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# **ON THE NUMBERS 54 AND 108 IN ANCIENT WORLDWIDE TRADITIONS: AN EXTENDED DATA BASE AND SOME POSSIBLE ASTRONOMICAL CONNECTIONS**

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## **1. INTRODUCTION**

The numbers 54 and 108, with some of their multiples and divisors, appear in ancient rituals, traditions, features of sacred structures.....as described in the over one hundred cases given below. Never we found an explanation of why they are chosen, as if the origin of their choice was forgotten or a secret not to be revealed. Here we provide a list of such occurrences, mainly from books we read. More can certainly be found by a fuller complete exploration of the literature and others can be found at the Google entry *108 sacred*, only partially used by us. The numbers appear mainly in oriental sources (China, India..... ) but also in Middle East, Europe and South America. The collection given here appears to be the largest ever made. It contains about 40% more entries than those published in 2003 in a similar report of the University of Bergamo and also in the journal *Migration and Diffusion*

An astronomic origin for such numbers is a hypothesis worth to be considered. Here we list, without comments, seven of them:

- according to Patten and Windsor [1, 2, 27, 28, 47] in ancient times, precisely until the year 701 BC corresponding to the last of such events (in that year the army of the Assyrian king Sennacherib was destroyed by a very special catastrophic event while he was keeping Jerusalem under siege) planet Mars, then revolving around the Sun on a quite elliptic orbit according to these authors, would come close to Earth every 54 years, alternatively by day or by night on a given longitude, hence every 108 years

either by day or by night. Such a close passage led to catastrophic events on our planet. The intensity of the catastrophes depended on how close was the passage, such a distance depending on the relative position of the other planets, then revolving along a system of resonant orbits. Patten and Windsor base their theory on the existence, in the biblical record, of a sequence of several catastrophes that are spaced by multiples of 54 years. Notice that resonant orbits are not stable, according to recent analysis by Damgov et al. [39,40] and by Bass [42]. Notice also that Woelfly and Baltensperger [5] have proposed a catastrophic interaction between our planet and a Mars-sized body moving in a very elliptic orbit, and now possibly disappeared inside our Sun. They attribute to the close passage of this body the glaciation's episodes in the last 3.2 million years, including the last one that ended circa 9500 BC.

- the ratio of the solar diameter (km 1.392.000) to Earth diameter (km 12.756) is 109.1, close to 108 to an error less than 1% (notice that an increase of solar diameter by about 1% is suggested by measurements taken during over a century at Greenwich Observatory; hence in earlier times the ration could have been much closer to 108).
- the Saros period is the number of years after which Sun, Moon and node return to the same position, producing an eclipse. Such a period amounts to 6585,321 solar days, about 18 years and 11 days. Hence 3 Saros are about 54 years. We should notice that the number 18 plays a special role in Inca architecture, see Von Hagen [75].
- according to Ackerman [48] planet Mars passed close to the Earth 99 times (hence the origin of the sacred 99 names of Allah in Islam), in a scenario that extends the one considered by Patten and Windsor. Now we know that Shakti, often considered the highest divinity in the Hindu pantheon, reincarnated 10 times, every time as a terrible goddess (Kali,...). Taking a clue from Velikovsky [49], we may associate Shakti with planet Venus, which possibly interacted with Earth 10 times, once together with Mars (and another body), an event that led to the end of the close passages of Venus and Mars with Earth, see Dixon [50]. Thus we would have 99 plus 9 distinct close passages, giving a total of 108. However a problem is that the last passage (both Venus and Mars coming close to Earth ) happened in 701 BC at the time of Sennacherib's siege of Jerusalem, while the number 108 is documented from times predating that date. Hence this explanation

would not be acceptable, unless someone could estimate in advance the number of passages, a feat requiring very sophisticated mathematical instruments

- the Greeks estimated the Sun diameter by multiplying the estimated Earth diameter of 8000 miles by 108; the distance Earth to Sun was obtained by multiplying the Sun diameter by 108; the distance Earth to Moon was taken at 108 times the diameter of the Moon, estimated in miles at twice 108 multiplied by 10, see Greaves [55].
- the ratio of the mass of Mars to the mass of Earth is 0.108, the ratio of the mass of Mercury to Earth is 0.054, see the tables in Phillips [60]. Notice that since the gravitational constant  $G$  is known only up to 3 digits, more digits cannot be given to the above ratios.
- every 20 years there is a conjunction of Jupiter and Saturn, an event that was considered very important by Kepler, who suggested that the Bethlehem star was associated with it. Now there are 108 such conjunctions in the time the Sun needs to move the equinox by a zodiacal sign, due to the precessional movement.
- a pole of a certain length  $\alpha$  set orthogonally to the vision direction will be seen as having the same angular size as Sun (or Moon) if it is set a distance equal to 108 times  $\alpha$ , see Kak [114].

In addition to the question of the origin of these numbers in the worldwide traditions reported below, their presence in the widely spaced continents of Europe, Africa, Asia and America suggests the investigation of the following problem: did such traditions arise independently, from a same event experienced worldwide, or by cultural diffusion, possibly related to human migrations?

In the following we will list occurrences of such numbers in various geographical locations.

## **2. CHINA, MONGOLIA, TIBET AND SOUTH-EAST ASIA**

**One of the most mysterious and archaic societies in China is the Hung League or Triad, presently the most important of the secret societies in China. While the name Hung refers to the Buddhist monk who led the rebellion against the Yuan dynasty becoming the first Ming dynasty emperor, the rituals of the Triad are believed to go back to pre-Buddhist religions of the Chinese. One ritual involves 108 plants in a pot. Another involves 108 groves of red bamboo. The number 108 appears in several other items associated with the Hung league, see Fei Ling Davis [35]:**

- The violation of several rules was punished with 108 strokes of whip (quoted book, pages 113, 115, 117, 160, 167, 181, 218, 271); highest penalty was decapitation**
- Different roles in the society were associated with a number: the President had the number 108 (above, p. 162)**
- During the festival of the Gods of Earth 108 coins were offered to the divinities (above, p. 184)**
- The society had a plan of the sacred Buddhist city of paradise, containing exactly 108 buildings, only 5 of which were inhabited (above, p. 194)**
- The cost of the membership diploma was 108 coins (above, p. 202).**

**In 1120-21 AD the peasant rebellion in the marshes of Shandong, to which the classic novel *The water margins* refers, was led by the famous team of 108 outlaws, whose chief was Liang Shan Po.**

**There are 108 lords of Tao, see [105].**

**The main Buddhist temple in Urga, Mongolia, has 108 columns, see [105].**

**Chinese astrology counts 36 beneficial stars and 72 evil stars, their sum being 108, see [105].**

The Buddhist rosary, called *aksamala*, in sale e.g. in Chinese Buddhist temples, consists of 27, 54 or 108 grains (so it should be and so the vendors state; but if you count them they are often less, a common way of cheating).

The grains can be red, white or black, colors of the Sun, the Moon and the Fire of Shiva, see [104]. The cheapest rosaries are made of seeds. More special rosaries, like the one used by Alexandra David Néel, the first European woman to enter Lhasa (in the twenties of 20<sup>th</sup> century, disguised as a Buddhist woman), consist of grains in the form of skulls, typically used by hermits [6].

Nicholas Danziger traveled to China via Iran, Afghanistan and Pakistan in the seventies. He was the first westerner to enter China from Pakistan via the newly opened Karakorum highway through the Khunjerab pass. The following occurrences of 108 are found in his book [7]:

- p. 309: *I noticed particularly one Golok woman from Changthang (the Tibetan plateau), her waist-length hair braided into 108 plaits to reflect the 108 blessings of Buddha.*
- p. 379: the boat he took on the Yangtze Kiang had a dormitory with 108 beds; he commented: *anything to do with Buddhism again?*

A funeral ritual in the 18-th century, described in the classic book *The dream of the Red Chamber* [44], involved on the third day the participation of 108 Buddhist monks.

There are 27 different ways of differentiating the pulse working in Chinese medicine, see Staude Terzani [91].

Chinese astrology uses 54 esagrams. See Maraini [99].

The Golok, or Ngolok, are a tribe living in northeast historical Tibet, now a part of Quinghai, near the Anye Machen mountain range, surrounded on three sides by the Yellow River, locally called Maqu (pronounced as Machu). That is a region of great importance in the archaic history of Tibet, being related to the original land of the epic hero Gesar de Ling and, according to Hummel [8], being the original land of the Zhang Zhung, a people whose language was lingua franca in Tibet until the 8<sup>th</sup> century. The Anye Machen

range has been proposed by us [9] as the Mount Mashu that Gilgamesh reached in his second trip, where he met Utanapishtim, a survivor of the Flood who is usually considered to be an alter ego of Noah but who from many considerations must have been another survivor of the Flood, in the original land that the Sumerians left after the Flood (Dilmun, claimed to be located in the East).

The Ngolog, also called Black Tangut, numbered about 120,000 people around 1950 but now are only about four thousand (see Deshayes, [23]), since most of them were killed while resisting the Chinese occupation of Tibet. These fierce horsemen, living partly as bandits, were visited by Leonard Clark, an American officer who stayed with the Muslim general Ma Pufang, the last war lord to be defeated by the Red Army led by Lin Biao. Clark had the task to evaluate the possibility to continue fighting against the communists from Tibet. The religion of the Ngolok was Bon, the pre Buddhist religion of Tibet that still survives in some parts and that has deeply influenced Tibetan Buddhism. In [10] Clark relates how he visited a Ngolok chieftain, in his tent: there 108 lamps were burning in front of the statue of a Bon divinity.

The most famous temple in Tibet is the Jokhang Temple, in Lhasa, where the Jowo statue is kept, Jowo meaning *Lord* in Tibetan. This temple contains a very ancient statue of a young man, deemed by some (when it was visited by David Néel) to be the young prince Gautama, before he began his religious life. The temple was a famous place for fortune tellers. The first act before meeting one of these tellers was to light 108 small lamps in front of the statue, see David-Néel [20]. Lighting 108 lamps is still now a current practice in Tibet.

There are 108 ways to build a *chorten*, which is a kind of mausoleum, often build over the grave of a holy man. See *The Tibetan book of dead*, version by Tucci [22].

In Tibet a “mystery rite”, named *chod*, was performed near special places. In David-Néel [19] we read: *Some lamas undertake tours to perform near a hundred and eight lakes, and a hundred and eight cemeteries.*

Camels in caravans bringing tea from China to Siberia via Mongolia were loaded with two or three boxes of tea bricks; each box contained exactly 108 (Chinese) pounds of tea, see Prjevalski [13].

A collection of sacred books in Tibet is the *Kangyur* (from Tibetan *Bkha hgyur*, meaning *Translated words*, see Néel [11], the original texts being written in Sanskrit, the content being related to the Bon religion, see Hummel [8]). It consists of 108 volumes, see a passage in Néel [12]: *Il existe, à Choni, une gompas qui jouit d'une certaine réputation parce que son imprimerie possède les planches gravées permettant l'impressions des 108 volumes formant la collection des livres canoniques appelée Khagyur*. The commentaries of the Kangyur, called, *Tangyur*, consist of 225 volumes (notice  $225 = 108 + 108 + 9$ , all special numbers....), see Maraini [37].

The Kangyur can be printed on paper, skin, silver or gold foils. The increase in price from one type of material to the next more expensive was traditionally exactly 108 times, see Prjevalsky [13]. A copy of Kangyur was preserved at their great risk during soviet times by Buddhists in the Buriat province of Soviet Union. It was written on 108 skins and preserved in a lacquered box, see Thubron [32].

Fortune telling is an ancient profession in Asia, often transmitted from father to son by uncountable generations. In the year 1993 the Italian journalist and writer Tiziano Terzani, who in 1976 had been told not to fly during that year by a fortune teller in Hong Kong, followed the advice (incidentally, the helicopter that should have taken him to a meeting in Cambodia crashed....) and devoted time in contacting fortune tellers in various parts of Asia. In Mongolia he visited the monastery of Ghisir, where in former times (i.e. before communism almost completely eradicated Buddhism killing most of the monks) a school for astrologers was located. The interview with the monk now doing fortune telling started with the monk asking him to tell a number not greater than 108. See Terzani [14].

From an article by J. Van Dyk: *One walk around Kailas, Ted explained, washes away the sins of life; do it 108 times (an inauspicious number to Tibetan Buddhists) and you can achieve nirvana in this life.*" (National Geographic, November 1999).

One of the traditional gambling in Tibet used 108 small carved bones in a hollowed out skull.



**Buddhism entered Tibet in the 7<sup>th</sup> century in the region of Lhasa. Initially 12 temples were built in certain key geographic points, starting with the Jokhang temple in Lhasa, that were associated with special bodily parts of a certain female demon, and the 12 temples were used to pin her down. This is linked with the belief that local gods had to be subdued before Buddhism could take root. Then the construction program was incremented by the addition of further 108 temples, at the end of the 7<sup>th</sup> century, see Allen [18].**

**Near the ruins of an ancient important temple in Milan, in the south-western part of Tibet, where the Guge empire flourished several centuries ago, chorten are present in rows of 108, see Tucci [25] and Tucci [36], where reference is made to 108 *chapels*.**

**The main temple of Lhasa is the Zuglacan (or Tsuglakhang, which is the true original name of the Jokhang); here 108 episodes of the life of Buddha are represented by frescoes, see Tucci [26].**

**One of the oldest temples in Tibet is located in Samye (badly damaged during the Cultural Revolution, it has now been restored to its former beauty). It was founded by king Khrisong Detsen, who adopted Buddhism as state religion; the famous lama Padmasambhava was called, with Shantarakshita, to assist in the construction. The temple contained 108 chapels; not far from it another temple, the Ngari Tratsang, contained frescoes of the 108 “works” of Buddha, see Tucci [26]. Near the temple 108 caves are found, whose entrance was closed during the Cultural Revolution, restoration being now under way; see Pachen and Donnelley [38].**

**In Gyangse, the famous Baiqoi Pagoda has 108 doors, see [64].**

**There are Tibetan tankas (religious paintings) depicting the 108 Bodhisatvas in carnal congress with their naked Shaktis. See [69].**

**Angkor Wat was built in Cambodia by a people whose culture came from Vedic India. For some reason the ancient society at Angkor failed. The jungle took over and grew upon this former great city, concealing its amazing architecture, until it was rediscovered in the 19th century. Angkor Wat incorporates the numbers 54, 108 and 540, in its planning, architecture and**

engineering. The city has a diameter of about two miles, and was surrounded by a moat with five bridges. It has five gates, and to each of them leads an avenue, bridging over that water ditch which surrounds the whole civic area on a flat plane. A row of huge stone figures, 108 per avenue, 54 on each side, a total of 540 statues of the Indo-Aryan deities Deva and Asura, border each of these roads, and each row carries a huge Naga serpent with nine heads.

108 bridges were built in Tibet by Thangtong Gyalpo, who is considered the Leonardo da Vinci of Asia and lived about the same time as the Italian Leonardo. See Harrer [84].

When the Buddhist monk Hsuan Tchang was on his way from China to India in 629 AD, at the entrance of the great Lob Nor-Takla Makan desert the king of Gaochang gave him an escort of 24 servants and 30 horses, i.e. 54 beings, see [94].

In the Dreguen monastery in Tibet (on the way from Gangtok to Lhasa) there are representations of the 108 emanations of the Supreme Buddha. See Maraini [100]

The Kum Bum temple in the Tibetan town of Gyantse has foundations with a radius of 108 cubits. See Maraini [101], who does not specify the type of cubit.

Women in Baltistan arrange their hair in 108 tresses. See Maraini, [102].

Ngolok women, belonging to a tribe living in the region of the sacred Anye Machen mountain (they resisted the Chinese invasion and were mostly destroyed), in the twenties used to dress their hair in 108 tiny tresses. See Rock [110].

In the stupa of Bodnath, 8 km west of Katmandu, built about 2000 years ago in octagonal shape, there are 108 niches containing prayer wheels always moving, see [111].

### 3. JAPAN

In the middle of the first millennium before Christ, Buddhism spread outward from India into Ceylon, Tibet, China, Cambodia, and eventually into Japan. Everywhere Buddhism went it adopted ideas and themes from the ancient indigenous religions. Even in our century in Japanese cities, on Buddha's birthday, there are precisely 108 bongs gonged out on a large gong at Buddhist shrines. Bells are sounded 108 times in Buddhist temples nowadays also past midnight of 31 December, relayed live from the television, see Bornoff [31].

The *Tale of Genji* is a classic of Japanese literature, written by Murasaki Shikibu (c. 980-c.1014), a complex story of life and loves of the *shining prince* Genji, developed in some thousand pages divided into 54 books. Again in 54 chapters is another later classic, the *Life of an Amorous Man*, by Saikaku, published in 1682. See Bornoff [31].

Another curious survival of number 54 may be seen in the booklet *The description of the desired Japanese*, published by the Public Instruction Ministry in 1964, with a yellow cover, the Bible for every school teacher. It has 54 pages. See Terzani [15].

Bowing exactly 108 times is a tradition in Japan. Here is the description of how the Japanese explorer Kawaguchi behaved when in the spring of 1900 he saw for the first time the sacred source of the Ganges, the *Chumik Thonga Ranchung*, or *The Spring of Joy*, see Allen [17]: *It inspired me with the profoundest feelings of pure reverence.....I addressed myself to this sacred pillar of nature, confessed my sins, and performed to it the obeisance of one hundred and eight bows.*

Just as a curiosity we notice that the great orientalist Fosco Maraini, when he returned to Italy at the end of Second World War after several years in Japan doing anthropological research and being imprisoned when he refused the oath of fidelity to Mussolini government in Salò, packed the material he had collected in 54 wooden boxes. See Maraini [45].

**In the mandala Kongo-Kai there exists 108 saint celebrities, called the *Honorable of the Vajradhatu*.**

**The capital built by Genghis Khan was called Karakorum. It was destroyed when the Yuan dynasty collapsed, being followed by the Ming dynasty. The first Ming emperor, originally a monk, destroyed Karakorum, building at its place a huge Buddhist monastery, with 108 stupas. See [112].**

#### **4. INDIA**

**The number 432,000 appears not only in Germanic traditions (the Eeinherier entering Valhalla, see below) and in the Chaldean king list in Berossus (but only if the traditional saros of 3600 years is correct; if a saros close to 20 years is taken, then the length of the king list is virtually the same as the length of the patriarch list given in the Septuaginta), but also in the Rig Veda. The Rig Veda has 10,800 stanzas with 40 syllables per stanza, a total of 432,000 syllables.**

**There are 10,800 bricks in the Indian fire altar (Agnacayana), a funeral pyre, a number of fate.**

**In the Ramayana (prose version by Buck [21]), the monkey Hanuman breaks the skull of the demon Lighting Tongue into 108 pieces. The hermit Pulastya gets angry when he is disturbed for the 108th time. Indrajit, the son of the demon Ravana, who takes away Sita from Rama, wins 108 kinds of illusions from Brahma. In a battle between Rama and the Rakshasas in the Dandaka forest, a Rakshasa soldier hit a brass plate 108 times.**

**At a variance with the number 108, that might be explained by a memory slip when, after several years, he told his story to Rustichello of Pisa in a Genoa prison, Marco Polo (Il Milione, third book, chapter 23, Latin version of 1485 by Pipino, with notes by Cristoforo Colombo; Italian edition by Edizioni Paoline, 1985) states, with reference to the king of Maabar, in southern India:**

*on his neck there is a silk band adorned with 104 pearls and rubies. Every day he has to recite 104 prayers in the morning and 104 in the evening.*

Mustang is a secluded province in north-west Nepal, which the Nepalese government is still trying to keep out of the main tourist directions by charging a high entrance visa. The local religion is mainly Buddhism and that land is rich of monasteries (gompas) with extremely ancient and rare documents (a copy of the Kangyur written on pure gold foils, weight 40 kilos, is kept in the fortress of the town of Tsarang). The famous gumpa of Lo Gekar is located in a mountain area in the middle of 108 chorten. See Terzani [15].

Mukthinath is a temple town in Nepal, where Buddhism and Hinduism coexist with several temples. Near the Vishnu temple the water of a holy source is distributed by a system of 108 outlets, see Tucci [24].

The Hindu rosary (called *japamala*) has 108 grains as does the Buddhist rosary (it is worth recalling that Buddhism can be seen as a variant of Hinduism; this was the opinion of Gandhi). Curiously, Allen [17] notes that the Survey of India Office was able to send his agents incognito into Tibet for land measuring where the agents counted the number of their passes, the basic length unit, using a modified rosary with 100 instead of 108 grains.

According to Yoga precepts, man should breathe exactly 21600 times per day; since night and day can be considered of equal length in tropical India, this would mean 108 multiplied by 100 two times (one breath every 4 minutes).

Every life of Brahma, in an undending chain, lasts 108 years. See Kaplan [52].

In 1929 Morgenstierne met in Chitral (a town in formerly Kafiristan, where Pakistan borders Afghanistan) an old man who knew by heart the list of his ancestors for 54 generations back.

In Matsya Purana a list is given of the 108 principal holy places existing in the world, see [58].

**The city granary excavated in Mohenjo Daro had 27 storage cells, see Mandel [59].**

**Indian necklaces usually come with 33, 99 or 108 grains, special good luck being associated with those of 108 grains, see Mandel [59].**

**In Southern India there are 108 sacred Sri Vaishnavite shrines, one of the most famous being the Thiruvinnam, or Oppiliappan Sannidhi, located in the Thanjavur district of Tamil Nadu, see [61].**

**According to the Azhvars, devotees of Narayana, there are 108 sacred places called Divya Desams or Tirupatis; 105 are in India, one in Nepal, 2 outside this world: Tiruppavai, the “ocean of milk”, and Srivaikuntam, the domain where Narayana presides. See [65].**

**Ganesha, one of the deities of the Hindu pantheon, has 108 names, from Akhura to Yogadhipa, see [62].**

**Encircling the sacred city of Benares there is a circular path with radius about 8 km named Panchakoshi Parikrama. Pilgrims complete this path in five days visiting 108 shrines along the way. If unable to complete the walk, it is sufficient for them to walk around the Panchakoshi Temple, which has 108 wall reliefs, see [63].**

***Lalitha Astotram* is a sacred Sanskrit text of the 108 names of the Divine as Mother, see [66].**

**The snail-headed Buddha features a seated Buddha with an apparent hairdo comprised of several tight spiral curls, that at close inspection consist of the 108 Snail Martyrs that gave their lives to moisten his shaven holy head. See [67].**

**There are 108 names of the god Skanda, see [68] for a list in Sanskrit and English.**

**Lord Krishna was taken care by 108 shepherdesses (gopi). See [70].**

**The goddess Durga has 108 names. There are 108 pilgrimage places (called *Pitha*) where the goddess is venerated. Each pitha is associated with a fragment of her body that was destroyed in a certain circumstance while in flight. See Eliade [71]. There are 108 pose representations of the Nasya Sdhastra, 108 Upanishads, 108 names of Vishnu in the Mahabharata and 108 names for Shiva, see [105].**

**The Vedic year consists of 360 days, or rays of a wheel, of which 108 are made of fire, the sunset days (116 of sun, the daylight, 136 of moon, the night time), See Woodroffe [72], quoted in Daniélou [73].**

**A mantra is a formula with associated magic powers. The following mantras need to be repeated 108 times, see Daniélou [73]:**

- the mantra to stop fire (the Agni-stambhana)
- the mantra to stop sleep ( the Nidra-stambhana)
- the five letters mantra (the Panchakshara)
- the fifteen syllables mantra (the Panchadashi)

**The river Krishna in Nepal originates from the Dhaulagiri and has traditionally exactly 108 sources, see Harrer [85].**

**There are presently five great leaders of the Hindu religion in India, one being Shankaracharya, who was visited by Richard Bernstein during his trip following the steps of the 6<sup>th</sup> century Buddhist monk Hsuan Tchang. Near Mumbai Bernstein attended the ceremony of the consecration of a statue of Hanuman, during which 108 gold coins were showered over it. See Bernstein [96].**

**In an ancient shamanism exorcism in Ceylon 108 lemons have to be cut over the head of three sick person using a nutcracker of betel, see [105].**

In the book *Natya Shastra* of Bharata Muni, possibly written in the 5<sup>th</sup> century BC, devoted to music and dance, 108 postures are described that can be combined to give the various movements of dance. See Kak [113].

The Mahavedi is a Vedic architectural structure, built according to a special size measured in units called purusas. The great square altar at the extreme east end of the Mahavedi is marked off at a point which is 54 units away from the west end. See Kak [114].

## 5. MIDDLE EAST

Sargon the Great, usually dated at about 2200 BC (but according to Pincherle [45] he lived before the Flood, in the 4<sup>th</sup> millennium BC), had 5400 men in his special body guard and 5400 men attending his banquets. See Pincherle [44].

Eight tablets were found near Nippur by the 1949-50 expedition of the Oriental Institute of the University of Chicago containing a document, translated by Landsberger, Jacobsen and Kramer, titled *The first almanac of agriculture*. The document was written in 108 rows. See Semerano [46]. From a tablet dealing with creation myths (Pettinato, communication at Accademia dei Lincei meeting, Rome, June 2000) we know that Enki gave 108 “essences” to Inanna. Now essences is a term referring to spiritual powers. This may be the earliest reference in literature to the number 108.

Gudea, a Sumerian king of the city of Lagash, built a temple to Ningirsu employing 216,000 workers (see Sitchin [4], p.45 in Italian edition by Edizioni Mediterranee, 1996). His meal usually consisted of 108 different foods.

In offerings to the gods in Uruk 108 types of common dates were included (plus an unspecified amount of bigger special dates imported from Dilmun, a region in the East, whose location is still a point of debate). See Sitchin [33].



The following list of antediluvian kings involves the number 108 (in the so called W-B text/144, see Sitchin [4], above quoted Italian edition, p.264):

*....the sovereignty was moved to Bad Tibira.*

*In Bad Tibira*

*EN.MEN.LU.AN.NA was king for 43,200 years*

*EN.MEM.GAL.AN.NA was king for 28,800 years*

*Divine shepherd DU.MU.ZI was king for 36,000 years*

*The three kings reigned for 108.000 years*

One may note that 108,000 is 30 times 3,600, which is the length of the Sumerian long year *SAR/SHAR*. 30 is also one of the “sacred” numbers, having a natural association with the revolution period of Saturn. According to Sitchin [4] 3,600 is the value of the orbital period of the *twelfth planet*, named *Nibiru*, by him associated to crucial events in the history of the Solar System and seen as the original abode of the *Anunnaki*, the beings involved in the “creation” of man. In Spedicato [88] it is claimed that the use of the long *sar* in the above computations may be wrong. One should use a shorter *saros*, related to the *saros* associated with successive lunar eclipses, whose value is now about 18.6 but may have been about 20 before the Noachian Flood. In such a case the total time for the reign of the three kings would reduce to a more acceptable 600 years.

At the time of the Assyrian king Tiglatpilaser the smallest unit of the Assyrian army consisted of 10 soldiers. The equipment of this unit was listed in a document found in Guzana and given in Pettinato [29]. It includes exactly 108 items (weapons and miscellanies like 4 horses, 2 asses, 1 ox and 10 sheep). A text of Calash is read as stating that the basic company of chariots included two distinct groups of 53 chariots and 53 men. The number 53 is given by the sum of 30, 12 and 11. While 30 and 12 are “sacred” numbers, 11 is generally not so, hence it is natural to suspect an error either in the text or in the translation. Changing 11 to 12 would give two groups of 54 elements, hence again the special number 108.

**Bale** is the name of a very ancient city in Lebanon. Its Greek name was **Mediapolis**. It is located on the way from Beirut to Damascus, in the Beak valley. Its extensive ruins consist of buildings of several periods, Roman columns and structures existing over much more ancient structures, including huge megalithic blocks, among the biggest known in the world. Long predating Roman and Greek structures on the site, the three that make up the so-called *Trinitron* are as tall as five-story buildings and weigh over 600 tons each. A fourth megalith, abandoned in its quarry before completion of the cutting is almost 80 feet in length and weighs 1100 tons. Amazingly these giant blocks were cut, perfectly shaped and somehow transported to Baalbek from a quarry several miles away. In addition they were skillfully incorporated, at considerable height. The temple had 54 massive columns during Phoenician times.

The book of Enoch, a canonical biblical book for the Christians and the Hebrews of Ethiopia and Armenia, also for the Essenes in Qumram, but not included in the present Christian or Masoretic canon, consists of 108 chapters.

In 1947 Athanasius Yeshue Samuel, Metropolitan of the Syrian Orthodox Archdiocese in Jerusalem, bought from beduins the first four scrolls of the rich cache from Qumram. It included a complete book of Isaiah, written in 54 columns, of 30 lines each. See Samuel [30].

Rabbi Eliezer (Rokeach), a teacher of the Nachmanides kabbalistic school, lists number 54 as *the way of skipping* in the search of hidden information in the Bible, see Satinover [34].

In Kabala it is stated that the name of God consists of 216 letters.

The temple constructed by Solomon in Jerusalem, destroyed by Nebuchadnezzar and reconstructed after the return of the Jews at the time of Cyrus, was rebuilt by Herod at the end of the first century BC. A feature of Herod's temple was a colonnade in four rows totaling 162 columns. Now  $162 = 54 \times 3$ , and 162 is not divisible by 4, implying that not all rows had the same number of columns.

In Islam 99 names are given to God, the hundredth-one being secret. Following the first name, *Allahu*, the second name is *Al Rahamanu*, which appears 108 times in the Koran. See Mandel [93].

In the Har Karkom region, in Negev, Israel, a village has been found dated to Hellenistic times and consisting apparently of 108 buildings, see Anati [107].

## 6. NORTHERN EUROPE

In the final battle of the gods in the old Germanic sagas, the legions on the side of "order" are the dead warriors, the *Einherier*, who once fell in combat on Earth and who have been transferred by the Valkyries to reside with Odin in Valhalla, a theme much rehearsed in heroic poetry. On the last day, they went forth to battle in martial array. One reads in the *Grimnismal*: *Five hundred gates and forty more - are in the mighty building of Valhalla - eight hundred Einherier come out of each one gate - at the time they go out on defense against the Wolf*.

There were 540 gates to the mythical Norse/Germanic warrior's heaven called "Valhalla".

The 800 *Einherier* were courageous warriors who died in battle, and in so doing had automatic reservations at the gates of Valhalla at the end of time. There were 800 *Einherier* at each gate, and 540 gates, making 432,000 a count of courageous warriors who died in battle, and who are to enter Valhalla. This is of interest because this strange number also appears in the Chaldean kings list of Berossus, where 432,000 is often thought to be 432,000 years.

In Edda, a collection of Nordic myths by Snorri Sturluson, there are 54 chapters. In chapter 21, Thor is said to possess a great palace, called Bilskirnir, having 648 great beams, a number that from the relation  $54 \times 12 = 648$ , connects the two "sacred" numbers 54 and 12.

Statues of mother goddess datable to Neolithic times have often 27 eye lashes over each eye, thus 54 lashes (see Spanuth [77],).

The diameter of Stonehenge, in English feet, is 108 feet. Ancient monuments used apparently units as the English feet and inch, see [55], or the royal cubit and the megalithic yard, obtainable respectively as the diagonal of a square whose unit is the Egyptian *remen* or the diagonal of a rectangle consisting of two adjoint squares of side one remen, see C. and B. O' Brien [56]. It may be noted that 12 million royal cubits is the length of the Earth axis.

## **7. GREECE AND ROME**

The Cypriote writing, a syllabic one, was based upon 54 different signs; see Chadwick [51]. The Syrian alphabet used 27 signs; see Palmer [53].

The number 10,800, that occurs often in Indian tradition, also appears in Greek culture, as the number given by Heraclitus for the duration of the Aeon, according to Censorinus (*De die natali*). The number might however have a different origin, since it is the product of 360, at least a conventional length in days of the Earth year, by 30, a close estimate of the length of Saturn year, in Earth year units.

Pythagoras was a Greek mathematician and philosopher in the 6th century B.C. He lived over a century after the 701 BC event. He inspired an organization, somewhat secret, with cultic aspects that have survived for many centuries. According to their belief, there were five catastrophic cycles of 108 years in a 540-year megacycle. On those occasions, on a heliocentric model of the Solar System, Saturn had five different locations in the cosmos. When those positions are plotted on paper, and when sequential lines are drawn to connect those five points, the result is an equilateral pentagon.

Some secret societies from Europe date back past the Middle Ages, and this probably includes Pythagorean societies dating from much earlier. Thus ancient Gnostic ideas have been perpetuated. In secret societies, overtones of the previous era can still occur. For instance, Rosicrucian tradition speaks of

**cycles of 108 years (72 plus 36) according to which the secret brotherhood makes its influence to be felt.**

**The theater of Epidauros, the best preserved from the classical world, has 54 rows of seats (55 if the upper platform is counted, where people could stand). Rows counted by us on a local visit in July 2003.**

**Zosimus was a pagan officer in Rome early in the sixth century A.D., about whom little is known, except that he was clearly against the Christian emperors who had introduced new religious rites, while the empire was under great crisis. He was an admirer of emperor Julian. In his "New History" there is yet another indication of an ancient reverence for the numbers 54 and 108. He referred to secular games that were held in Rome on occasions somewhere between 105 and 110 years apart. The location was the Field of Mars in the northern part of the city of Rome. The games were organized following a ritual described in the Sibylline books, albeit the text was somewhat corrupt and not easily understood at his time (one should recall that the Sibylline books were the among the about 600 prophetic books collected by Augustus when he came to the power; all were destroyed by him except the Sibylline books, destroyed later by Theodosius; notice that, according to Gellius [74], Tarquinius the Superb had bought only 3 of the originally 9 books). Among the elements of the ritual, hymns were sung by 27 young ladies and 27 young lads, who were chosen under the condition of being *amphithaleis*, i.e. both their parents had to be alive. Thus the ceremony involved 54 youngsters and 108 parents. See Zosimus [16].**

**The Cyclades are a vast archipelago between Greece and Turkey, consisting of islands of very different sizes. Counting how many they are depends on an arbitrarily set limit to their size. In classical times they were counted as exactly 54 islands, see Orosius [79].**

**The Proci, i.e. the young men wishing to marry Penelope in the absence of Odysseus, are in number 108, 52 from Dulichios, 24 from Samos, 20 from Zakynthos and 12 from Ithaka, see Odyssey book 16, lines 247-251. Notice that the number 108 is not stated explicitly.**

## 8. MEXICO, GUATEMALA AND PERU

The so called "Pyramid of the Magician" is located in Uxmal, Yucatan Peninsula. This Mayan pyramid is approximately 35 meters high, like a 12 stories building. Its appearance is unique, as it is oval (elliptical) in shape, while most Mayan pyramids are square or rectangular. On each of two sides, the pyramid has staircases that lead to the top, where the temple is located. These two tall, wide staircases each have 54 steps.

Tikal's Temple of the Jaguar has four sides and nine levels,  $4 \times 9 = 36$ . In addition, on both the right and left of the pyramid's single grand staircase are indentures, discernible protrusions, which are actually extensions on each side of the stairwell's balustrade. There is one on each of the two sides of the temple, and at nine levels. Now  $2 \times 9 = 18$ , hence  $18 + 36 = 54$ .

Another case where the numbers 54 and/or 108 seem to have been important in ancient architectural planning is the city of Machu Picchu, high in the Andes, in Peru. In Waisbard [78], we read: *Machu Picchu ...had two sectors, the high one named Hanan and the lower one named Hurin. There were twelve quarters and 216 buildings.* We do not know if the 216 buildings were evenly divided, 108 buildings in Hanan, the upper city, and another 108 buildings in Hurin, the lower city.

On the great gateway to the so called *Sun temple of Kalasaya* there appear 54 jaguar heads and 108 condors.

The Cresap Mound in West Virginia was found to contain 54 graves; see Braschi [76].

## 9. ANCIENT EGYPT AND AFRICA

**The giant statue of Ramses II (the Memnon colossus) has on his legs 108 inscriptions (a giant statue of Buddha in a temple in Bangkok has 108 inscriptions on the soles of the feet).**

**When the great library of Alexandria was opened, it contained 54.000 scrolls. The number later increased to some 700.000.**

**Along the sides of the Great Gallery in the Great Pyramid of Giza (attributed to Cheops, but possibly built around 3500 BC, at the same time as the Sphinx, 300 years before the Noachian Flood) there are 54 niches.**

**In March 2000 the discovery was announced of a previously unknown pyramid in the Saqqara area by a French team led by prof. Jean Leclant. This is the 108<sup>th</sup> known pyramid....the last one to be found?**

**The theatre of Sabrata, Lybia (70 km from Tripolis), beautifully located in face of the sea, is adorned with 108 granite columns [81].**

**A fragment of Manetho states “ *the six kings of a foreign country reigned for 108 years*”, the reference being to the Hyksos kings of the XV dynasty.**

## **10. MISCELLANEA**

**In 1509 Arnio of Viterbo wrote that Noah reached the mouth of Tevere 108 years after the Flood, see [57]. Not far from Tevere, in the little lake occupying the crater of the inactive volcano of Nemi, two quite large boats of unusual shape were found and recovered at Mussolini time; they were destroyed by fire after the second world war. Perhaps boats of people who survived the Flood floating over the waters of the small lake, well protected by the high walls of the volcano from the winds? Perhaps Noah knew of them and paid a visit?**

Rather surprisingly number 108 seems to have made inroads even in modern catholic world. For instance a Virgin Mary golden statue has been put on the top of Milan cathedral in Italy at the height of exactly 108 meters. One of the encyclicals written by Pope Paul John II contains 108 chapters. Once he ordained 108 bishops.... The area of the Vatican is 108 acres.

The number 108 (Haq) is one of the seven numbers “necessary” for the sufis (together with 66, Allah, 11, hu, 22, yahu, 48, Ha mim, 70, ya sin, and 110, la ilah ila hu).

From Harrer [84] the following information comes about 108: “ *here, at my birthplace Huettenberg, is every year a so called REIFTANZ to which several thousand people are coming. Since 1608 the musicians are repeating 108 times the same refrain, the same melody....*

Again about Harrer: during the descent from a conquered peak in South-East Asia he was attacked by leeches; 108 punctures were counted by his doctor.

The highest *cromlech* in Europe is located on the San Bernardino pass, at over 2000 meters elevation. It presently consists of 46 erected stones (*menhirs*) but when it was firstly represented in a publication of 1864 it had 54 stones, see [89].

According to an article in La Repubblica, of October 13, 2004, the Italians have on average 108 intercourses per year (the world average is 103). The numbers come from a sampling of 350.000 persons worldwide.

Mithridates, the King of Pontus who was known for his great empire and knowledge of 23 languages, in order to avoid being poisoned used to take every day a mixture of 54 different ingredients. Arsenic being ineffective when he decided to take his own life in order not to be made prisoner by the Romans, he ordered his bodyguard to kill him with his sword.

The magazine Time issue of July 4-11, 2005, advertises special subscription prices for 54 or 108 issues, at 1.10 euros per issue, see [106].



**The Letter of James consists of 108 lines.**

**The number of islands of the Hawai archipelago has been determined in 108. There are also 108 volcanoes on such islands. See [108].**

**Number 111 is a sacred number for the Egyptians and has been used in the planning of the great pyramid, according to Vhora [109]. It is the sum of 108 and 3, another “sacred” number.**

**The Christian rosary contains 54 beads in its basic part.**

**The theologian Gioacchino da Fiore, writing around 1200 AD, declared that our world is close to the end of the fortieth “generation”, each one lasting 108.000 years. See [115].**

**In the fight against so called bandits the Piedmontese military razed to the ground 54 villages in the Appennines (Antonio Proce, Palo del Colle, private communication).**

**The first miracle in Lourdes took place on a man aged 54 years, see Mangiapan [116, p. 68]. Also, 54 cases were under consideration as miracles when Mangiapan wrote the quoted book.**

**Darwin had a cultivation of 54 varieties of gooseberry. See Sheldrake [117], p. 66.**

**The Virgin was declared to have been born via Immaculate Conception by Pope Pius IX in 1854, at the presence of 53 cardinals, hence 54 highest Church authorities considering the Pope. There were also 99 bishops. See Messori, [118, p. 352].**

**The last two visions of the Virgin officially accepted by the Church have been those in Banneux Notre-Dame, Belgium, and in Betania, Venezuela, separated by 54 years. See Messori, [118, p. 357].**

**In the French Alps Benoite Rencurel at Laus had 54 visions of the Virgin, see Messori [118, p. 439].**

**According to Censorinus [119, Vol. 2, p. 15] the man who lived the longest life in historical memory was Gorgias of Lentini, who died aged 108 years.**

**According to a fragment of Hesiod, 108 years define the generation of old man, see [119, Vol. 2, p. 85].**

**To defend the first Hebrew installments in Palestine at the beginning of the 20-th century a military unit was created, named Beit ha shomer, consisting of 108 men. See [120].**

**Our Lady of Laus appeared to Benoite Rencurel from 1664 to 1718, during 54 years. See [121,p. 95].**

## **APPENDIX 1: ON THE NUMBER 52**

**The number 52 plays an interesting role in ancient traditions, especially as a basis number in the Mayan calendar. We have found mathematically, by using a first order model of the event, see Spedicato and Del Popolo [83], that a reversal of the Earth axis (with respect to the stars), which is the most natural explanation of some passages in Herodotus [84], Pomponius Mela [85] and the Koran [86], if it would happen with the present orbital-rotational configuration of Earth, would lead from the present year of 365.24 days to a new year of 365.23 days. A subsequent reversal would return Earth to present year. Thus 364 is the average value of the number of days of the two years and we notice that 364 is equal to 7 by 52. Number 364 was taken as the standard number of days in a year by the Essenes, see the *Book of the Jubilees*, a text probably of the second century BC discovered in the 19-th century in Ethiopia.**

**The Etruscans used the liver for divination. They divided the surface of the liver in 52 parts, see [87].**

**The Mayas had a record of their history inscribed in 52 golden tablets, see Tomas [98].**

**The ship by which the Pheacians carry Odysseus to Ithaca is manned by 52 mariners, see Odyssey book 8, line 35. Odysseus' ship itself appears to have been manned by 52 mariners, since when he approaches the cave of Kirkes he is in a group of 23, he leaves 23 at the ship and 6 had been killed before by the Cydonians.**

## **APPENDIX 2: ON THE NUMBER 42**

**In Chengde, the summer residence of the Chinese emperors north-east of Peking, ancient Jelhum, there is a Buddha with 42 arms, see Staude Terzani [92].**

**In both the *Tibetan book of the dead* and the *Egyptian book of the dead* man is subject to judgment by 42 gods, 21 looking at his good deeds, 21 at his bad deeds.**

**In Heliopolis the most important Egyptians books were kept, including 42 books attributed to Toth. They were taken to the palace in Persepolis by Artaxerxes Ochus, as Plutarch states in *Isis and Osiris*. They were presumably incinerated, with the 12.000 ox hides where the original Zoroaster writings were engraved, at the time of the fire ordered by Alexander the Great.**

**According to Iliad XI, 24-25, the cuirass of the Trojan Agenor was adorned with 42 belts of enamel.**

**According to Mathew 1, 1-17, there are 42 generations from Abraham to Jesus.**

### **APPENDIX 3: ON THE NUMBER 18**

**In the year 643 AD in his capital town of Kanauj king Harsha, the last native ruler of all northern India, asked the visiting Buddhist monk Hsuan Tsang to compete in a theological debate with the Indian scholars. The debate lasted 18 days, was attended by 18 kings and was won by Hsuan. See Bernstein [96].**

**The Egyptian and the Incas calendars consisted of 18 months, see Tomas [97].**

**The Virgin appeared 18 times to Bernadette, see Mangiapan [116, p.52]**

**In the Apocalypse of St John 18 verses are referred to the Virgin, see Messori [118, p. 485].**

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