolic, chaotic or measured approaches discussed above. The great creation cycle at St Mark's Cathedral, Venice (late 11th century) demonstrates a very linear and narrative approach inside the creation dome (itself a cosmological symbol of the dome of heaven surmounting the flat earth), with details of sun, moon and other astronomical features. Stars also feature in the thirteenth-century *Creation of the stars* in Freiburg Cathedral (13th cent, Franz, 1997) and in the illustration of creation in the manuscript of Hildegard of Bingen (c. 1150, Maclagan), although her more famous image of the universe as a whole is far more abstract. Manuscript illuminations provide further examples of a strictly narrative approach (such as the *Biblia Vulgare Istoriat* 1471, Lippincott, 1999), but attempts to integrate traditional narrative with contemporary scientific theory are also to be found in Renaissance works such as Giovanni di Paolo's *Expulsion from Paradise*, 1445 which bears reference to the *Sphera Mundi* of Sacrobosco (Dixon, 1985).

Modern examples like Barnett Newman's *Adam*, 1951-52, Chagall's *Creation of Man* (1956-58), the *Creation* tympanum of Washington Cathedral and others reflect a more abstract and interpretative approach, while often including specific astronomical features such as stars. It is curious that many images from earlier medieval times seem to have a stronger mathematical basis or intention, while twentieth century artistic images are often more symbolic or abstruse. More specifically scientific diagrams are to be found in modern texts, such as images of the Big Bang and expanding universe in George Smoot's *Wrinkles of Time* (1993) which is quite typical of 1990s publications, or other very popular works to explain scales of time and space (Hogan, 1998). Popular interest in such scientific questions as the 'beginning' and the 'end' of the universe has increased at the turn of the third millennium CE, and books on cosmology are numerous and wide ranging. Few have many illustrations but images may be used to convey an explanation of known theory to non-experts, in largely the same way as religious images were viewed by the masses. The question is at what stage 'scientific' images used for a particular purpose may possibly be accorded any artistic status.

Evidence demonstrates that our universe was born out of a superdense superhot fireball some 15 billion years ago (Riordan and Schramm, 1990, Rees, 2000). The fear of it all ending persists but in a somewhat different way than before. The Judao-Christian view of 'the end' is based on scriptural sources and, like 'the beginning', has a long visual tradition, involving destruction or redemption, hell or paradise, an optimistic or pessimistic view. Current theory suggests that if expansion decelerates, then the universe may ultimately contract towards a 'big crunch' (Davies, 1994) in a scenario where there is no 'next', in the same way that there was no 'before' before the big bang (Rees, 1999). More recent theory even suggests that rather than the universe obliterating itself in one cataclysmic event (big crunch) it may truly last indefinitely in a state of bleak nothingness.

Death and destruction of the individual, as well as apocalypse in general, were ever present themes in the ancient world. As with the creation/beginning, death and the end were alluded to in many cosmic myths and addressed in works ranging from the Egyptian Book of the Dead to countless images of the Last Judgment in the art of Western Europe. The wider cosmological view plays an important part in such images and the influence of contemporary theories are often apparent, for example in the cosmic allusions to the rolling out of the

heavens at the end of the world in the *Last Judgment* in the tympanum at Vezelay (1125). Similar astronomical themes (with sun, stars and moon) are depicted in the dome of the Kariye Djami, Constantinople (1320) representing the end of the universe and of time in accordance with Revelation 6:14, and also recur, for example, in the Saint Sever Apocalypse (11th century), with the end arriving in a shower of stars. Astronomical features also recur in Giotto's version of the *Last Judgment* at Padua (1305), Signorelli's *Last Judgment* at Orvieto (1500-04) and many other examples (Shrimplin, 2000). Bosch, and Durer (*Opening of the fifth and sixth seals*, 1498) included astronomical features in their depictions of the apocalypse, and interest in contemporary astronomy is also reflected in artworks in the Renaissance. Not all images of the end are pessimistic, for example, Gustave Doré's nineteenth-century illustrations to Dante's *Divine Comedy* show the promised paradise amongst the stars, but many versions of apocalypse from the early twentieth century understandably reflect the troubled times and periods of upheaval and world wars, for example the *Apocalypse* by Odillon Redon, 1899; Ludwig Meidner's *Apocalyptic Landscape*, 1912; Kandinsky's *Last Judgment*; and Max Beckman's *Apocalypse* 1943 which contains astronomical allusions to the sun and stars (Carey, 1999). These all tend to reflect the age of their creation as visionary scenes of war and upheaval as much as twentieth-century developments in scientific theory. Horrors of war were well known but it was not until the twentieth century that methods of warfare could be considered as a specific threat to the human race, if not the planet itself.

As with medieval examples, concern for 'the end' appears to lay an emphasis upon the death of mankind rather than the end of the planet or solar system, let alone the universe as an entity. But some modern works do more specifically reflect the direct influence of contemporary astronomy, such as works by Bill Hartman and Adolf Schaller (Sagan, 1995) who depicts the time when the sun will expand as a red giant, causing the end of life on earth and perhaps eventually the planet. Popular interest or concern in such likelihoods has increased enormously in recent years, highlighting various possible threats. Instead of fear of retribution by a deity, there has developed a real concern with the finite nature of our species, planet and solar system, but the possible finite nature of the universe is seldom discussed (*Newsweek*, 15 November 1999). Articles in the popular press show images of destruction by comets, asteroids, or by the man-made hole in the ozone (see respectively the *Times* newspaper, 3 September 1999, 5 September 1999 and 9 September 1999, or the *Living Planet Report*, 2000), demonstrating concern for 'the end' of mankind even if the planet itself would be likely to survive. There seems little fundamental difference between the images of mankind having caused his own destruction by mistreatment of the planet, and previous images of mankind having caused his own destruction by mistreatment of his god(s).

In spite of changes in approach to 'the beginning', where the role of mankind has lapsed into insignificance in terms of time and space, the emphasis on 'the end' still seems firmly placed on humanity and the immediate environment. A comparison of pertinent visual images used as cover designs for two key publications, Weinberg's *The First Three Minutes* and Davies' *The Last Three Minutes*, totally reflects this. The former draws on ancient symbolism and clearly depicts the expanding universe as a whole, while the cover design for the latter

work shows what appears to be an image of our own sun. The emphasis seems in fact to have narrowed down from medieval images which depicted the beginning and end of the *whole* of the known universe, to concern about the end of our species (not even the planet), the likely reason being because survival is now threatened and the risk of human extinction is greater than ever. Lucio Fontana's *Il Fine del Dio* refers back to an egg symbol (riddled with holes), unusually used to denote 'the end' and an unusual work by Alberto Ruggieri, (Image Bank, [www.theimagebank.com](http://www.theimagebank.com), no. 10118436) shows the planet being squeezed like a metaphorical lemon. The fear of the end is a concept which is of perennial concern, even if a nervousness results in some cases in frivolous treatment in contemporary cartoons. Images continue to be used to explain complex ideas as knowledge at first available to a select few, the intelligentsia of theologians, philosophers or scientists, gradually permeates into the 'public domain' and becomes assimilated, even if imperfectly understood. A high level of understanding may not be essential for artistic or aesthetic quality.

## References

This paper is a very concise summary of a much larger work currently in progress. Due to limitations of space, works could not be illustrated here, but will be found reproduced in works cited below.

- Brandon, S. G. F. (1963) *Creation Legends of the Ancient Near East*, London.
- Carey, F. ed. (1999) *The Apocalypse and the Shape of Things to Come*, London.
- Davies, P. (1994) *The Last Three Minutes: Conjectures about the ultimate fate of the Universe*, London.
- Dixon, L. S. (1985) 'Giovanni di Paolo's Cosmology,' *Art Bulletin*, 67, 4, 604-613.
- Durham, F., and Purrington, R. D. *Frame of the Universe: A History of Physical Cosmology*, New York.
- Ehrhardt, A. (1968) *The Beginning: a study in the Greek philosophical approach to the concept of creation*, Manchester.
- Franz, M-L: von (1972) *Patterns of Creativity Mirrored in Creation Myths*; Zurich.
- Franz, M-L. von (1997) *Time: Rhythm and Repose*, London.
- French, T. W. (1995) *York Minster: The Great East Window*, Oxford.
- Gribbin, J. (1993) *In the Beginning: The Birth of the Living Universe*, London.
- Gribbin, J. and M. (1994) *Time and Space*, Eyewitness guide, London & New York.
- Guthrie, W. K. C. (1957) *In the Beginning: Some Greek views on the origin of life*, Cambridge.
- Henderson, L. D. (1983) *The Fourth Dimension and Non-Euclidean Geometry in Modern Art*, Princeton.
- Heninger, S. K. (1977) *The Cosmographical Glass: Renaissance Diagrams of the Universe*, San Marino.
- Hogan, C. J. (1998) *The Little Book of the Big Bang*, New York.
- Hurwit, J. M. (1985) *The Art and Culture of Early Greece 1100-480 BC*, Ithaca and London.
- Lippincott, K. (1999) *The Story of Time*, London.
- Maclagan, D. (1997) *Creation Myths: Man's Introduction to the World*, London.

- Peacocke, A. R. (1979) *Creation and the World of Science*, Oxford.
- Rees, M. (1999) 'Understanding the Beginning and the End,' 284-295 in Lippincott, *Story of Time*.
- Rees, M. (2000) *Before the Beginning: Our Universe and Others*.
- Riordan, M., Schramm, D. M. (1990) *Shadows of Creation: Dark Matter and the Structure of the Universe*, New York.
- Sagan, C. (1995) *Cosmos*, New York.
- Shrimplin, *Sun Symbolism and Cosmology in Michelangelo's Last Judgment*, Truman State University Press: Kirksville, Mo. 2000.
- Smoot, G. and Davidson, K. (1993) *Wrinkles in Time: The Imprint of Creation*, London.
- Sproul, B. C. (1991) *Primal Myths: Creation Myths around the World*, San Francisco.
- Weinberg, S. (1983) *The First Three Minutes: A Modern View of the Origin of the Universe*, London.