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Were some astounding truths left for us by our Cosmic Tutors?

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Introduction

It's impossible before writing this to state that my research revealed 'The truth, and nothing but the truth'. You'll have to use your own judgement on many points, given that data are scarce, sources unofficial, and new hypotheses unpopular. But after reading, you should reflect on how we should aim to survive in an environment where catastrophic events occur on much longer time frames than our lifetimes. The tentative conclusion reached is that for our survival we will need the experience of species that reached intelligence before us, and that this process of learning from the future is a fundamental application of syntropy (Di Corpo 2018). Of course, the Internet provides details on almost everything imaginable, but 'Fake News' or 'Silence' are likely to be what you will encounter if you look for anything relevant to this controversial subject. So I've used my own judgment on issues I've investigated informally for years, and recognize the courage of Christopher Knight and Alan Butler in writing their book, 'Who built the Moon?' as a sequel to 'Civilization One'.

I also acknowledge my debt to Graham Hancock who provided incisive analyses of data from prehistory. I am still waiting for experts to acknowledge some of their earth-shaking conclusions that I can only touch on in this short essay. They tackled a period of pre-history that has so far eluded archaeologists, historians and astronomers - asking what happened before the Great Flood? They provide you with an invaluable starting point for questions relating to the origin of our species, our earliest known civilizations, and our prospects for the future.

The effective suppression of reports in the communications media on topics such as Extraterrestrials (ET's) and Unidentified Flying Objects (UFO's), is a particularly serious obstacle when discussing our past and future: academics risk their positions if they suggest that an event had an extraterrestrial ET connection, especially if they call into question the fragile body of existing theory on this subject. Maintaining secrecy on mysterious subjects avoids having to admit, through ignorance, that you

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cannot answer questions from the public after they send you a photo of an UFO or an extraterrestrial! Nonetheless, these subjects are becoming of key public interest as shown by their response to Star Wars and other Hollywood spectaculars.

Some anomalies to take into account

I'm not going to fully recap the arguments of Knight and Butler, but summarized briefly, they state that the origin of the moon cannot be simply described as the capture of a 'heavenly body' by terrestrial gravity. The ideas that the moon is an artificial structure, is perhaps hollow, and is likely to be inhabited, are not new. Before being cited by our authors, these 'theories' were supported by the following observations:

- After the launch of Apollo 13 from the Moon, its rocket booster was allowed to fall back and impact the Moon's surface. The seismic equipment left on the surface of the moon recorded the moon continuing to shake for three hours and 20 minutes (ATS 2014) - a phenomenon consistent with a hollow sphere but not a solid one. If the moon really is hollow, then its low overall density would also be consistent with its artificiality. A fast moving solid moon during its entrapment by the Earth, would have been subject to a much stronger gravitational pull, with either a collision or a bounce away likely to be the consequences, and not an orbit much closer to our planet than now.
- What appear to be impact craters on the moon, seem to have flat floors. This would be consistent with the moon being a sphere of hard material covered with loose regolith or debris.
- The current distance between the moon and the Earth is such that during an eclipse of the sun, the apparent moon diameter is exactly the same as the apparent diameter of the sun. This is highly improbable, and not shown by other moons in the solar system. Since our moon is slowly drawing away from the Earth (see, e.g. 'Physics Forums' and many other sites supporting this observation), presumably a much 'closer fit' of its orbit around the Earth was the case billions of years ago, and the phenomenon just described during eclipses would not yet have arisen. Was it predicted by our Tutors that this 'close fit' would coincide in timing with the maturity of an intelligent species, and if so, having observed it, what did they think we should we do now?
- The moon was referred to by Knight and Butler as 'the regulator' stabilizing the Earth's orbit, and generating tides which helped in the evolution of land animals.
- One of the several strange coincidences mentioned by Knight and Butler in support of their belief that an element of intelligent planning underlies the moon,

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is that the Earth is some 400 times larger than the moon, and the moon 400 times further from the Sun than from the Earth.
- The personal observations made by Ingo Swann (1998), one of the original experts on the paranormal skill of Distant Viewing, confirmed observations made from space vehicles circumnavigating the moon. Notably, there are artificial structures on the far side of the moon not visible from the Earth, as well as some on this side that are visible in published photos (Anon 2014).
- It has also been suggested that this may imply that extraterrestrials live on or in our satellite, and observations of UFO's close to the moon, seems to be consistent with this last statement (Austin 2016). Could it also be true what has been passed on as heresy, that the first human walking on the moon, Neil Armstrong, saw extraterrestrial vehicles parked on the other side of the lunar crater?
- And did he, or NASA, receive a message from the 'Moon Authorities' stating that further manned expeditions to the moon are forbidden? A message apparently consistent with NASA's cessation of manned exploration over the last 45 years or so since the Apollo missions ended? The article by Arjun Walia (2017) in 'Collective Evolution' is one of several supporting these assertions.

Indirect evidence for our origins

According to Knight and Butler, the data they provided on measurements of structural dimensions of the Earth and Moon, at the very least, requires further exploration of their hypothesis of a past intervention by some superhuman agency. Our authors point to the critical dimensions of our sun, the earth and its satellite, as disproving the conventional belief with this celestial trio is that we are dealing with a totally natural situation. Their conclusion is that the large size and proximity of the moon to the earth, and several unusual dimensions of these three celestial bodies, suggest that the Earth-moon combination may have been 'developed' as an optimal incubator for life forms, and eventually for intelligent life. Furthermore, they suggest that now humanity has risen to an adequate technological level, they should be able to confirm these critical measurements, which means that they can be regarded as 'messages' left for us by those who 'developed' the current planetary configuration.

Our authors' investigation begins with the application of a common unit of length that was used in the design of Neolithic monuments some 4000-6000 years ago, to measure critical dimensions of the Earth and Moon. This common length unit employed by 'primitives' was discovered by Alexander Thom, who in 1962 called it 'The Megalithic Yard' (89.96 cm). This common measure of length used in constructing antique monuments throughout Europe and beyond, has inevitably been criticized by experts, but using simple reconstructions of early measurement

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procedures, this measurement was demonstrated by Knight and Butler to underlie our commonly used units of weight and volume. Also, a closely related unit used by the Sumerians for the length of a pendulum chord, gives rise to our time units of minutes and seconds. If correct, this can be described as a major discovery, in that it shows that our common measures of weight, volume and time were developed in an integrated fashion and may be incredibly antique. It also calls into question the historical assumption that the last Ice Age some 6,000-10,000 years ago, preceded all early world civilizations, namely the Sumerian, Egyptian and Indian civilizations that existed some 3-4,000 years ago. The concept of 'Civilization One', an advanced pre-Ice Age civilization postulated by these authors, is supported by the discovery of this ancient integrated system of measurements that we unconsciously adopt without considering its possible origin. Starting with an ancient linear measure, the integration of measures of time, weight and volume shows the sophisticated thought behind them. They are not simply separate empirical procedures, developed for each culture individually, as one would initially expect.

Knight and Butler tested the idea that critical dimensions of our world and moon were designed to be discovered, and if the critical measurements of the earth and moon are expressed in megalithic yards, they come close to large, round numbers: for example, $6x10^n$. i.e., if the planetary dimensions are expressed in sexagesimal form, the occurrence of very large round numbers suggests that these cosmic macro-measurements were primary, and their translation into the unit measures used in the everyday life of our distant ancestors and ourselves, was secondary. This apparently improbable situation leads to the hypothesis that not only was this ancient measure of length used by early human civilizations, but is derived from prior measurements of the earth and moon by a space-going species off-planet. Such a tentative conclusion appears untenable at first sight. It implies that a cosmic exercise was carried out unthinkable ages ago by some vastly superior civilization for the benefit of an intelligent species that was evolving here, in the hope that it could survive natural and self-induced crises. I am going to consider this hypothesis seriously and see where it leads.

Let us suppose that a message was left for the eventual attention of intelligent life forms who by this point in time are supposed to have evolved the technologies needed to investigate their wider environment. This message could not have survived in written form, and if it is a message, could be assumed to have been left by the super-intelligent entity who billions of years ago, set up this co(s)mic situation! I find the sequence of inferences by Knight and Butler fascinating, and my main disagreement comes from their choice of the superior entity involved. In their view, they were our distant, super-intelligent progeny, returning by time travel to before their own origin, to add an artificial satellite to their home planet. I am not

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disagreeing with the possibility of time travel for a hyper-technological species, just the belief of the authors that there were no extraterrestrials present who were capable of implementing, or motivated to accomplish what they suggested was done 4-5 billion years ago. The current estimated age of the universe, at some 10 billion years, seems to allow ample time for the evolution of the 'category II' species that Nikolei Kardashev (Anon 2018) postulated was needed to carry out the mega-engineering feat required to manipulate and modify planetary bodies.

The origin of the moon

The conventional theory of the origin of the moon is that a large object (a planetoid referred to as Theia), was travelling at high velocity and impacted our young planet, ejecting material that eventually became our Moon. This so-called 'Big Whack' hypothesis mentioned by our authors, would have set the Earth spinning, such that a day in the life of the Earth would originally have been only a few hours long. Examination of daily and annular growth marks on early fossils shows that the Earth's initially rotation rate was indeed faster, and has been slowing slightly with time by some few milliseconds per century since the first measure was available in the 8th century BC (Clarke 2016). Thus, a day was shorter in the past, and tidal effects and the resulting friction from the Moon's gravity (and to a lesser extent from the Sun's gravitational field), slow the Earth's rotation, and initially, caused huge tides and associated frictional forces. Tidal rhythms also make the intertidal zone an important route for evolving aquatic species to invade the land, and speed up the distribution of essential nutrients.

There are reasons referred to earlier why the simple entrapment of the moon as a fragment from collision of the Earth with an external body, or if captured while flying past, would not easily have resulted in the largest moon in the solar system entering a stable orbit so close (initially) to the Earth, without it being shot off into space. Although the Big Whack' hypothesis still seems the current winner with scientists, Uwe Wiechert, senior author of a recent Science paper, **'**Moon and Earth Formed out of Identical Material', wrote: "We already knew that the earth and the moon have a very similar isotopic composition. We never expected, however, that they would turn out to be identical." The official debate on this issue seems to turn on whether the colliding planetoid referred to as Theia, originated in the same area of the solar system as the Earth, thus perhaps explaining their similar isotopic result. Of course the explanation proposed by our authors; namely that the moon was constructed from material taken from the proto-Earth, is not excluded by Uwe's observation.

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It is implied by our authors that material from the Earth's surface was transported artificially off-earth to form the moon. If we buy this hypothesis, presumably gaps in the Earth's crust resulted. Could these have corresponded to the deep ocean trenches? If so, this would have also been helpful for the evolution of terrestrial life forms, since given the huge quantity of water on our planet, the contents of these deep ocean trenches allowed 40% of the planetary surface to remain as dry land. This avoided the otherwise complete oceanic coverage of our planet which would have been the case if the planetary surface were smooth. Such a characteristic presumably also could have led to splits in the shallow crust, and may have initiated a feature of the Earth, alone among the planets of the solar system: continental drift. By separating and then rejoining land masses, this presumably increased species diversity and their rate of evolution.

Counting the number of days in the year

Having laid out the initial hypothesis of our authors, let's explore some of its implications. They suggested the simple procedures and tools that could have been used by early man to determine how many days there are in the year. A circle of menhirs like those at Stonehenge, or similar megalithic structures elsewhere, could have been used to take sightings on dawn light over a particular stone, to determine midsummer's day. An observer could then compare this occurrence with the same event the previous year, having marked off the number of days that passed in the interim. This procedure could have fallen within the duties of a priestly caste, responsible among other tasks of informing the community of critical dates on their calendar needed for ceremonies and agricultural tasks.

Prime numbers of 360° and associated terrestrial unit measures

Perhaps it is obvious that the most fundamental clues left for a newly-intelligent species to discover, are to be found in the realm of numbers. The structure known as the pentadactyl limb – five fingers and toes, is common in many land vertebrates; both mammals and some dinosaurs. Obviously then, having ten fingers is a logical basis for the simplest decimal counting system. But where did the sexagesimal system come from? One clue as mentioned, comes from the number of days in the year which currently is 365.2; to which 360 days is a close approximation. OK, it may require several million years more before the rotation of the earth slows to exactly 360 days, but as in the past, civilizations used 360 days as an approximation to year length. It is a number with useful mathematical properties, notably the abundance of component prime numbers within it (Fig 1).

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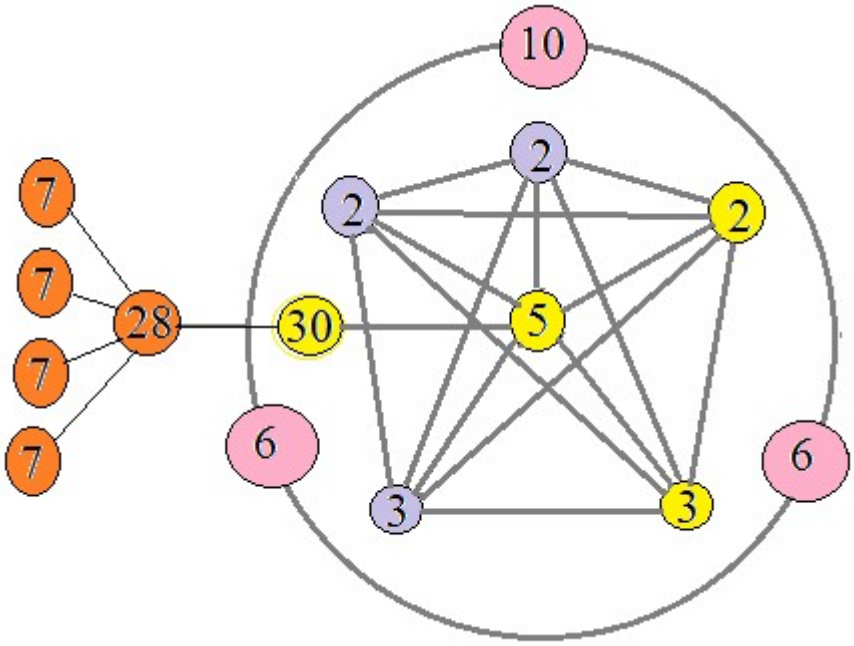
In geometry and exploration, 360° (degrees) is also used to specify the limiting compass direction. Its component, 60, also defines the number of minutes and seconds in our hour. Less accurately perhaps, 30 = 360/12 is a good approximation to the monthly time span and was used as such by the Sumerians.



The number of days in a year is currently given by another approximation - 365 days, and the small error this entails with an average of 30 days per month, requires increasing the lengths of some months to make a total of 365 days, with a further much smaller correction to be made on leap years. We also use components of 360 to define a solar day: i.e., 24 = 2x2x2x3 hrs, and use the 28 days in February, to create roughly 4 weeks in a month. Lunar cycles were perhaps the first statistics governing the life of early man as judged by several fossilized bones found which were perforated by 30 holes. The estrous cycle of women is also linked to the lunar month with a gestation period close to 3/4 of a year or 9 months.

But the earth's rate of rotation has changed over time

Experts agree that the period of rotation of the planet has declined very slowly over time, and 360 days in a year will not occur for many millions of years yet. Our investigation now considers the range of actual days in the year before and after the period when life began. 360 emerges as containing almost the largest number of prime numbers within the number of days per year that have prevailed since the evolution of life on Earth. This may not at first sight seem important, but hopefully its

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relevance emerges in the following. If we examine other potential numbers of days of rotation per year as a basis for a system of measurement units, it seems important to ensure that this number can be easily divided into shorter whole number factors. If we consider the two systems of counting we have been left with, the decimal and sexagesimal systems, we find that in the range of days/year from 381 to 357, only 360 days allows both of these whole number factors to be derived as multiples (Table 1).

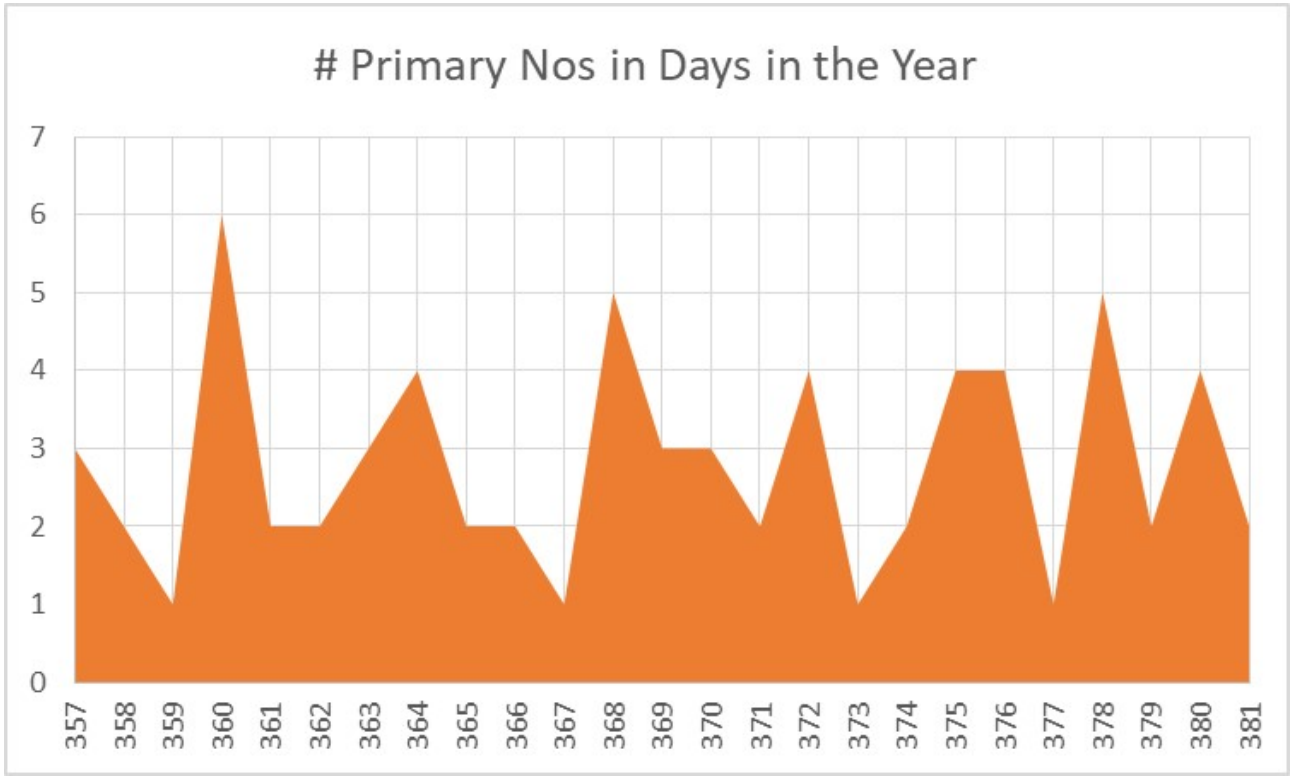

Fig 2: Total number of primes occurring within different numbers of days/year.

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Table 1: Prime numbers within the range of days per year prevailing over our planetary history, and their suitability or otherwise for establishing decimal or sexagesimal systems of counting and measurement.

	NUMBER OF DAYS IN THE YEAR												
	357	**358**	**359**	**360**	**364**	**365**	**366**	**367**	**368**	***375***	***378***	***384***	***400***
# Prime Numbers:	***3***	***2***	***1***	***6***	***4***	***2***	***2***	***1***	***5***	***4***	***5***	***7***	***6***
	3	**2**	**359**	**2**	**2**	**5**	**2**	**367**	**2**	***3***	***2***	***2***	***2***
	7	**179**		**2**	**2**	**73**	**3**		**2**	***5***	***3***	***2***	***2***
	17			**2**	**7**		**61**		**2**	***5***	***3***	***2***	***2***
				3	**13**				**2**	***5***	***3***	***2***	***2***
				3					**23**		***7***	***2***	***5***
				5								***2***	***5***
												3	
DECIMAL?	*No*	*No*	*No*	***Yes***	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	***Yes***
SEXAGESIMAL?	*No*	*No*	*No*	***Yes***	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*

A calculation provided by Wikepedia suggests that a slowing of the earth's rotation rate by some 2.4 milliseconds has been occurring per century. Figure 2 and Table 1 show calculations of the number of prime factors in a number of rotation period estimates preceding 360 days. What emerges is that in terms of its constituent prime factors, a 360 day rotation is distinctly different from adjacent rotation periods ranging from 356 to 366 days. Only for a 360 day rotation are both decimal and sexagesimal systems compatible, as shown in Table 1.

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Table 2: Statistics for the ages of geological eras and supposed numbers of days/year and hours/day that prevailed (NASA).

Period	Age (yrs)	# Days/Year	# Hrs/Day
Current	0	365	24
Upper Cretaceous	70 million	370	23.7
Upper Triassic	220 million	372	23.5
Pennsylvanian	290 million	383	22.9
Mississippian	340 million	398	22
Upper Devonian	380 million	399	21.6
Middle Devonian	395 million	405	21.4

As illustrated by the data provided by NASA in Table 2, the number of days in the year has steadily declined throughout geological time, and day length has increased. If we examine the factors underlying times of rotation, 360 days emerges as a unique rotation rate in terms of its easy division into sub-factors consisting of 7 prime numbers. As illustrated, this is of utility for various measurement scales. Note that odd numbers of days (ignoring unity), in a year inevitably correspond to either a few, or a single component prime, and a surprising frequency of large prime numbers emerge which are impractical for measurement purposes. Also few of the even numbers of days per year, e.g., 358 = 2x179, would help to factor out smaller useful subunits of a year as for example, specifying the duration of weeks or months. With 361 days, we have the unusual case of the duplication of a prime number: $361=19^2$: this also leaves no options for subdivision of the year into useful subunits. The only real contender other than 360, is 364 = 13x7x2x2, where one could, in theory, have 52 seven-day weeks in a year and thirteen 28-day months. The existence of 13 months per year would not correspond to our planet's lunar cycle however.

A week approximates to each phase of the moon

The Babylonians considered that the lunar cycle approximated to 28 days, and divided it into 4 periods of 7 days. The utility of this time interval seems related to programmed work and religious observations typical of urban civilizations, while perhaps the work of hunter gatherers is more closely linked to the lunar cycle? A religious polytheism underlying the week often came into play here. Each weekday was allocated to one of the 7 classical planets they recognized as such, which included the Sun and the Moon in addition to the five planets they were aware of: Mars, Mercury, Jupiter, Venus, and Saturn. The Romans adopted the Babylonian system, naming each day after the god associated with the classical planets; the seven

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names of Roman gods, e.g., (in Italian): Mercoledi (Mercury), Giovedi (Jupiter) and Venerdi (Venus). These were substituted in pre-Christian northern Europe by the names of mythical Norse or Germanic personalities, such as the pagan gods Woden (Wednesday), Thor (Thursday), and Freya (Friday).

The development of the seven-day week is of course referred to in the creation story of the Book of Genesis, which as one of the ancient mythologies in the Bible, describes how God created the world in six days and rested on the seventh day: a fairly typical urban time allocation! The formal adoption of this system by the Roman Emperor Constantine (AD 306-337) is supposed to have led to its acceptance worldwide.

Much further back in time, the apparent origin of the story of the Garden of Eden can be linked to a clay tablet recounting Sumerian legends, which describes how mankind was trained by the gods to grow food in the royal garden for their consumption. Who were these 'gods'? A more advanced human race, or an alien species as the Annunaki are considered to be by some authors? This last theory (from Sitchin 1976; 2004), was supported by a variety of information, and contains the implication that human beings were genetically modified or cloned by a species of higher intelligence, the Anunnaki, and taught to follow orders as a work force for these more developed entities. Implicit in this theory is that the Anunnaki, an extraterrestrial species, which arrived in proto-Mesopotamia some 400,000 years ago. I presume they developed the system of measures we still use, based on the Earth-Moon configuration supposedly left by our earlier and more advanced Tutors?

Should we ignore evidence that contradicts our prejudices?

The authors celebrated here put their reputations on the line by following where the data led them. Even though in theory, this approach receives the approval of science, scientists do not always obey this principle, and often prefer to follow the current paradigm even if it has been superseded by new discoveries. I follow the authors' procedure by discussing one aspect of their thesis they seem not to have considered relevant.

We may ask: how would intelligent species evolved on other planets set up a common system of measures, if the number of days in their year were not divisible into shorter time intervals without creating uncomfortable fractions? This must have been a common experience for our fellow intelligent aliens evolved elsewhere. This would be the case if the days passed in their planet's yearly orbit could not be divided into smaller primary numbers? For example, what to do if the number of days in the

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local planetary year were 173? (Back to ten fingers, if they had them, or some other multiple of their number of appendages – hence not necessarily leading to the decimal system!)

Of course I am presuming here that the numerical system of counting we use also breaks down to an estimate of the number of days in the month and the months in the year. This comes out close to 12 units of 30 days; the nearest integer to the actual number of days in the monthly cycle of the moon. Considering the rotation of the seasons, a total of 360 days is a close approximation to the actual 365.2 days there are currently in the year, and leads directly to the sexagesimal system of numbers first used by the Sumerians (and currently by ourselves). This of course factors out to 360/6 = 60, which is also used to define the minutes in an hour and seconds in a minute. In accepting the magic number 360 from simple geometry we also assume that two lines whose ends meet at an angle of (360/2)° = 180°, form a single straight line, but if two straight lines cross in a way we define as perpendicular, they meet at (360/4)° = 90° degrees, and form a 'right angle'. Altogether simple – but a miraculous starting point for geometry!

Evidence suggests, as mentioned, that the Earth's rotation has been slowing slightly with time per century. Thus, a day was shorter in the past, and there were more of them in a year (see Table 2). While not discounting the possibility that time travel may be feasible for our descendants, (e.g., Billings 2014), and was perhaps necessary for monitoring the success of their ambitious program, there is a logical inconsistency here. I am not referring to the infeasibility of time travel, but to the implication that it was our powerful descendants who evolved first on a planet without a moon, and then travelled back in time to add a moon to increase the possibility of us (themselves?) evolving as intelligent progeny. But just a minute, wouldn't we/they then be on different evolutionary pathways? While I agree with Arthur C. Clarke's famous quotation, "Any sufficiently advanced technology is indistinguishable from magic", and this may include time travel, it seems to me that a simpler alternative is available. It is more realistic to assume the existence of other non-human creatures of advanced intelligence needed to implement this scheme, and to make the assertion that really intelligent species recognize the validity of this characteristic in other organisms! Over unthinkable time spans, is it possible that they have been following an ethical code requiring that the sum total of intelligence in the Universe should be encouraged to increase? If we wanted to become really philosophical, we could perhaps spend some time considering why this hypothetical Cosmic Code of Ethics might arise, and what would be its likely consequences? But let us leave this issue to each of us for personal meditation.

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Thus if we were to accept the idea of the earth-moon system as an efficient planetary incubator, and even a degree of artificiality of the moon and its orbit, it is not possible in my opinion, to discount the reasonable possibility that a hyper-intelligent species from elsewhere in the cosmos could have been responsible in some way for this configuration. This solution would avoid the conundrum of our ancestors lifting themselves up by their own shoelaces so to speak, in seeking to retrospectively improve their own evolution.

It raises other questions however; not only as to who, if anyone, tackled this mega terraforming project, but what objective did they have in mind for the new species evolving there? This is surely the key question, and might differ if a non-human intelligence were involved. It would not necessarily require time travel, although given the enormous time intervals involved, such a capability would be useful for monitoring their mega-project, and may be a distant possibility judging by recent research in particle physics. The associated technique of directed panspermia for example, was surely not developed specifically for this planet, but to seed the untold millions of new planets in the Universe? Of course, such a hypothetical 'seeding program' extending beyond the solar system has to be suggested as one component of a hypothetical inter-planetary agreement between space-going species, containing (we hope) a codicil prohibiting gross interference with events on the surface of planets that are hosting developing intelligences? Again, this issue is left for individual meditation.

It seems likely that an alternative and more practical methodology for monitoring terrestrial evolution appears to have been established in our case. Long ages ago, some extraterrestrial species set up massive glass domes and towers on the moon, presumably to house observers (Hoagland 2013). A controversy on this topic results from the unwillingness of those who organized the first manned expeditions to the moon to make evidence available to the public of the past alien activity they identified there. This anomaly was discussed by Richard Hoagland in: 'Confirming glass structures on the moon', who argued for more clarity on the identity of artificial structures seen both on the Moon and Mars. That the images of giant structures of crumbling glass on the moon are a reality was confirmed this year by Chinese imagery published without comment taken from the 'Jade Rabbit' lunar vehicle stationed on the moon (Hoagland 2013;14).

One incontrovertible piece of evidence are these relicts of giant glass domes that have emerged from both US and Chinese missions to the moon, but strangely ignored in the popular press. They are badly damaged by meteorites, and this confirms their great antiquity. That they could have been established by advanced extraterrestrials

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for observing the evolution of our distant ancestors seems not improbable, and should be explored by future moon expeditions, should they be permitted.

In conclusion, the main difficulty I see with the 'Who built the Moon' hypothesis, is that the authors start from a firm belief that we are the only intelligent species in the cosmos. This conflicts with growing evidence accumulated over millennia (but now less efficiently hidden than before), showing that a variety of intelligent species have visited our planet and are secretly being monitored by the major powers. Thus, on December 7, 2012, after a TV interview, the then Russian president, Dmitri Medvedev, not realizing that his microphone was still on, told the interviewer: "*The president has been given a file of top secret information. This folder contains information about aliens who have visited our planet. There is also a secret special service which governs the activities of these aliens"*.

Our authors did not consider the fact that the Earth was in existence for long enough that more than one intelligent species could have been produced here in sequel, in the 3.8 billion years ago since life first arose on this planet. Nowadays there is far less surprise that life arose so quickly, since panspermia could have dramatically shortened the aeons needed to evolve or synthesize DNA-based organisms by natural, random processes. The inadequate time available for the generation from scratch of this mega-complex molecule on the Earth's surface, could be the reason why one of its discoverers, Francis Crick, (referred to in the literature as an atheist), postulated panspermia in Crick and Orgel (1973) as the source for our planetary DNA, rather than having to depend on the Almighty for the miraculous creation of this mega-molecule! The rapid take-off of planetary life by 0.7 billion years after the Earth's formation, once cooling of our planet's surface had occurred, makes the option of random or guided panspermia seem quite likely. A key contender for panspermia in our case, at first sight seems to have been past eruptions of Martian volcanoes; the probable donors of meteorites found in Antarctica with what appear to be fossilized bacteria embedded in them. Another feasible option, which looks progressively likely, would be the seeding of promising organisms from elsewhere by intelligent extraterrestrials. (One organism that it was suggested might even be extraterrestrial (Luskin 2015) is the octopus: an animal with a remarkable nervous system and built-in camouflage system, whose genome is so unlike that of other mollusks that it's being called (jokingly?) "alien", by the scientists who worked on it).

The theory of directed panspermia was proposed by Wickramasinghe (2010), and supposes that intelligent beings purposefully placed microorganisms within protective micro-spheres, and used them to seed Earth, and presumably other promising planets, in a form of 'Cosmic Horticulture'? A very recent event that can best be explained by directed panspermia is the discovery in orbit around the Earth of

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such a microscopic metal sphere containing organic material (Wainwright et al. 2015). Ideally, such spheres would be manufactured in a way that they would open when they came down to Earth. During July 2013, Professor Milton Wainwright and his team had sent a weather balloon almost 17 miles above the Earth to collect samples. The most noteworthy sample was a metallic orb 30 micrometers in diameter, composed of titanium plus a tiny amount of vanadium. Testing, revealed biological material oozing from inside the sphere, and on the outside was a fungus-like covering. Another observation supporting the panspermia interpretation occurred in 1984 when the passengers on a train traveling through Padriesko, near Moscow, witnessed a metallic craft landing nearby. Yuri Simiakov, a biologist and Russian ufologist, discovered not only elevated magnetic levels at the site and an absence of living organisms, including microbes, but also tiny metallic spheres containing DNA. A team of Swiss and German scientists have since proved that DNA can survive the stresses of atmospheric re-entry, so if an intelligent being wanted to transport biological matter to Earth from elsewhere, hosting it inside small titanium-vanadium balls would be an excellent choice. These spheres are lightweight, heat resistant, and help shield against solar radiation. Perhaps they were manufactured to open when they came down to earth?

The composition of one of the Wainwright spheres – Titanium and Vanadium, is shown to be custom-manufactured, and if constructed on Earth, what was it doing in the stratosphere? A comment from my friend Federico Bilotti, an engineer and expert on the prostheses used in surgery, was: “Interesting to read about Titanium which is found normally with Nickel and Aluminium in the mix used for surgical staples: they contain 90% Titanium, 3-6% Aluminium and 1-2% Vanadium. (The spheres found in the stratosphere had 1% Vanadium). This alloy performs spontaneous movements when it is heated or traversed by an electrical current, and is characterised by super elasticity and ‘shape memory’ (the material remembers its original shape, and when heated or electrically charged, it reverts to it). A liquid substance could be introduced during manufacture of the spheres in their open state (two halves of a hollow sphere connected tangentially at their circumference). Once filled at a warm temperature, they could then be frozen at stratospheric temperatures to close the filled spheres, but when returned to the original programmed temperature on the Earth’s surface, they would open, responding to their shape memory”. Of course there is no guarantee that the microspheres observed had this property, however useful it might be! Alternatively, when the enclosed bacteria reached a temperature at which they began metabolizing, they might create enough gaseous pressure to spew out of their casing? Panspermia theorists believe this mechanism could be an explanation for the sudden appearance of certain plagues and infectious diseases, but more radically in the context of this discussion, these structures provide a mechanism for directed

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panspermia, assuming they were manufactured off-planet by some forward-looking extraterrestrials.

Long term changes in the Earth's rotation

Graham Hancock provided several examples of ancient folk tales that include unrelated but important numbers apparently resulting from the research activities of early civilizations, who sought to pass on information on the behavior of the Earth in orbit, through a period (the Ice Age), when literacy was not widespread. This information was transformed at a very early date into verbal mythologies that survived much longer than most written records.

One of the most persistent and ancient mythologies refers to the properties of twelve easily identified groups of stars called the constellations. According to Wikepedia a constellation: 'Is a group of stars that form imaginary outlines or meaningful patterns on the celestial sphere, typically representing animals, mythological people, animals or gods, or manufactured devices'. This persistent mythology sees a birth constellation as determining the characteristics and fortune of persons born under their influence. I have always considered astrology as an unscientific belief system, but have begun to change my opinion after reading Graham Hancock's book, 'Fingerprints of the Gods'.

That the spin rate of the Earth was intended to be drawn to the attention of an evolving intelligence, is suggested by the observation that when there were 366 days/year, surprising 'coincidences' emerged; notably that the size of the Earth is 366% larger than the moon, while 1000 earth days are equivalent to 366 orbits by the moon, and the mean orbital velocity of the Earth around the sun is 1/10,000 of the speed of light in a vacuum. Other surprises Knight and Butler (2005) discovered resulted from the megalithic geometric measurements of 366° (rather than 360° as inaugurated by the Sumerians), such that the polar circumference of the Earth measures 366 Megalithic yards for each second of arc, that of the Moon measures 100 megalithic yards per second of arc, while that of the sun measures 40,000 megalithic yards for the same angular measure. It seems evident from these statistics, if confirmed, that the megalithic yard was originally defined in terms of the dimensions of the three bodies mentioned, implying that super-human intelligences existed in the past and travelled in space. So what are we, the perceiving newly-intelligent organisms to do, now that we have received the messages? (apart perhaps from showing a little more modesty).

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Using mythology to pass on quantitative information

Graham Hancock postulated the existence of an early pre-Ice Age civilization with a level of sophistication in some respects, greater than ours. He supposed that this civilization developed the system of numbering and measures we have inherited: leaving open the question whether they, in turn, were advised by more intelligent species than human beings. For example, the Anunnaki were mentioned on Sumerian tablets as superior beings or Gods, but there is evidence, (discussed by Sitchin 1976, Tellinger 2005, 2015 and Evans 2016), that they were advanced extraterrestrials. This illustrates the difficulty of identifying the origin of unusual bipeds – without DNA analysis, their origin, on or off the Earth, is uncertain.

Hancock suggested that after the last Ice Age was over, early reconstruction in various parts of the world was helped by the arrival of enlightened, tall and bearded individuals; perhaps they were survivors of an earlier advanced civilization destroyed by the climatic catastrophe? These bearded hominids were portrayed in sculptures and subsequently deified in regional belief systems. Thus, Osiris was described as a bearded white man who visited disorganized Egypt after the great flood, abolished cannibalism, and introduced efficient agriculture. Quitzelcuotl, the plumed serpent, arrived in Mexico after the great flood, bringing a knowledge of maize, mathematics and astronomy, and Viracocha performed a similar service in pre-Incan Peru.

Knight and Butler referred to the earliest ET entities as the UCA (Unknown Creative Agency), whom believed were responsible for massive terraform projects such as the ‘construction’ of the moon. These entities were at a higher level presumably than the Anunnaki whose activities were described in the writings of Sitchin as still using mechanical methods in e.g., mining. The more sophisticated objectives of these early cosmic intelligences, they believe, was to create conditions around solar systems such that the development of life was encouraged, and eventually another intelligent life form would be added to the cosmos.

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The Seasons and the Zodiac

The tilt in the Earth's axis of rotation in relation to the orbital plane means that our seasons are a result of the angle the Earth's poles measure relative to the sun's equatorial plane. This varies around 22.5 degrees, and is stabilized by the moon's gravitational attraction resulting in a tidal rhythm of close to 13 hrs.

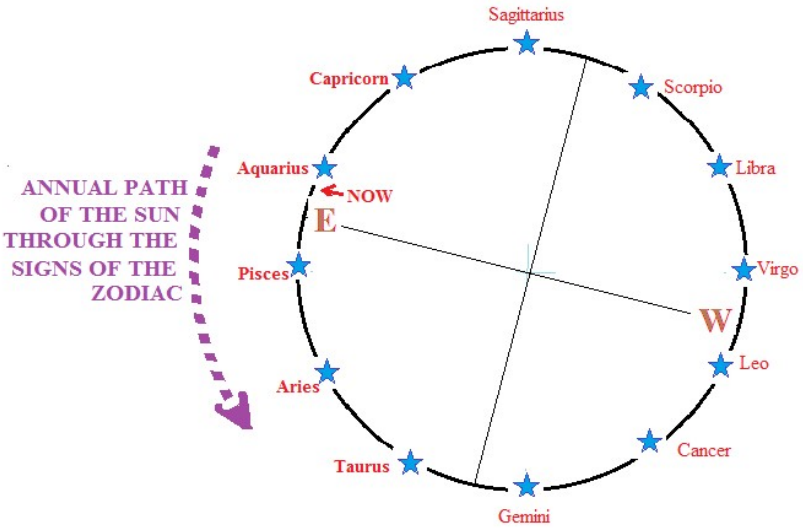

Fig 3. Mapping the course of the sun through the 12 constellations over 25,776 years.

As seen from the Earth, the constellations are spaced more or less evenly around the sky. They were used by early civilizations in both a practical and religious sense, notably to track the rotation of the earth's axis in what is referred to as the Precession. Graham Hancock remarked on the apparent anomaly that since sky gazing was principally a task for sea-goers, why then were the Egyptians, a land-locked people, obsessed with astronomy? He noted that ancient sea-going vessels were found buried near the pyramids, suggesting that an earlier mariner race had perhaps introduced the Egyptians to this obsession in remote prehistory. But where from? - from Atlantis? – the only pre-Ice Age civilization we seem ready to hypothesize.

The concept of the 'Precession of the Equinoxes' corresponds to a unit of time in excess of verifiable historical records for human civilizations. It emerges from the original Egyptian calendar, and poses serious questions as to how it was derived. The presupposition that this long-term astronomical time schedule was discovered by the Egyptians seems doubtful. The 25,776 year 'Precession of the Equinoxes' or 'Great Year' was known to the early Egyptian civilization, and would require that the Egyptian civilization extends back to 27,000 BC or thereabouts, if the astronomical observations needed to support this mega time unit were to have an observational basis.

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Estimating the duration of the Precession therefore is a feature one might expect to have been developed only by a long-lived and ancient race, and not by a civilization with just a few thousand years of history. Sellers (1992) was the first to point out the importance of astronomy in investigating precession. He found that the ancient Osiris myth incorporated the following key numbers needed for analysis of the phenomenon:

- 30°: the number of degrees along the ecliptic needed to include each zodiacal constellation;
- 72: the number of years the sun takes to pass through one degree of a zodiacal constellation;
- 72 x 30 = 2,160: The years it takes for the sun to pass through a zodiacal constellation;
- 12 x 2160 = 25,900 years: Total time needed to complete a precessional cycle.

Given that the Osiris myth showed up in the pyramid texts from around 2,450 BC, i.e., very early in Egyptian pre-history, this implies that the above calculations were probably completed before the documented history of the Pharaohs began. Comparing their estimate of the duration of the precessional cycle of 25,900 years with a modern estimate of 25,776 years, Hancock noted that this is equivalent to an error of only 144 years, or 0.6%: a remarkable achievement!

Did we benefit from Extraterrestrial tutors?

The overall hypothesis that seems to emerge from this study is that mankind benefitted from syntropy, given that intelligent species from their future appear to have worked to reduce the long time interval from evolution of life on this planet, to the date when mankind can escape from their planet of origin. Apart from evidence for directed panspermia, the possibility exists that planetary and lunar characteristics were modified to promote evolution. Genetic and socio-economic interventions converted hunter-gatherers to more specialized city dwellers with a wide range of technical and mathematical skills, aided by an integrated system of measurements.

Fig 4 shows in an imaginative fashion, the initiation of a planetary food web by panspermia, mammalian evolution by Darwinian processes, and 2 syntropic interventions to accelerate human and technical progress as demonstrated by two blue quadrilaterals. Genetic manipulation by benevolent extraterrestrials would also have shortened the time to planetary emancipation and could have represented one of these ‘blue’ events.

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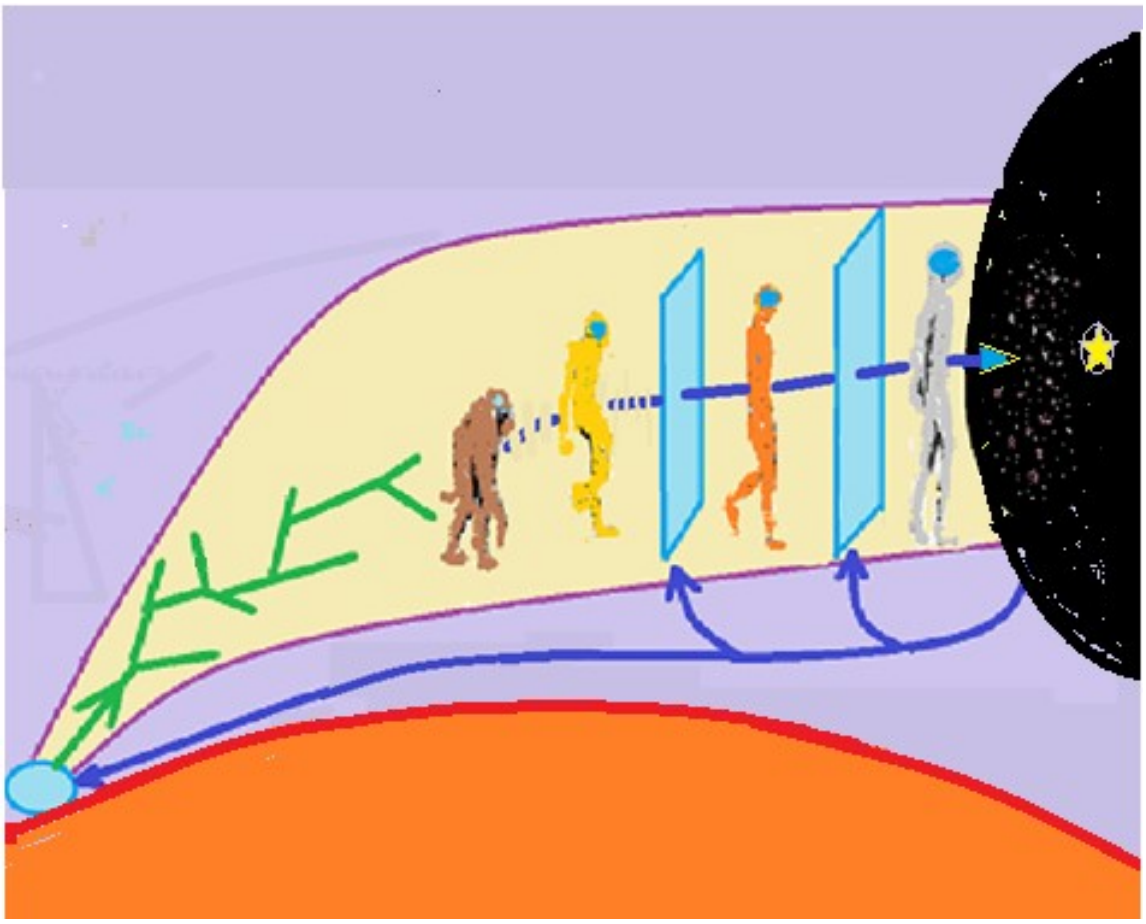

Fig 4: A cartoon illustrating a hypothesis of processes imagined to be initiated by extraterrestrial initiatives, including panspermia, followed by conventional Darwinian processes leading to prehominids, and at least two later interventions imagined to complete our species ontogeny to space-going creatures.

Long term quasi-cyclic behavior of our planet

The planetary motions that spur climate swings are complex, but earlier inter-glacial periods than this one were shown to produce remarkably similar fluctuations over time in the temperature and levels of greenhouse gases, CO_2 and methane, found in long-term ice cores (Fig 5). A rapid onset of glacial melting has led on average, to moderate to warm conditions prevailing over some 50,000 years, followed by a somewhat longer period of glaciation, in which ice ages of shorter duration and lower intensity were also frequent.

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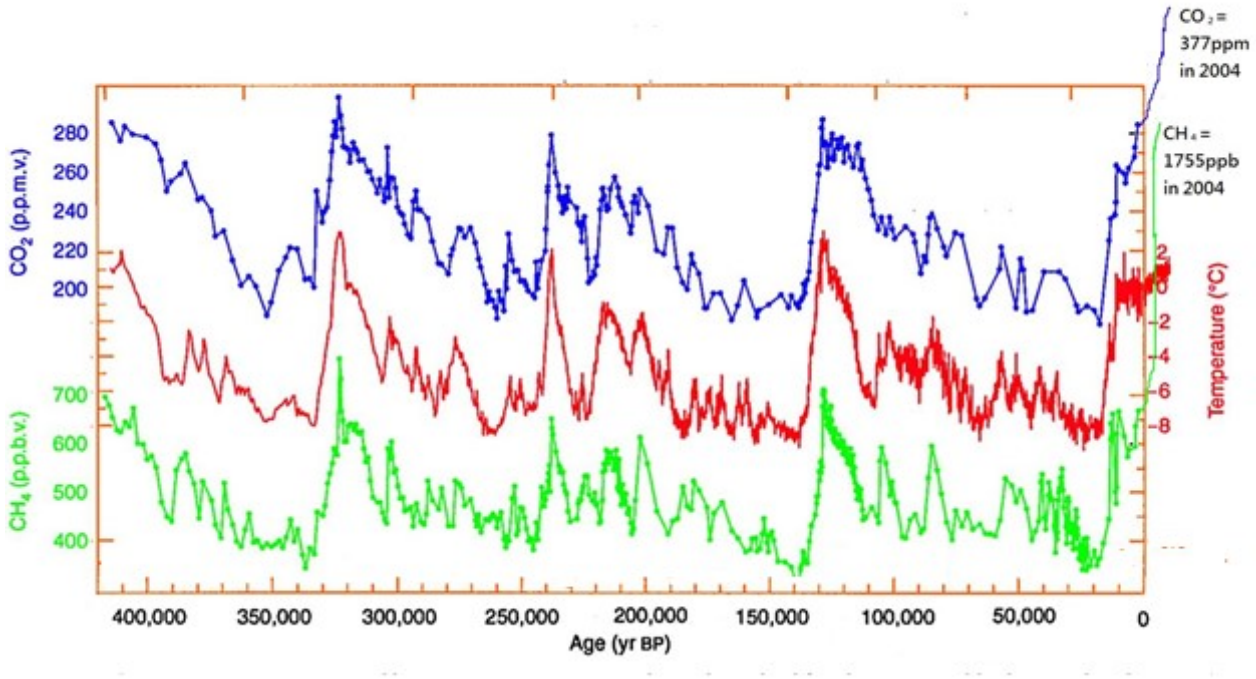

Fig 5: 400,000 years of ice core data from Antarctica, condensed from a figure in Davies and Bendle (2017), showing temperature fluctuations and similar fluctuations of the greenhouse gases, carbon dioxide and methane, over the last 400,000 years, followed more recently by evidence of human-induced global warming.

The rhythmic fluctuations in temperature and greenhouse gas concentrations shown in Fig 5, derive from the interaction of what are known as Milankovitch cycles. In a summary provided by Columbia University (2018), these were specified to consist of a 100,000-year cycle in orbit eccentricity, a 41,000-year cycle in the tilt of Earth's axis relative to its orbital plane around the Sun, and a 21,000-year cycle caused by a wobble of the planet's axis, whose duration is not greatly different from that of a Precession. Together, these cycles change the seasonal proportions of solar energy reaching dry land, most of which is located in the Northern Hemisphere, and this of course influences the climate. The net effect of these last three cycles on the Earth's temperature is complex, but from long-term ice core data available (Fig 5) it is clear that the net result has been a series of Ice Ages, separated by periods of moderate climatic conditions which extended previously over some 40,000 years. The longer duration of moderate climate conditions in the latest inter-glacial has been ascribed to global warming, as a result of multiple human influences on the climate. This has not only prolonged the warm period, breaking the earlier regular cycle, but is felt by many to presage a movement of the planet's climate to a totally different and warmer condition.

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Obviously this past sequel of Ice Ages has punctuated the development of civilizations between global glaciations, since few if any structures or artifacts are likely to survive the massive effects of peak glaciation. Immediately after the glaciers disappeared, coastal civilizations in the tropics will have been submerged by massive flooding and a sea level rise roughly estimated at 400 ft, or over 100 metres.

Considering how another planetary civilization defines long time intervals, why on earth would the Sumerians invent a time unit called a 'Shar', equivalent to 3,600 years? (Sitchin 1976). This unit could have utility for the preceding culture of the long-lived Anunnaki on Earth, given that it is the orbital period of their planet Nibiru, but its utility for describing events of relevance to short-lived human societies on Earth seems improbable.

Implications for intelligent life forms evolved on Earth

The time sequence of past climatic events on Earth driven by the orbital variations described above, has led to particularly dramatic changes in the planetary climate every 50,000-100,000 years. This must have had a seriously adverse effect on any intelligent species that depends on a substantial agricultural production to support large urban populations. This will also be the case in future for temperate-polar regions where low temperatures and glaciation will drastically reduce agricultural production. Mass migration to warmer latitudes will be a necessity, but will be contested by the populations already there. Advanced preparation for this crisis will be necessary, but is unlikely to be very effective, given the suddenness of past climate changes. A substantial decline in human populations and a catastrophic impact on ecosystems will likely result if timely and effective measures are not in place. At the present time there is substantial concern in the opposite sense, with precautionary activities promoted by international negotiation to keep the likely temperature rise below the 2.5+°C increase aimed for (see: CC 2018). An even higher temperature rise due to heat trapping by excess production of greenhouse gases from human activities, Fig 5 shows how these have recently risen to well above historical peaks in earlier epochs. Similar catastrophic results for human populations will be also a possibility, with massive northerly migrations from the tropics likely to result in this case.

The available data from the UN given in Fig 6 confirms that the human population on the planet has shown a spectacular increase. The world population was estimated at 7.7 billion people in 2018, and has experienced continuous growth since AD 1350 when it was close to 370 million. The highest population growth rate was above 1.8%

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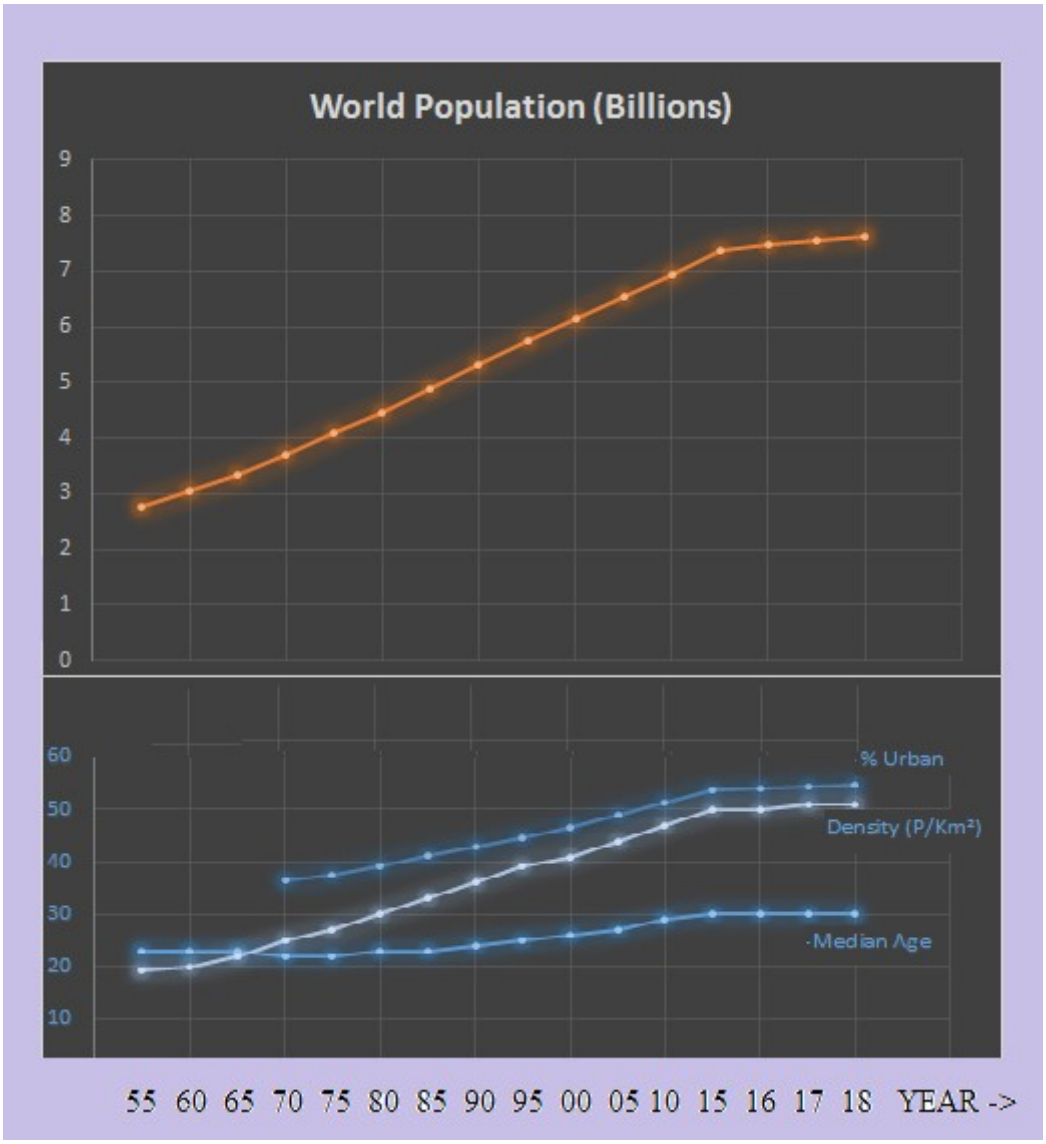
per year between 1955 and 1975, but declined after 2010 and 2015, and is projected to decline further this century. The median age of the world population of 30.4 years in 2018 is close to recent estimates for a single human generation time, although the median age has increased since 1956. Nonetheless, annual birth rates have not declined from a close to constant 135 million per year. While death rates showed some increases in recent years at 56 million per year, the possibility of oncoming population stability or decline is not supported by available data. Although population densities have risen, they appear to have stabilized recently, probably due to a higher proportion of the population concentrated in cities.



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Some tentative conclusions

1) Starting with the origin of life on Earth, there seems to be a good case now for assuming panspermia was involved, given the rapid onset of life forms following the cooling of the early Earth's surface. The recent discovery of metal microspheres in the stratosphere, makes the more specific hypothesis of 'Directed Panspermia' very plausible.
2) The concept that a higher entity than mankind referred to here as our 'tutors', or category II species, had a role to play in our rapid evolution, seems a possible explanation for planetary metamorphoses early in the history of our planet and its extraordinary moon postulated by Knight and Butler. Other ET's, less developed intellectually or technically, may have intervened later, to have an influence in speeding up mankind's early intellectual and socio-economic development during or before the last Ice Age.
3) The presence of a higher civilization prior to the onset of what previously were considered the first or originating ancient civilizations in Sumeria, Egypt, Peru-Bolivia, Central America and the Indus valley, have been speculated on for a number of reasons by Hancock, and Knight and Butler, and seems a reality. The reason for considering that there was an off-planet basis for these early civilizations, was their rapidity of development, with sophisticated early urban centers, supported by commercial agriculture, trade and flourishing artisanal production, and an impressive understanding of long-term changes caused by movements in the Earth's orbit.
4) The megalithic yard was postulated as the ancient basis for everyday measures we use today, such as the pound weight, the pint as a unit of volume, and short time units associated with oscillations of a pendulum of known length. The megalithic yard was suggested to come from off-planet measures of lunar and mega-terrestrial measures, formulated initially as multiples of 10^{n} megalithic yards, where n was a large round number in thousands or millions. This required their originators to be space-going in order to measure and formulate these initial cosmic definitions.
5) The existence from earliest times of extended time measures such as the precessional cycle of 25,900 years, which would require observation periods longer than early human civilizations, and the Shar, a time measure of 3,600 years, suggest that an earlier civilization produced them, and probably one where lifespans were longer than for humans. The focus on spatio-temporal and long-term astronomical studies in the Sumerian, Egyptian, and Proto-Mayan cultures

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which require observations to be made over long time frames exceeding the duration of early human civilizations, and suggest their earlier origin from off-planet intelligences.

6) With generation times of 25-30 years, human beings are a short-lived species when compared with the intervals between the periodic environmental crises just discussed, which makes forecasting future crises unconvincing in terms of our personal experiences. After several generations have passed, a catastrophe is remembered more as a mythological event, with a low priority being given to the anticipation of the next event in the series.
7) In a fundamental sense, interventions by a superior cosmic intelligence as discussed here, such as directed panspermia and the transmission to human communities of improved social and technological modalities, not to mention modifications to the genome of the developing intelligent species, can be regarded as critical applications of syntropy. They should speed up the development of techniques for surviving future catastrophes discussed earlier, by downloading strategies from the future, namely from the greater experience of species that arrived at intelligence before us. As such, problem-solving applications inevitably can benefit from contact with higher intelligences by shortening the time needed for us to acquire the capability to avoid the worst features of future catastrophes. In particular, learning to leave the surface of the planet for a more secure environment elsewhere seems to have great potential as a long-term survival strategy, but it is unlikely to be relevant to guaranteeing overall population security.
8) Although it goes beyond this essay to suggest remedies in the case of drastic climate change or other catastrophes, being aware that catastrophes will occur, requires the development of strategies to counter them. The rapid development of the capability of space travel for example, will not save all of humanity, but would preserve elements of our rich cultural history, and may be the reason for the considerable interest shown in our planet by extraterrestrials in recent years.

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