

Edwin C. Krupp

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### Abstract

Broad public embrace of archaic astronomy probably began in the eighteenth century with awareness of the summer solstice sunrise's affiliation with Stonehenge. Since that time, Stonehenge has retained an astronomical mystique that attracts crowds mobilized by the monument's supposed cosmic purpose. They are committed to witness prehistoric heritage operating in real time and with enduring function. More recently, mass media have intermittently thrown a spotlight on new archaeoastronomical discoveries. While the details, ambiguities, and nuances of disciplined study of astronomy in antiquity do not usually infiltrate popular culture, some astronomical alignments, celestial events, sky-tempered symbols, and astral narratives have become well known and referenced in popular culture. Places and relics that command public interest with astronomical connotations are transformed into cultural icons and capture visitors on a quest for the authenticity the past is believed to possess. Monuments and ideas that successfully forge a romantic bond with the past and inspire an imagined sense of sharing the experience, perspective, and wisdom of antiquity persist in the cultural landscape.

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## Introduction

Largely dependent on mass media, popular culture reflects the interests, values, notions, themes, and sensibilities of mainstream culture. Astronomical aspects of ancient and prehistoric sites, particularly Stonehenge, became more widely known in popular culture, particularly in Western culture, through books, magazines, and newspapers, and especially through television, during the same period of time when most of the general public was losing direct contact with the sky through urbanization, less reliance on direct observation of nature, and the proliferation of artificial lighting. The exotic character of these archaic places activated the imagination, and to those no longer at home with the sun, moon, planets, and stars, the astronomical attributes of these monuments seemed to indicate a surprisingly sophisticated approach to celestial phenomena. This romantic conceit continues to thread through perceptions of antiquity in contemporary popular culture.

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## Aligned with Stonehenge

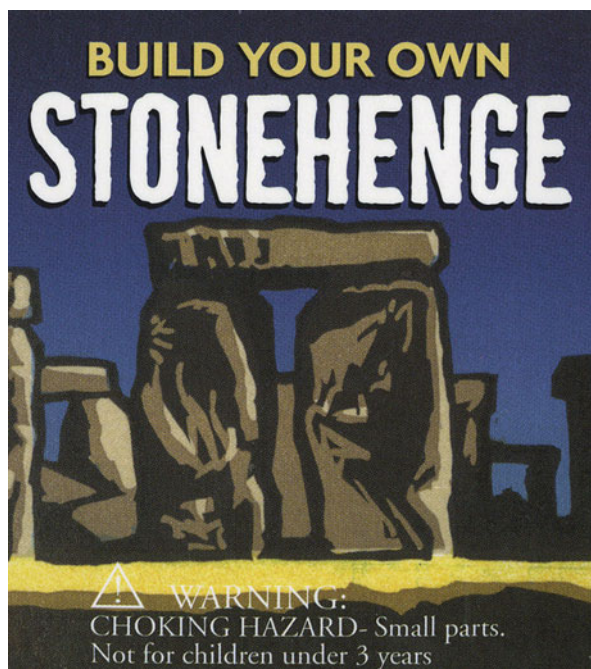
By 2006, popular culture in America had so fully embraced archaeoastronomy's foundational notion – the presence of astronomical alignments in prehistoric monuments – a London and Philadelphia publisher, Running Press, incorporated instructions for correct astronomical orientation of the mini-megaliths in its *Build Your Own Stonehenge* kit (Fig. 18.1).

The little book packaged with the plastic stones, *The Building of Stonehenge* by Morgan Beard, advises readers, “the most plausible explanation is that Stonehenge was used as a calendar or ancient observatory” (Beard 2006). The pamphlet mentions “midsummer sunrise over the Heel Stone” along with midwinter sunset and various lunar alignments and eclipse prediction. A few pages later, the booklet instructs those who have completed assembly of the tiny Stonehenge model, “now, for an extra bit of fun you can wait for the sunrise on the summer solstice and align your circle astronomically, just as the ancients did – Druid robes optional”.

The toy Stonehenge must have been a commercial success. My little 2006 Stonehenge is the fourteenth printing, and 2 years later Running Press released a new, larger version under the title *Stonehenge: Build Your Own Ancient Wonder*. It came with a new and illustration version of Morgan Beard's tiny book, with the same assessment of Stonehenge astronomy and the same instruction for astronomical alignment. If Stonehenge is a prehistoric monument superhero, the *Build Your Own Stonehenge* kit is an action figure.

Public exposure to Stonehenge astronomy was already sufficient more than two decades earlier to inspire parody. By 1982, Peter Payack and The Idea Works, Inc., in Pequannock, New Jersey, had designed, manufactured, and distributed *The Stonehenge Watch*, a handheld cast plastic replica of Stonehenge as it was in the Bronze Age and mounted inside a flip-open case contrived to resemble a pocket watch. In *Stonehenge Unraveled*, the miniature booklet Mr. Payack wrote to accompany the device, he trumpeted merits of *The Stonehenge Watch*: “Solid-state

**Fig. 18.1** The *Build Your Own Stonehenge* kit turns anyone into a megalithic astronomer (Collection E.C. Krupp)



**Fig. 18.2** The *Stonehenge Watch* puts prehistoric astronomy in your pocket (Collection E.C. Krupp)



construction”, “guaranteed never to wind down”, “programmed to function for over 5,000 years”, “unlike any other computer”, and “the first large-scale twentieth century retreat from the tyranny of ultra-precise timekeeping” (Payack 1982) (Fig. 18.2).

Advertising in the 1970s and 1980s exploited Stonehenge’s seasonal association with time. Emperor Clocks promoted build-your-own timepieces with a Stonehenge constructed out of grandfather clocks. A February, 1974, Unitron

telescopes pitch in *Sky & Telescope* magazine displayed the instruments against a Stonehenge backdrop with copy that identified Stonehenge as a “predictor of celestial events” and classified Stonehenge and Unitron telescopes as “monuments of reliability”. Alleged astronomical and chronometrical dimensions of Stonehenge embedded the clocks and the telescopes in a deeply rooted tradition of astronomical observation and timekeeping.

Even when the commercial message contained no explicit reference to an astronomical alignment, a connection between Stonehenge and the sky could be invoked. A magazine advertisement promoting England as “known for its rock groups” placed an impossibly large moon above the stones. In a 1986 magazine advertisement for the public broadcasting system’s *Nova* television program on science, a photograph placed the sun between a pair of Stonehenge sarsen circle uprights. The Aztec corporation named its new speaker “Stonehenge 1” and showcased it with a picture of the monument at winter solstice sunset. Midwinter, a manufacturer of dinnerware, named its new line of dishes “Stonehenge”, explained the monument is “an ancient reminder of man’s ever present interest in the universe”, and added, “and now you can capture that feeling with Stonehenge Sun, Moon and Earth patterns. . .45 pc set”.

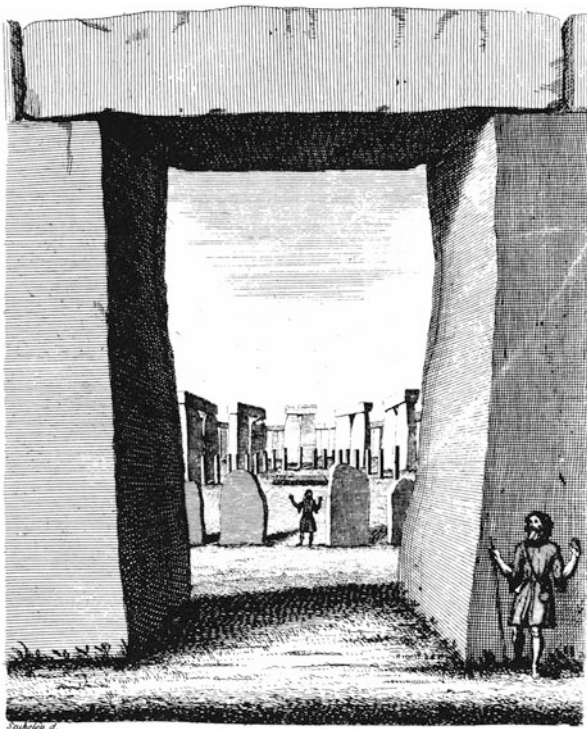
None of this marketing would have made any sense were Stonehenge not recognized as some kind of astronomical device, and it was, largely due to the impact of *Stonehenge Decoded* (Hawkins and White 1965), an internationally successful book of new revelations about the astronomical capacity of Stonehenge. The book consolidated Gerald S. Hawkins’s recent discoveries of solar and lunar alignments in Stonehenge. Hawkins captured the public imagination with his use of an IBM computer – an exotic and fetching new technology at the time – to validate the alignments and to portray Stonehenge as a kind of astronomical computer.

Hawkins also transformed Stonehenge into an eclipse predictor and so amplified the stones’ mystique. What really cemented the link between Stonehenge and astronomy, however, was 1965’s widely seen CBS television documentary, *Mystery of Stonehenge* (CBS News 1965; Krupp 1978a), which framed the question of Stonehenge astronomy as a colorful dispute between the established, conservative archaeologist and foremost expert on Stonehenge, R.J.C. Atkinson, and the upstart, innovative astronomer, Gerald S. Hawkins. Whatever merits or flaws the arguments possessed, significant television exposure turned Stonehenge astronomy into popular culture, and Hawkins should be credited with stimulating the energetic, worldwide, culture-based, and more disciplined enterprise archaeoastronomy became.

Astronomy had, however, forged a popular alliance with Stonehenge almost 250 years before Hawkins’s analysis. In August, 1721, William Stukeley, an English antiquary, noticed the earthen avenue that extends northeast from Stonehenge points “whereabouts the sun rises, when the days are longest” (Burl and Mortimer 2005). He first published a report of this Stonehenge alignment with summer solstice sunrise in 1740 (Fig. 18.3).

Stukeley regarded Stonehenge as a prehistoric monument. He attributed it to the ancient Celts of Britain and identified it as a Druid temple. This imaginative but unsubstantiated assertion endured. In the public mind, Stonehenge became a place

**Fig. 18.3** William Stukeley envisioned Druids among the megaliths and provided a view along the axis of Stonehenge toward the southwest and opposite summer solstice sunrise (Collection Griffith Observatory)



where Druids ceremonially observed summer solstice sunrise, and that presumption began to prompt Victorians to assemble at Stonehenge to witness the spectacle of midsummer sunrise. It was a popular event by 1870. According to British archaeologist Christopher Chippendale, Stonehenge's most comprehensive historian, "since the later 19<sup>th</sup> Century the principal annual event at Stonehenge has been going to watch summer solstice sunrise" (Chippendale 1983).

The self-designated "Druids" that now parade inside the sarsen circle in white robes for summer solstice sunrise did not get around to astronomically appropriating Stonehenge until 1915. They have no bona fide connection to the original Druids, who in any case had nothing to do with the construction, orientation, and use of Stonehenge, but they are now sufficiently associated with Stonehenge to be authorized solstitial access.

Through the twentieth century, the general-admission summer-solstice crowd at Stonehenge just kept growing. By the 1930s, 15,000 were showing up for the event – a gargantuan crowd, given the small size of the monument. In the 1960s, summer solstice at Stonehenge began to turn into an underground, counterculture festival. Stonehenge was by then astronomically fortified by the contrived and misleading ending of the CBS *Mystery of Stonehenge*, in which the summer solstice sun rises directly above the Heel Stone to "prove" the validity of the Hawkins decoding of Stonehenge. Ongoing media coverage of summer solstice sunrise



**Fig. 18.4** Public interest in Stonehenge summer solstice sunrise prompted production and supported sales at the monument of a sunrise-enhanced postcard (Collection E.C. Krupp)

influenced the agencies who administered Stonehenge to become more receptive to the monument's astronomical potential. Postcards that featured summer solstice sunrise over the Heel Stone were sold at Stonehenge. In 1973, a black-and-white HMSO Department of Environment postcard view with a rising sun airbrushed behind the Heel Stone and titled "Sunrise" was available at the monument. Also, a color postcard, "winter sunset", documented the alignment in the opposite direction toward winter solstice sunset. The 1971 edition of *Stonehenge and Avebury and Neighboring Monuments* official guidebook by R.J.C. Atkinson endorses some astronomical claims, including the possibility of some summer solstice and winter solstice alignments and lunar alignments, but expresses skepticism for others (Fig. 18.4).

Academic acceptance of Stonehenge astronomy – at least, among astronomers – became apparent with the obligatory inclusion of pictures and commentary on Stonehenge in college-level astronomy textbooks to illustrate the antiquity of astronomy (Abell 1969).

Magazines for amateur and armchair astronomers published articles with material on Stonehenge astronomy (Etheridge 1969; Robinson 1966; Wallis 1973) (Fig. 18.5).

Planetarium shows explored Stonehenge and ancient and prehistoric astronomy. At Griffith Observatory in Los Angeles, *Stonehenge and the Dawn of Astronomy* played from 2 March through 18 April 1971. Borrowing content from Hawkins,





Stonehenge is described in show "The Dawn of Astronomy" starting on October 21.

**Fig. 18.5** Griffith Observatory put Stonehenge astronomy on the cover of its monthly magazine in October, 1969 (Griffith Observatory)

the show also revived Sir J. Norman Lockyer's much earlier archaeoastronomical initiatives. Through the 1970s and 1980s, Griffith Observatory's archaeoastronomical planetarium shows were revised and more ambitiously produced to reflect the evolving sophistication of the research (Fig. 18.6).

Stonehenge astronomy started showing up in editorial cartoons. Charles Conrad, a political cartoonist for the *Los Angeles Times*, incorporated a plan of Stonehenge, complete with Hawkins alignments on the sun and moon; in a visual commentary on nuclear weapons and disarmament, he captioned "Missilehenge".

**Fig. 18.6** Stonehenge and other astronomical antiquities returned to the Griffith Observatory planetarium in 1973 and were promoted in the Observatory's program brochure (Griffith Observatory)

February 27 - April 22

## Stonehenge and Ancient Astronomy

Astronomical events had a fundamental importance to ancient man. He considered the sun, moon, and planets to be gods with supernatural powers. The positions and movements of these astronomical bodies were therefore extremely significant to our ancestors. In this planetarium program we shall journey back in time 5000 years to ancient Egypt, where we shall discover how all the great monuments, pyramids, temples, and tombs were aligned with the stars. In addition, unusual astronomical events such as eclipses of the sun or moon were terrifying, unless priests or sages had predicted them beforehand. On the Salisbury Plain of England is an ancient stone monument called Stonehenge which can be used as a giant computer to predict eclipses. In this show we shall journey to neolithic Britain to explore the wisdom of early man.

While independent researchers like C.A. Newham (1964) and A. Thom (1954, 1966) were studying the astronomical potential of Stonehenge and other prehistoric monuments in Britain and attracting only modest notice, modern popular archaeoastronomy was created by Gerald S. Hawkins's *Stonehenge Decoded* and the CBS *Mystery of Stonehenge* program. That high-profile attention on prehistoric astronomical monuments encouraged others to get interested in archaic astronomy. By the early 1970s, a handful of individuals were reporting discoveries in other parts of the world, among them were John C. Eddy, who surveyed medicine wheels in North America; Anthony F. Aveni, who examined architectural alignments in Mexico and Guatemala; and Ray Williamson, Von Del Chamberlain, John C. Brandt, and others, who investigated ancient sites and rock art in the American Southwest. From 30 October through 4 December 1974, E.C. Krupp presented what seems to have been the first modern survey of new developments in archaeoastronomy. This weekly lecture series at Griffith Observatory, "Stonehenge and the Lost Astronomies", included material on ancient Egypt and on the New World. Soon after, in winter, 1975–1976, E.C. Krupp enlisted the participation of Alexander Thom's son and collaborator, Archibald S. Thom, along with Eddy and Aveni, and organized and presented another series, "In Search of Ancient Astronomies", for the University of California, Los Angeles, and the University of California, San Diego (Krupp 1978b).

In time, some of the other ancient and prehistoric monuments that became associated with astronomy acquired iconic status almost equal to Stonehenge. The play of light and shadow at the equinoxes on the Castillo, or Pyramid of Kukulcán, at Chichén Itzá, a postclassic Maya ceremonial center in northern Yucatán, has become as famous in Mexico as Stonehenge summer solstice sunrise is in England. The astronomical and calendrical connotations of the Castillo hierophany are now known throughout the world through steady popularization and promotion. The number of visitors dramatically increased at Chichén Itzá,





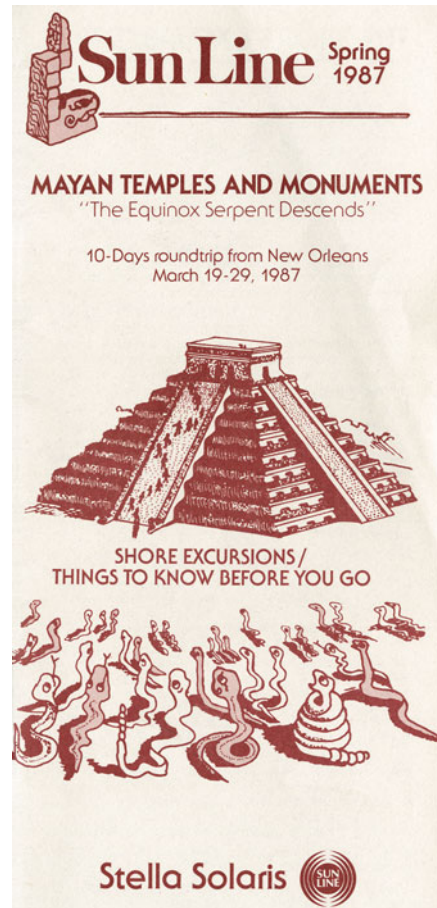
**Fig. 18.7** For the 1987 vernal equinox, the crowd descending on Chichén Itzá for the Castillo stairway serpent of light and shadow had grown to 20,000 (Photograph E.C. Krupp)

particularly at the equinoxes, between 1976 and 1981, and the ongoing impact of prodigious crowds led to major tourist development and much more formal control of the monuments (Fig. 18.7).

In the late afternoon, for a few days centered on each equinox, seven isosceles triangles of sunlight successively appear on the west side of the Castillo's north stairway. The large sculptures of feathered serpent heads at the bottom of the stairs turn the balustrade into a descending diamondback snake of light and shadow. The effect was first noticed and reported by archaeologist J. Rivard in 1970 (Rivard 1970), but it had been seen, photographed, and published in 1948 by travel photographer Laura Gilpin, who said nothing about the date on which it occurs (Gilpin 1948). The astronomical, seasonal, and symbolic aspects of the phenomenon went unrecognized until Rivard discussed it. Rivard's paper did not generate widespread interest, but by 1976 Luis E. Arochi, a Mexican lawyer, began turning the equinox at Chichén Itzá into a national event with publication of his book *La Piramidé de Kukulcán, Su Simbolismo Solar*. He magnified its impact with personal appearances on the equinox to preside over the serpent's descent. More elements of the community, including Mexican local politicians, archaeologists, and Mexican tourists began to participate. Publicity attracted more people to Chichén Itzá to witness the equinox revelation.

By 1982, 12,000 visitors were on hand for 21 March, which fell on a Sunday that year and always coincides with Benito Juárez's birthday. E.C. Krupp published the first detailed account and analysis of the Castillo equinox hierophany in English,

**Fig. 18.8** Sun Line Cruises and Ted Pedas promoted the 1987 equinox cruise to Yucatán with a cartoon in which visitors snake down the Castillo stairs and serpents watch the spectacle (Artwork Robin Rector Krupp, collection E.C. Krupp)



for the general reader, in 1982 (Krupp 1982), and by 1987, eclipse cruise pioneer and planetarium director Ted Pedas was organizing equinox Caribbean cruises that transported thousands to Yucatán, and the crowd on 21 March 1987 at Chichén Itzá had swelled to 20,000 (Fig. 18.8).

The pyramid's performance became an even more complex and organized spectacle with anthropologists, elected officials, mariachi bands, *folklorico* dancers, modern variety show theatrics, local Maya people, and New Age pilgrims, who traveled from North America, Europe, Asia, and elsewhere to experience the equinox extravaganza. The audience topped 45,000 in 1995 (Krupp 1996), and by then the equinox enterprise extended to other Mesoamerican sites, like central Mexico's Teotihuacán, where no equinox alignment or display is to be seen. Commercial equinox package tours multiplied (Fig. 18.9).

Like summer solstice at Stonehenge, equinox at Chichén Itzá and other Mesoamerican monuments are now widely known and extravagantly embraced. A 2012 report in the *Los Angeles Times* "Travel" section on touring Yucatán



**Fig. 18.9** Postcards are a sign of commercial success. This 1995 postcard documents Chichén Itzá’s equinox serpent with a picture taken at an earlier time when the crowd was just starting to grow (Collection E.C. Krupp)

antiquities (Reynolds 2012), indicated 40,000 arrived for the 2012 vernal equinox and that twice that many were expected to appear at the site on 21 December 2012, for the conclusion of Baktun 13 and the alleged roll-up of the Maya calendar, the world, and everything.

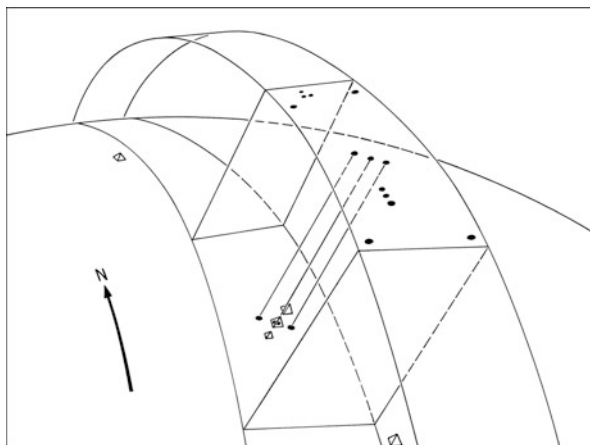
A small number of other archaeoastronomical relics have commanded significant attention, spurred by mass media in the modern era of these studies. The Sun Dagger of Fajada Butte, in Chaco Canyon, New Mexico, is an eye-catching display of seasonal light and shadow on prehistoric Pueblo rock art near the summit of this landmark (see ► Chap 41, “Rock Art of the Greater Southwest”). A formal report on the effect earned the cover of *Science*, a formal, refereed journal of scientific research, in 1979 (Sofaer et al. 1979). The Sun Dagger successfully slipped into popular culture with an appearance in *Cosmos*, Carl Sagan’s singular public television series on astronomy (Sagan 1980). A PBS television documentary, *The Sun Dagger*, subsequently produced by Anna Sofaer’s The Solstice Project and narrated by the well-known actor Robert Redford, was released in 1983 and brought the idea of ancient astronomy in the American Southwest and the Sun Dagger’s fetching summer solstice descent through an Ancestral Pueblo spiral petroglyph to a mass audience. Although the Fajada Butte Sun Dagger has not been energetically commercialized like Stonehenge and Chichén Itzá, visitors to the National Parks Service Visitor Center at Chaco Culture National Historical Park have encountered descriptions of the Sun Dagger since its discovery (Fig. 18.10).

**Fig. 18.10** By 1983, the National Park Service was already proving information on the Fajada Butte Sun Dagger in the Chaco Canyon Visitor Center (Photograph E.C. Krupp)



*The Orion Mystery*, by Robert Bauval and Adrian Gilbert, burdened Egypt's pyramids with a new promotion that equated the three main pyramids at Giza to a map of the stars in Orion's Belt (Bauval and Gilbert 1994). A BBC television documentary in 1994, *The Great Pyramid: Gateway to the Stars*, brought the book wide popular recognition, and more books and more television programs on the theme followed, along with considerable adversarial commentary on the Internet. By 1996, the idea was sufficiently familiar to be considered evocative enough for advertising. Software Bisque showcased its *TheSky* astronomy software in an advertisement in the March issue of *Sky & Telescope*. A picture of the Giza pyramids silhouetted against a star chart of the constellation Orion was captioned, "new theories have linked the positioning of Egypt's ancient pyramids with the celestial orientation of the three stars in Orion's belt. What discoveries await you in *TheSky*?" E.C. Krupp began delivering public lectures on fatal flaws in Orion Mystery arguments in 1998 on *The Pyramids, the Sphinx, the Mystery*, a Visions Travel & Tours, Inc., commercial cruise (enigmatically through Alaska's Inside Passage) that teamed Krupp and celebrated Egyptologist Zahi Hawass against author Graham Hancock and other unorthodox interpreters of Egypt before a large audience generally sympathetic with unconventional archaeology and disposed toward New Age spirituality. Ongoing adoption and proliferation of Orion Mystery





**Fig. 18.11** There are only two ways to bring the stars of Orion down to earth at Giza, and both of them are in conflict with the arrangement of the pyramids on the ground. The first method, direct projection, projects the Belt of Orion on a line that crosses, and does not coincide, with the line of pyramids. Despite this simple geometric test, several popular books on the subject show the agreement of stars and pyramids with a completely erroneous diagram (Griffith Observatory, Joseph Bieniasz)

arguments by other writers and media personalities induced Krupp to prepare and publish the first enumeration of Orion Mystery errors (Krupp 1997). Although the idea that Orion is mapped in pyramids is not as well known as summer solstice sunrise over the Heel Stone at Stonehenge, the Giza/Orion correlation is notorious enough to have a Wikipedia entry dedicated to it (Fig. 18.11).

Symbols on the Nebra Sky Disk, a Bronze Age relic discovered by treasure hunters in Saxony-Anholt, Germany, in 1999, put ancient astronomy back on the world stage. Images that might represent the sun, the moon, the horizon, and the Pleiades on a 3,600-year-old bronze disk, about 30 cm in diameter, ignited interest in prehistoric European astronomy and also provoked highly speculative commentaries in the popular press about its origin and function. Nothing like it had been encountered before. Magazines featured reports on it (*Archaeology* Jan./Feb., 2003; *Archaeology* Nov., 2005; *National Geographic* Jan., 2004), and it was the focus of a National Geographic special television show in 2004. In the same year, *BBC Horizon* aired its radio program, *Secrets of the Star Disk*. Programs on the disk were produced for The Learning Channel, The Discovery Channel, and The History Channel. The disk was soon showcased in a major exhibit of Bronze Age antiquities. It toured major cities – including Halle, Copenhagen, Vienna, Mannheim, and Basel – between 2004 and 2007 and drew thousands to see it in person. All of this public notice led to interlinked tourist development of the area associated with the disk. The State Museum of Prehistory has the disk on public display. A special visitor center has been constructed at Mittelsberg Hill, near Nebra, and the prehistoric enclosure where the disk was found. The 5,000-year-old chambered tomb dolmen near Langeneichstädt is now part of central Germany's Nebra Sky Disk




**Fig. 18.12** Even before the Nebra disk became celebrated in the pages of *National Geographic* magazine in 2004, its public profile was already great enough to claim a place on the poster for an astronomical research workshop in 2003 (Collection E.C. Krupp)

**HIGH RESOLUTION INFRARED SPECTROSCOPY IN ASTRONOMY**  
European Southern Observatory - Garching near Munich, Germany  
November 18-21, 2003

Infrared spectroscopy at a resolution of a few km/s offers a unique tool to study rotational-vibrational transitions of many abundant molecules as well as important atomic lines in a multitude of interesting astrophysical environments. Applications include:

- late-type stars, AGB stars and post-AGB-Objects
- possible direct detection of exoplanets
- abundances and magnetic fields of stars
- ISM chemistry and stellar kinematics
- gas in galactic centers



The ESO VLT will soon be equipped with two unique spectrometers combining high spectral ( $\sim 10^5$ ) and spatial resolution ( $\sim 0.2$  arcsec)

- CRIRES, an adaptive optics fed 1-5  $\mu$ m spectrograph with  $\lambda/\Delta\lambda \sim 10^5$
- VISIR, including a mode with  $\lambda/\Delta\lambda \leq 3 \times 10^4$  between 8-13  $\mu$ m

The aims of this workshop are to:


- present the latest status of such instrumentation at the VLT and other observatories
- present and review recent results
- bring together the community interested in high resolution infrared spectroscopy and to foster new collaborations
- provide ESO with feedback for the instrument commissioning phases

Registration: absolute deadline via the Web page is August 30th 2003 (earlier registration is advised as the number of participants is limited to 110).

Scientific Advisory Committee:  
Bengt Gustafsson (Uppsala, chair), Catherine de Bergh (Meudon), Ewine van Dishoeck (Leiden), Artie Hatzes (Tautenburg), Ken Hinkle (Tucson), Ulli Käufl (ESO), Alan Moorwood (ESO, co-chair)

for all other details please consult the webpage:  
<http://www.eso.org/ekstasy2003>

E-mail contact: [ekstasy@eso.org](mailto:ekstasy@eso.org)



tourist pilgrimage. A 7,000-year-old monument at Goseck has been interpreted as a prehistoric observatory and is now a developed site for tourists. In addition, a German rock group adopted the name Nebra and released a CD titled *Sky Disk* on Pelagic Records in 2009 (Fig. 18.12).

Since 1975, a slowly growing public awareness of the completion of Baktun 13, a milestone in the ancient Maya Long Count tally of days from the mythical date of Creation in ancient Maya belief, focused worldwide public attention on 21 December 2012. Arriving with the 2012 winter solstice, the end of Baktun 13 seemed to some to have been deliberately contrived to coincide with an astronomically and seasonally significant event. Romantic notions about archaic wisdom and apocalyptic anxiety over a calendar's alleged runout of time transformed the Maya calendar into a vehicle for assorted pseudoscientific prophecies of doom (Fig. 18.13).

Commentary on 2012 and the Maya calendar remained under the radar of mass media until José Argüelles, author of *The Mayan Factor: Path beyond Technology*, successfully promoted the Harmonic Convergence, a global event he invented for the weekend of 16–17 August 1987. The book enigmatically manipulated



**Fig. 18.13** Despite pseudoscientific claims of Maya Calendar doom coming with the end of Baktun 13, Mexico, Guatemala, and Honduras all promoted tourism to their Maya monuments for winter solstice, 2012. This Maya calendar countdown clock encourages tourists arriving at Mérida's Manuel Crescencio Rejón International Airport in Yucatán to wrap up the baktun at Chichén Itzá (Photograph E.C. Krupp)

Maya calendrics, linked them with a beam of transcendental energy claimed to emerge from the center of the Milky Way Galaxy, and anticipated 2012 and the end of Baktun 13 as “Galactic Synchronization” and “the peak of maximum acceleration and dissonant entropy”. Argüelles incorporated the language of scientific physics, modern astronomy, and ancient Maya calendrics in his New Age spirituality, but not the facts, principles, and essential content of those disciplines. In the realm of popular culture and mass media, however, his 1987 catchphrases perpetrated wider belief in the significance of a date 25 years in the future.

When popular culture embraces specialist knowledge, it may oversimplify ideas, distort content, and naively misappropriate unfamiliar facts and exotic concepts to validate belief, market products, and inflate images. An assertion that successfully allies itself with science appears to have authoritative support other beliefs do not share, and archaeoastronomy adds the authenticity of ancient science to beliefs that hijack its public appeal.

Most of what happened next in the 2012 phenomenon emerged from *Maya Cosmogenesis* (Jenkins 1998), in which John Major Jenkins explained the 2012 winter solstice conclusion of Baktun 13 as an effort by ancient Maya astronomers to anchor the calendar with the precessional migration of the winter solstice sun into

alignment with the direction toward the Galactic Center, where the Milky Way widens into the Galaxy's central bulge. Although the "galactic alignment" is astronomically flawed in several ways, it caught on and inspired greater confusion with other kinds of cosmic alignment alleged to prevail on 21 December 2012. Jenkins packaged his notion in a colorful, selective, and idiosyncratically organized account of ancient Mesoamerican astronomy – alignments, star lore, symbolism, myth, and calendrics. He also merged his ideas about winter solstice sunrise and the Milky Way with the orientation of Izapa, an early and singular pre-Columbian ceremonial center in southernmost Mexico, and interpreted Izapa's distinctive iconography within the same narrative.

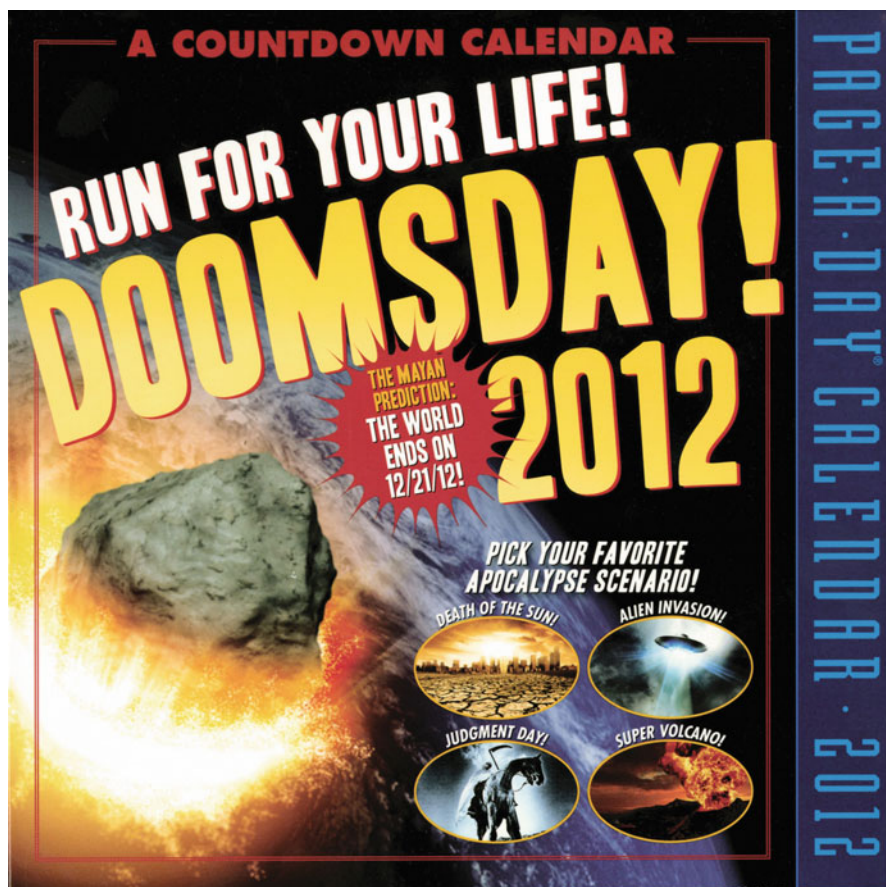
After the publication of Jenkins's book, 2012 was propelled into syndicated all-night talk-radio shows like *Coast to Coast* with an archaeoastronomical twist, and the alleged shutdown of the Maya Calendar began to accumulate assorted prophesies of doom. The 2012 Maya Calendar End Times follies evolved to include a renegade planet headed toward earth, a catastrophically active sun, a gravitationally disruptive alignment of planets, global seismic changes, pole shifts, reversal of the earth's magnetic field, and the earth's departure from orbit and subsequent consumption by the black hole at the center of the Milky Way Galaxy (Fig. 18.14).

The spirit of apocalyptic anxiety moved onto the Big Screen in 2009 with motion picture director Roland Emmerich's film *2012*. The movie is a fantasia of earthquakes, volcanoes, and tsunamis mystifyingly triggered by neutrinos from a huge solar flare and linked with the Maya calendar. Billboards, benches, buildings, bus stops, newspapers, and movie marquees advertised the film all over Los Angeles, which in the movie went down for the count when things started to go wrong.

E.C. Krupp wrote the first widely circulated, nationally distributed detailed commentary on dubious 2012 notions (Krupp 2009), and it was immediately followed by a 2012-oriented treatment of Maya calendrics by Anthony F. Aveni (Aveni 2009a). At the same time, Aveni published an entire trade book on the subject for the general reader (Aveni 2009b). NASA posted Krupp's article on its website as a resource in response to the astronomical number of inquiries it was receiving about 2012.

Anticipating reinvigorated interest in 2012 once the year arrived, Griffith Observatory, in Los Angeles, produced a major planetarium show, *Time's Up*, which leveraged Maya calendar lore and false predictions of doom on behalf of a look at the real nature of time and the long-term future of the universe. The live, all-dome program premiered in the Samuel Oschin Planetarium on 14 May 2012. Griffith Observatory normally closes to the public at 10:00 p.m., but on Friday, 21 December 2012, it remained open until 12:01 a.m. on Saturday morning to demonstrate the planet's survival to the hundreds who converged at the site for the end of Baktun 13 (Fig. 18.15).

On 5 May 2012, the University of Pennsylvania Museum of Archaeology and Anthropology, in Philadelphia, Pennsylvania, opened *Maya.2012: Lords of Time*, a temporary exhibit that showcased ancient Maya relics from Copán, never seen outside of Honduras, to explain the 2012 phenomenon, the Maya calendar, Maya



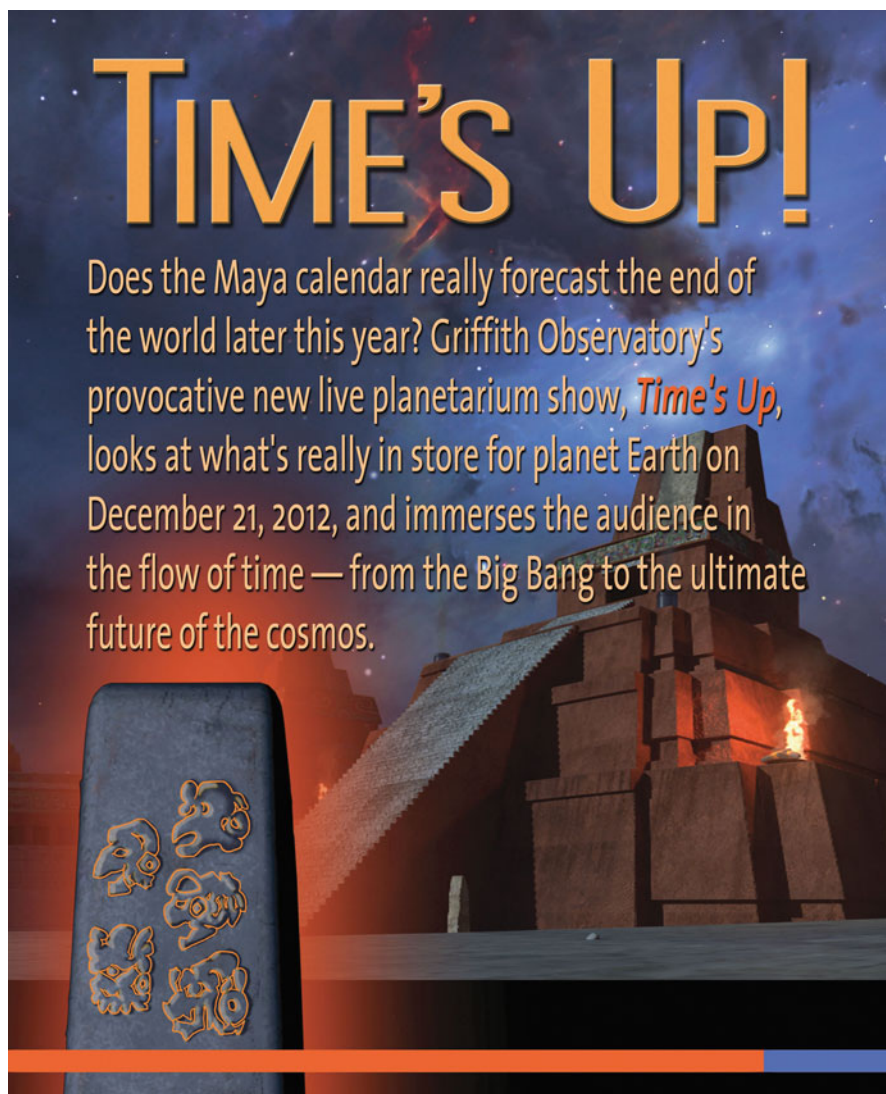
**Fig. 18.14** The Maya End Times Apocalypse spawned a commercial Page-a-Day calendar that could transport anyone through 2012 with daily anxiety and the fear that the last page in the stack would be 21 December (Collection E.C. Krupp)

monuments, and Maya astronomy and set the record straight on what the Maya may have really thought about the completion of Baktun 13 (Fig. 18.16).

Baktun 13's full entry into popular culture was confirmed in an episode of *The Simpsons*, the long-running animated television series that parodies American life. On 7 October 2012, the show's annual "Treehouse of Horror" Halloween special included a segment that turned the usual cartoon-character cast of the show into ancient Maya people who predict the destruction of the earth at the end of Baktun 13, in 2012.

The 2012 theme appeared in numerous newspaper cartoons and was referenced in commercials. Nearly 1,500 books involving 2012 were published (Whitesides 2011). At least six novels hinged plots on the 2012 theme. The year's questionable character put it on the cover of numerous magazines. The *Run for Your*





**Fig. 18.15** The 2012 Maya Calendar End Times Follies provided the hook for Griffith Observatory's *Time's Up* planetarium show, which transformed Baktun 13 uncertainties into a program on the true nature of time and the second law of thermodynamics (Griffith Observatory, Don Dixon)

*Life! Doomsday! 2012* Page-a-Day Calendar offered daily eschatological aphorisms for anyone counting down the End Times (Krupp 2012). In Los Angeles, KFI-AM, a popular talk-radio station, identified itself as “your soundtrack for the End of the Maya Calendar”, and Motel 6, a national motel chain, ran a commercial with a 2012 theme. Belgium even honored 2012 and the Maya calendar on a postage stamp.





**Fig. 18.16** The University of Pennsylvania Museum of Archaeology and Anthropology made an exhibit out of Maya calendrics and modern folly in 2012 (Photograph E.C. Krupp)

Archaeoastronomy, in turn, took a look at 2012's archaeoastronomical affiliations in an academic session, "The 2012 Phenomenon: Maya Calendar Astronomy, and Apocalypticism in the Worlds of Scholarship and Popular Culture", organized by John B. Carlson and Mark Van Stone for the Ninth "Oxford" International Symposium on Archaeoastronomy in Lima, Peru, in January, 2011 (Carlson 2011) (Fig. 18.17).

*Archaeoastronomy* is not a household word, and its full dimensions and its nuances are not well known. A few sites and relics with astronomical elements, however, have become archaeoastronomical icons. As a consequence, in popular culture and mass media, the ancients are often portrayed as astronomically astute and engaged. This sensibility was sufficiently established by 1981 to drive the inclusion of ancient astronomical alignments into popular entertainment when archaeologist Indiana Jones made use of an ancient solar alignment involving the "Map Room" in the ruins of Tanis, Egypt, in *Raiders of the Lost Ark*, the Stephen Spielberg Paramount Pictures pulp fantasy adventure film. Jones was searching for the Lost Ark of the Covenant and used a surveyor's transit to find the subterranean Map Room. Once inside, he placed a staff – with the correct length and topped by a crystal medallion – in the right floor slot for that day of the year. The crystal medallion was once part of the Staff of Ra, and Ra is the primary solar god of Egypt. When sunlight entered the roof window and reached the crystal on the upright staff,

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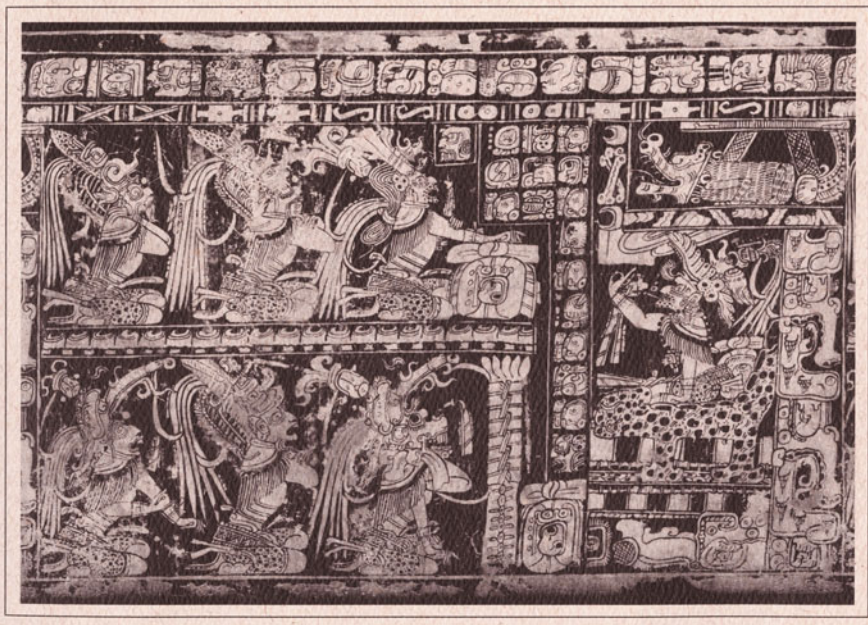
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## The Maya Calendar and 2012 Phenomenon Studies

John B. Carlson, Editor



**Fig. 18.17** Archaeoastronomy was not only part of the 2012 bubble. It also tried to sort it all out, and a special issue of *Archaeoastronomy, the Journal of Astronomy in Culture* captured the perspective of the experts (Collection Griffith Observatory)

the light was bent and focused to spotlight the location of the fictional Well of Souls, where the Ark was supposedly hidden by the Egyptians who supposedly stole it from Jerusalem nearly 3,000 years earlier. None of the historic background is correct, and the IMDb website's "Frequently Asked Questions" section about the film ([www.imdb.com/title/tt0082971/](http://www.imdb.com/title/tt0082971/)) concludes that Indiana Jones could not have located the Ark with his archaeoastronomical performance in the film. Soon after the movie's original release, however, John B. Carlson explored the same question in a brief article on archaeoastronomy in popular culture and outlined how the stunt might have actually worked (Carlson 1982). Carlson concluded that awareness of



**Fig. 18.18** *Raiders of the Lost Ark* toy merchandising included “The Map Room Adventure Set”, which equipped the Indiana Jones action figure with the surveyor’s transit and Staff of Ra that allows him to locate the Well of Souls with a calendrically calibrated beam of sunlight (Collection E.C. Krupp)

the importance in many ancient cultures of astronomical alignment in architecture “is more than ever becoming part of the popular consciousness” (Fig. 18.18).

Archaeoastronomy also penetrated popular culture in a more disturbing way through a variety of pseudoscientific enterprises, including ancient astronauts, the Face on Mars and the “monuments” that accompany it, pyramidology, and earth mysteries. All of these utilize astronomical alignments, astronomical numerology, and astronomical symbolism. They are ambitiously and effectively marketed in books, magazines, websites, television programs, and radio shows to ignite interest and belief in their audiences. By forging bonds between the past and the present, between earth and sky, and between the personal and the cosmic, they cultivate an emotional investment in exotic beliefs and “heretical” knowledge. For many, these feelings are reinforced by associative thought and personal experience. Because the winter solstice had meaning for our ancestors, it has meaning to us. We may, however, project our meaning onto the past in the belief that we are understanding it. We also may find personal meaning in the concrete and direct experience of observing astronomical events, like the winter solstice sunrise, from some ancient



place and through that experience believe that place is charged with power. The power is really just the emotional feedback we get from that romantic link to the past that drove us to experience that event in the first place, but to many, it may seem to be an inherent property of the place, something that prompted the interest of the ancients who built it.

A modern tourist in the landscape of antiquity may sense significance in a particular moment in time and space. That personal experience of time and sky is compelling because it confers meaning on those who witness the event.

Popular culture is “popular” because it reflects the broad prevailing belief system of the times. Archaic astronomy occupies a place in popular culture because it fulfills a function. Whether the insight we sense is fabricated or authenticated by fact, it makes us feel we have a grip on the world.

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## Cross-References

- [Analyzing Light-and-Shadow Interactions](#)
- [Monuments of the Giza Plateau](#)
- [Nebra Disk](#)
- [Stonehenge and Its Landscape](#)
- [Sun-Dagger Sites](#)

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