

Higgs Boson in the Ani Papyrus and Vedic Particle Physics



By John Frederick Sweeney

Abstract

The Papyrus of Ani illustrates the sub – atomic process of decay, symbolized by the Higgs Boson in western physics. This paper explains the Papyrus of Ani in terms of Vedic Particle Physics, and reveals the existence of four Dark Matter particles which are probably the Higgs Boson after its decay into two electrons and two muons. The relationship explained in this paper leads to the question of which came first – Vedic Literature or the Egyptian Books of the Dead – or were both derived from a common, earlier source? The two ancient traditions feature similar myths – the Four Sons of Horus, and the Four Sons of Brahma.

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Introduction

My interest in Ancient Egypt began with a museum trip in Boston, and intensified when I worked in a Carl Jung institute, where one of the associated psychologists explained to me the etymology of the word, “alchemy.” Carl Jung was intensely interested in the subject, and even considered himself a 20th Century incarnations of the famous medieval alchemist, Paracelsus. Over lunch one day, the psychologist explained to me that in the Arabic language, “Al – Kamir” referred to Egypt, as the “Black Land,” which of course referred to the color of the Nile delta soil after the annual flood. Eventually the word devolved into “alchemy,” which medieval magicians used to reach immortality. Jung's psychology eventually concluded that alchemists were less interested in monetary gold than spiritual gold, and that the entire alchemical process comprised nothing short of a process of psychological development.

Thus it came to little surprise to find the website of Tony “Frank” Smith and his treatment of the Exceptional Lie Algebra E6 as isomorphic to the Temple of Man at Kendrak as well as to the Tarot system, which consists of yet another psychological system which interested Carl Jung at some point in his exploration of esoteric metaphysical systems. As a daily user of the Tarot, I understood its archetypes quite well. What I did not understand was its relationship to E6, and felt intrigued by Smith's explanation, which is included herein.

Those who practice Sacred Geometry have come to understand, after the great Egyptologist Lubicz de Schwaller, that the grand buildings of antiquity were constructed with built – in purpose. In this way Smith gives a related explanation of the Temple of Man at Karnak.

Now, if the Temple of Man was constructed in such a way, this implies that other temples, if not all Egyptian temples, were constructed in the same fashion, after a similar plan. In fact, this paper argues that the ancient Egyptians regarded the entire territory of Egypt as an organic entity, with a crown for the north and a crown for the south, with the Nile River uniting the two lands. The land was divided into 42 administrative divisions, which bear a critical relationship to Dark Matter, as this paper will demonstrate.

As an example, Frank “Tony” Smith writes:

Hermes Trismegistus was the Greek name for Thoth, the Egyptian god of learning. Hermopolis, or Khmunu, [the City of Eight](#), was the ancient center of the cult of Thoth.

How this city earned the name of City of Eight, among the 42 administrative districts of Ancient Egypt (which correspond to the 42 Assessors of the Ani Papyrus) reveals a great deal about nuclear physics and the Egyptian view of their land within the cosmos. Suffice to note that the number 8 relates to Bott Periodicity and the Eight Trigrams of Chinese metaphysics, in the stable 8 x 8 Satvic domain of matter in the Universe.

The British missionary, Robert Morrison, once bought a Chinese book in the southern city of Guang Zhou (Canton) around the year 1820. Morrison kept this book during his travels in China, perhaps to try to understand Chinese beliefs. The book was of such importance to Morrison that he shipped it back to London, where it became part of the British Library collection of his papers, and where it remains today, albeit under a different name, supposedly the British Museum these days. The librarians there cataloged this book under "fortune telling," and given such a label, no one apparently has touched the book since Morrison's death and the induction of the book into the British Museum collection.

A Christian missionary pamphlet distributed in Guang Zhou some years after Morrison's stay there eventually led to the Tai Ping Rebellion, a civil war which ravaged China for decades, in the wake of opium consumption and the Opium Wars, and ultimately led to the dissolution of the Chinese Qing Empire, and set off the Chinese Revolution of 1840 – 1911. In contrast, the west neglected the pamphlet that Morrison purchased in Guang Zhou back in 1820, and so no similar great change took place in England, Great Britain, Western Europe or the west in general. In the best estimate of the author, that book is the Encyclopedia of Da Liu Ren (Da Liu Ren Da Quan), which is modeled on nuclear structure under the Vedic Particle Physics rubric.

In western academia, an un – written code prevents scholars from reading about "fortune telling" or "superstition." For this reason, no one ever bothered to read the Encyclopedia of Da Liu Ren, despite the fact that it contains a complete description of nuclear physics. In the same way, scholars are not allowed to read anything deemed specious, in terms of the British and American traditional academic views.

For example, the author attended a course in Early Chinese History taught by the reknowned scholar, David Keightley, who was trained at Columbia University. Keightley is known as an expert on oracle bones, the bones of cows and tortoises which proto – Chinese inscribed with the 10 Heavenly Stems and 12 Earth Branches of Chinese metaphysics, before casting the

bones in bonfires to listen for the “pop” sound as the bones heated.

On the first day of the course, Keightley announced that he would not discuss the I Ching or the Eight Trigrams (Zhou Yi and Ba Gua) because they were controversial. That is to say, that in 1984, and possibly today, the Communist Party of China holds to the Marxian belief that China once had a slave society. In order to maintain that fiction, the I Ching and Chinese metaphysics must be viewed as superstition, along with the rest of the Confucian doctrine. If Keightley had discussed the I Ching in class, then Beijing would have refused to give him a travel visa, so Keightley would have been unable to visit mainland China. At that time, and probably today, the University of California at Berkeley campus was full of spies, and there probably was at least one mainland spy among the twenty or so students in Keightley's class.

In all seriousness, how can one discuss Early China without discussing the I Ching? How can one discuss the Heavenly Stems and Earth Branches, and ancient divination practices, while excluding the 900 pound gorilla in the room? So much for academic freedom on the Berkeley campus, the home of Mario Savio's Free Speech movement.

Western scholars of Egypt, India and China have primarily denigrated, rather than championed the cultures and knowledge of their areas of responsibility. If a British scholar had investigated the Da Liu Ren Da Quan, nuclear physics may have advanced much further, much faster, and arrived at a place where western nuclear physics has yet to discover. Instead, the British and other Europeans, later the Americans, disdained the cultures and knowledge of the conquered people of Asia as a means of retaining colonial control over those areas.

Keshav Dev Verma writes about the 19th Century Veda advocate, Vedic Maharishi Dayananda:

Such a forceful presentation of Veda by Dayananda drew the attention of European scholars, particularly British and German, who became curious to know more about them through their own studies. The politicians, particularly Macaulay, wanted the Vedas taken apart to determine a lethal antidote, in order to execute a cultural metamorphosis in India in the interest of the British Empire. The Sanskrit – English Dictionary by Sir Monier – Williams is a proof unto itself about how much effort was put in to unravel the texture of the Vedic text and the literature as well as the grammar, which includes the Astadhyayi, Mahabasya and Nirkuta, the master key to Vedic study. Moreover, this was done with the avowed purpose of finding their antidote for their own annihilation through tampered translation of Vedic texts. The services of Max Muller were further availed to supplement the campaign.

The author of this paper recently wrote two papers about Magic Squares encoded within the Sanskrit language of the Rig Veda, the very first book known to humanity. Those two papers are based on an essay by Oxford University professor Christopher Minkowski, which reveals Minkowski's disdain for Nilakantha, and his obvious disbelief in the entire concept of the Rig Veda containing encoded mathematics. In so doing, Minkowski continues the racist and imperialist British academic view that all of the culture and knowledge of ancient Egypt, Iran, India and China cannot possibly amount to anything more than the illiterate scribbling of primitive peoples.

This was precisely the attitude adopted by the British to counter the self – strengthening efforts of local reformers, such as the Maharishi in India, who advocated reliance on the Vedas as a means of countering British authority. Unfortunately, this attitude continues into the 21st Century, as demonstrated by Christopher Minkowski, and has been adopted by all the major western and westernized institutions and universities which have Egyptian, Asian or South Asian studies programs. The purpose of such institutions has become to prevent research into the culture and knowledge of those regions, while stultifying academic research about the regions.

When Minkowski, for example, diminishes the concept that the Rig Veda contains coded advanced scientific technology, then he signals to present and future western academics that pursuit of research down that avenue will prove fruitless, insignificant and generally not worth the while of a serious academic. His unstated thesis is that only Indian academics will pursue such a low road of research, which will only prove futile in the end.

The author once worked as a librarian at the East Asian Library at the University of California at Berkeley. As an undergraduate, the author discovered that the true purpose of the library was to prevent scholars from accessing the collection, the second largest in the US after the Harvard – Yen Ching Library. As a librarian working at the East Asian Library, the author attempted to improve access for scholars, but was often met with bureaucratic resistance. More access for scholars meant fewer coffee breaks for librarians. Remote electronic access would have attracted more visitors to the library, so this effort was discouraged as well.

Four Sons of Horus

The **four sons of Horus** were a group of four gods in [Egyptian religion](#), who were essentially the personifications of the four [canopic jars](#), which accompanied [mummified](#) bodies.[1] Since the heart was thought to embody the [soul](#), it was left inside the body.[2] The brain was misleadingly thought only to be the origin of [mucus](#), so it was reduced to liquid, removed with metal hooks, and discarded.[3] This left the stomach (and small intestines), liver, large intestines, and lungs, which were removed, embalmed and stored, each organ in its own jar. There were times when embalmers deviated from this scheme: during the 21st Dynasty they embalmed and wrapped the viscera and returned them to the body, while the Canopic jars remained empty symbols.[1]

The earliest reference to the sons of [Horus the Elder](#) is found in the [Pyramid Texts](#)[4] where they are described as friends of the king, as they assist the king in his ascension to heaven in the eastern sky by means of ladders.[5] Their association with Horus the Elder specifically goes back to the [Old Kingdom](#) when they were said not only to be his children but also his souls. As the king, or [Pharaoh](#) was seen as a manifestation of, or especially protected by, Horus, these *parts* of the deceased pharaoh, referred to as the Osiris, were seen as *parts* of Horus, or rather, his *children*,[6] an association that did not diminish with each successive pharaoh.

Since Horus was their father, so [Isis](#), Horus's original wife in the early mythological phase, was usually seen as their mother,[7] though in the details of the funerary ritual each son, and therefore each canopic jar, was protected by a particular goddess. Just as the sons of Horus protected the contents of a canopic jar, the king's organs, so they in turn were protected. As they were male in accordance with the principles of male/female duality their protectors were female.

[Imsety](#) in human form, protected the liver and was protected by his aunt [Isis](#).
[Duamutef](#) in jackal form, protected the stomach and was protected by his maternal grandmother [Neith](#).

[Hapi](#) in baboon form, protected the lungs and was protected by his other aunt [Nephthys](#).

[Qebehsenuef](#) in hawk form, protected the large intestines and was protected by his mother [Selket](#). [8][9]

The classic depiction of the four sons of Horus on [Middle Kingdom](#) coffins show Imsety and Duamutef on the eastern side of the coffin and Hapi and Qebehsenuef on the western side. The eastern side is decorated with a pair

of eyes and the mummy was turned on its side to face the east and the rising sun; therefore, this side is sometimes referred to as the front. The sons of Horus also became associated with the cardinal compass points, so that Hapi was the north, Imsety the south, Duamutef the east and Qebehsenuf the west.[10] Their brother was [Ihy](#), son of [Hathor](#).

Until the end of the [18th Dynasty](#) the canopic jars had the head of the king, but later they were shown with animal heads.[2] Inscriptions on coffins and sarcophagi from earliest times showed them usually in animal form.

Hapi, sometimes transliterated as **Hapy**, is one of the [Four sons of Horus](#) in [ancient Egyptian religion](#), depicted in funerary literature as protecting the throne of [Osiris](#) in the Underworld. He is not to be confused with [another god of the same name](#). He is commonly depicted with the head of a [hamadryas baboon](#), and is tasked with protecting the lungs of the deceased, hence the common depiction of a hamadryas baboon head sculpted as the lid of the [canopic jar](#) that held the lungs. Hapi is in turn protected by the goddess [Nephthys](#).^[1] When his image appears on the side of a coffin, he is usually aligned with the side intended to face north.^[2] When embalming practices changed during the [Third Intermediate Period](#) and the mummified organs were placed back inside the body, an amulet of Hapi would be included in the body cavity.^[2]

The spelling of his name includes a [hieroglyph](#) which is thought to be connected with steering a boat, although its exact nature is not known. For this reason he was sometimes connected with navigation, although early references call him the great runner, as below from Spell 521 of the [Coffin Texts](#).

“

You are the great runner; come, that you may join up my father N and not be far in this your name of Hapi, for you are the greatest of my children – so says Horus"^[3]

”

In Spell 151 of the [Book of the Dead](#) he is given the following words to say:

“

I have come that I
may be your
protection, O N; I
have knit together
your head and your
members, I have
smitten your enemies
beneath you, and I
have given you your
head forever.[4]

”

As one of the four pillars of Shu and one of the four rudders of heaven he was associated with the North, and is specifically referenced as such in Spell 148 in the [Book of the Dead](#).

In [Egyptian mythology](#), **Imseti** (also [transcribed](#) **Imset**, **Amset**, **Amsety**, **Mesti**, and **Mesta**) was a funerary deity, one of the [Four sons of Horus](#), who were associated with the [canopic jars](#), specifically the one which contained the [liver](#). Unlike his brothers, Imsety was not associated with any [animal](#) and was always depicted as [human](#). [Isis](#) was considered his protector.

Imsety the human headed son of Horus, protected the liver of the deceased and was in turn protected by the goddess Isis.[11] It seems that his role was to help revivify the corpse of the dead person, as he is asked to lift them up by Horus: "You have come to N; betake yourself beneath him and lift him up, do not be far from him, (even) N, in your name of Imsety." [12]

To stand up meant to be active and thus alive while to be prone signified death. In Spell 151 of the Book of the Dead Imsety is given the following words to say: "I am your son, Osiris, I have come to be your protection. I have strengthened your house enduringly. As Ptah decreed in accordance with what Ra himself decrees." [13] Again the theme of making alive and revivifying is alluded to through the metaphor of making his house flourish. He does this with the authority of two creator gods Ptah and Ra (or Re).

Spell 148 in the Book of the Dead directly associates all four of Horus's sons to the four cardinal points. Imsety was associated with the south.[14]

Duamutef, the jackal headed son of Horus, protected the stomach of the deceased and was in turn protected by the goddess [Neith](#). [11] It seems that his role was to worship the dead person, and his name means literally "he who worships his mother". In the Coffin Texts Horus calls upon him, "Come and worship my father N for me, just as you went that you might worship my mother Isis in your name Duamutef." [12]

Isis had a dual role. Not only was she the wife of [Osiris](#) and the mother of Horus, but she was also the consort of Horus the Elder and thus the mother of the sons of Horus. This ambiguity is added to when Duamutef calls Osiris, rather than Horus his father, although kinship terms were used very loosely, and "father" can be used as "ancestor" and "son" as "descendant".^[15] In Spell 151 of the Book of the Dead Duamutef is given the following words to say: "I have come to rescue my father Osiris from his assailant ."^[13]

The text does not make it clear who might assail Osiris, although there are two major candidates. The obvious one is [Set](#), the murderer of Osiris.^[16] Somehow the son who worships his mother Isis is able to assist in overcoming Set. The other possibility is [Apophis](#), the serpent demon who prevents the Sun's passage and thus the resurrection of Osiris.^[17] Either way, Duamutef through his worship of Isis has the power to protect the deceased from harm.

Duamutef was also considered one of the four pillars of Shu, a rudder of heaven, and was associated with the east.^[14]

First Duamutef was represented as a human wrapped in mummy bandages. From the [New Kingdom](#) he is shown with the head of a [jackal](#).^[3] In some cases his appearance is confused or exchanged with that of Qebehsenuf so he has the head of a falcon and Qebehsenuf has the head of a jackal.

Duamutef usually was depicted on coffins and as the lid of canopic jars. Many images of the *Judgement of the Dead* show him together with his brothers in front of Osiris on a small lily flower.

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Qebhsenuf was the falcon-headed son of Horus, and protected the intestines of the deceased. He was in turn protected by the goddess [Serket](#). [11] It appears that his role was to refresh the dead person, and his name means literally "he who libates his siblings". Horus commands him, "Come refresh my father; betake yourself to him in your name of Qebhsenuf. You have come that you may make coolness for him after you ... "[12] Libation or showering with cool water was a traditional form of worship in Ancient Egypt. There are many images of the pharaoh presenting libation to the gods. There is a sense of a dual function of cleansing and refreshing them.

After Set murdered Osiris he cut the body into pieces and scattered them around the Delta.[16] This was anathema to the Egyptians and the service that Qebhsenuf gives to the dead is to reassemble their parts so they can be properly preserved. In Spell 151 of the Book of the Dead he is given the following words to say: "I am your son, Osiris, I have come to be your protection. I have united your bones for you, I have assembled your limbs for you. have brought you your heart, and placed it for you at its place in your body." [13]

Qebhsenuf was the god associated with the west.[14]

Baboon, Jackal, Falcon and Human[[edit](#)]

The heads of the "four sons of Horus" as [canopic jar](#) stoppers, on display at the [British Museum](#)

The reasons for attributing these four animals to the sons of Horus is not known, although we may point to other associations which these animals have in Egyptian mythology. The baboon is associated with the moon and Thoth, the god of wisdom and knowledge, and also the baboons which chatter when the sun rises raising their hands as if in worship.[18] The jackal (or possibly dog) is linked to [Anubis](#) and the act of embalming and also [Wepwawet](#) the "opener of the ways" who seeks out the paths of the dead.[19] The hawk is associated with Horus himself and also Seker the mummified necropolis god. Imseti, the human, may be linked to Osiris himself or Onuris the hunter.[20]

The Egyptians themselves linked them with the ancient kings of Lower and Upper Egypt, the [Souls of Pe and Nekhen](#). In Spells 112 and 113 of the [Book](#)

[of the Dead](#) which have their origins in the earlier [Coffin Texts](#) Spells 157 and 158, it is described how Horus has his eye injured, and because of this is given the sons of Horus:

As for Imsety, Hapy, Duamutef, Qebehsenuf, their father is Horus, their mother Isis. And Horus said to Ra, place two brothers in Pe, two brothers in Nekhen from this my troupe, and to be with me assigned for eternity. The land may flourish, the turmoil be quenched. It happened for Horus who is upon his papyrus-column. I know the powers of Pe; it is Horus, it is Imsety, it is Hapy.
[21]

The injury of Horus's eye is part of the myth cycle known as the Contending of Horus and Set recounting how they fought over the crown of Egypt.[22]

In a unique illustration in the tomb of Ay the sons of Horus are shown wearing the red and white crowns as the Souls of Pe and Nekhen, the souls of the royal ancestors.

The attributes of the sons of Horus are not limited to their role as the protectors of canopic jars. They appear as the four rudders of heaven in Spell 148 of the Book of the Dead, as four of the seven celestial spirits summoned by Anubis in Spell 17 of the Book of the Dead and through this are linked to the circumpolar stars of the [Great Bear](#) (or Plough): "The tribunal around Osiris is Imset, Hapy, Duamutef, Qebehsenuf, these are at the back of the Plough constellation of the northern sky." [23]

Four Sons of Brahma

The following story from Wikipedia, which originates in Vedic Literature, tells the story of four sons of Brahma, the Hindu god. In Vedic Particle Physics, Brahma symbolizes Dark Matter. Thus, the Four Sons of Brahma must symbolizes four sub – atomic particles which pertain to the region of functional Dark Matter, as opposed to non – functional Thaamic Dark Matter, which comprises the invisible Substratum, one of the three aspects of matter in the Universe. With some detective work, it may prove possible to deduce the basic characteristics of these four particles, which are heretofore unknown in western nuclear physics and probably unknown to any other scholar of Vedic Particle Physics.

To the best knowledge of the author, this paper marks the first instance of anyone drawing attention to the similarities between the Vedic story of the Four Sons of Brahma and the story of the Osirian soul depicted in the Ani Papyrus. The Four Sons of Brahma are known as the Four Kumaras in Sanskrit, and each has a name. In the Ani Papyrus, the quartet may be symbolized by groups of four, such as four oars, or small human figures.

The Ani Papyrus features the journey of a male and female figure who appear to be conducting telekinesis with raised hands, while in a deep meditative state:



The couple probably represents a pair of Muons:

Like all elementary particles, the muon has a corresponding [anti - particle](#) of opposite charge (+1) but equal [mass](#) and spin: the **anti - muon** (also called a *positive muon*). (Wikipedia entry)

The four Kumaras roamed around at their free will with their cosmic powers all over the universe. During one of their sojourns, they arrived at [Vaikuntha](#), the abode of Vishnu. The city, with the residence of Vishnu located at the center of seven circular walls, is considered as a place of bliss and purity. It has seven gates of entry. The four Kumaras passed through the first six gates without any hindrance.

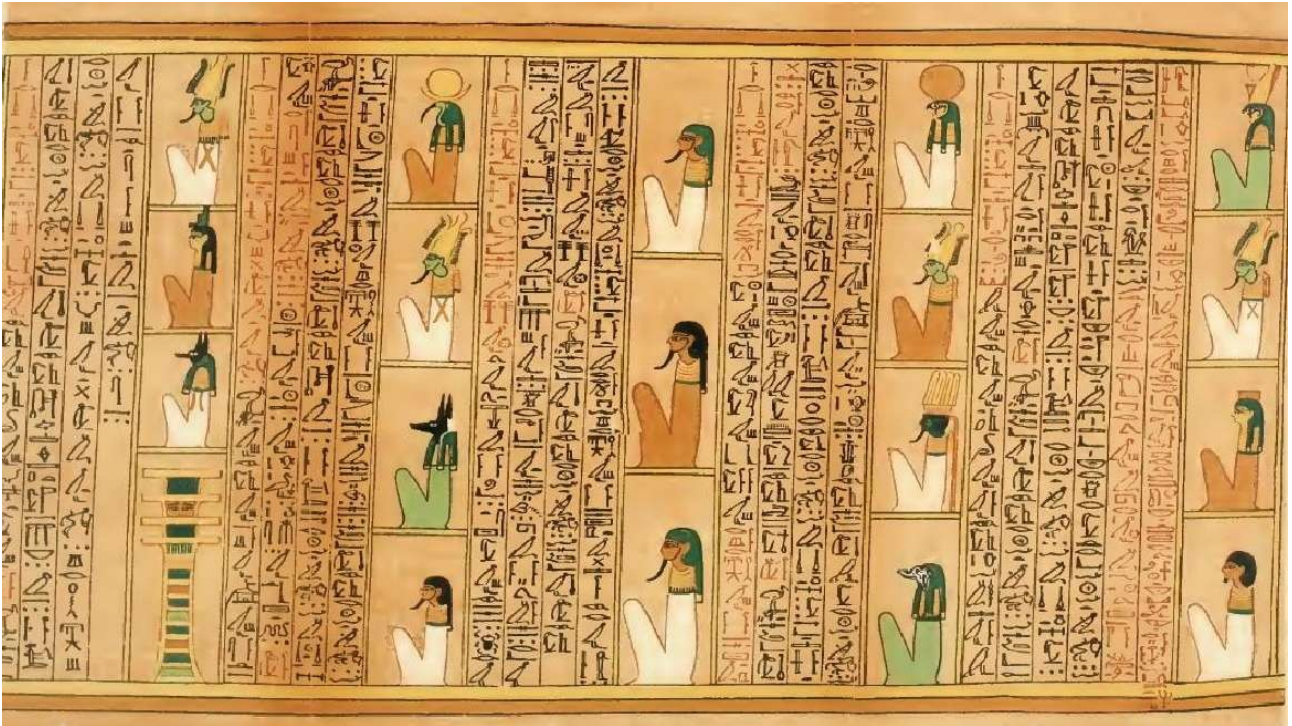
The seventh gate was guarded by [Jaya and Vijaya](#), the two [dvarapalas](#) (door-guards) of Vishnu's palace. The angry guardians stopped the four Kumaras and laughed at them since they looked like children and were also naked, and did not permit them to enter through the seventh gate. The four Kumaras were perplexed by the behaviour of the gatekeepers, as they had not faced such a situation and ridicule anywhere else. They expected Jaya and Vijaya to be like their master Vishnu, who does not differentiate among beings.

Enraged, the Kumaras cursed them to be born on earth thrice, as three villains with characteristics of "lust, anger and greed". The gatekeepers accept the curse and bowed to the Kumaras and begged for their forgiveness.

Vishnu, who learned of the incident, appeared before the Kumaras, in all his glory with his retinue. The four Kumaras, who were on their first visit to Vaikuntha, took in by the sight and the glittering divine figure of Vishnu. With deep devotion, they appealed to him to accept them as his devotees and allow them to offer worship at his feet for all time to come and let his feet be their final emancipation.

Vishnu complied with their request and assured Jaya and Vijaya that they would be born as demons on earth but would be released from all births by an [avatar](#) of Vishnu. The two guards were dismissed by Vishnu to go and suffer the curse of the Kumaras on Earth, and only afterward, return to his abode, after the end of the curse. The two banished guards were then born on Earth, at an inauspicious hour, to the sage [Kashyapa](#) and his wife [Diti](#) as [asuras](#) who were named [Hiranyakashipu](#) and [Hiranyaksha](#).^{[2][17]}

Papyrus of Ani



This section discusses how the Papyrus of Ani corresponds to the Vedic story of the Four Sons of Brahma. First, some analogies;

The Opening of the Mouth Ceremony corresponds to the opening of RTA channels to allow Dark Matter into the ten channels.

Particles which fail to meet certain standards are rejected and not allowed to pass on to higher Loka, or nuclear shells. Therefore, weighing of the Osirian soul, and asking 42 Questions, refer to nucleic processes whereby sub – atomic particles are shaken down to pass muster. Those that fail to pass muster get eaten by the crocodile.

The Djed Pillar corresponds to the Shiva Linga in Vedic Particle Physics, and erecting the pillar probably corresponds to Shiva placing his Linga in the Jalahari of Parvati.

The seven Assessors correspond to seven Octonions, while the seven gates correspond to seven openings in the nucleus,

The 42 Assessors correspond to the 42 Assessors, or Zero Divisors, described by Robert de Marrais in his series of Sedenion essays.

The entire papyrus corresponds to the story about the Four Sons of Brahma, described above, with the difference that the Ani Papyrus contains an Egyptian context for the story.

The 42 Nomea of Ancient Egypt

The 42 Nomea of Ancient Egypt correspond with the 42 Assessors of the Papyrus of Ani, where each sends representatives to attend the funeral of Osiris, according to the standard interpretation. Robert de Marrais has pointed out that the 42 Assessors correspond to the 42 Zero Divisors in the Sedenions. In this respect, then, the Ancient Egyptian image of their land corresponds to a system of high – level mathematics, one which western mathematicians rarely research. Instead, mathematicians such as Lord Kelvin and Sir Roger Penrose have openly disdained the Octonions, the level of mathematics subordinate to the Sedenions.

Frank “Tony” Smith has written about the correspondences between the Temple of Man at Karnak and the Tarot system of divination, as well as to the Exceptional Lie Algebra E6. Schwaller de Liebecz spent three decades in unravelling this mystery, and from this evidence one may see that the Ancient Egyptians held ideas about the geography of the Black Land which differ widely from our own views. The Ancient Egyptians believed in a type of Spiritual Geography, where each city held spiritual significance, and each city held a temple complex. The temple, the city and the entire geography of Upper and Lower Egypt was believed to constitute a living entity, with the Nile as the spine of the organism, connecting its chakras.

Upper Egypt held 22 nomea, or administrative divisions, while Lower Egypt held 20 nomea. The number 22 holds special significance, since 22 is the number of letters in the Hebrew alphabet, the paths on the Sephirot, the number of Major Arcana in the Tarot, which then correspond to angles in Greek or western astrology. The Jews recall 42 Stations of the Exodus, perhaps modeled after the 42 Nomea of Ancient Egypt. Thus one may see that the system of 42 Nomea of Ancient Egypt holds enormous spiritual and symbolic significance, and all of these systems related directly to the Exceptional Lie Algebras and the Sedenions.



Tarot:

The **Tarot** is a well-known mystical structure that may have its origin in ancient cultures.

This page is a view of the **Tarot** from the point of view of underlying mathematical structures, to see whether it might represent well-defined mathematical objects that can be used to build models such as the [D4-D5-E6 physics model](#) that describe physical phenomena in ways that are consistent with experimental observations.

If so, it may indicate that the useful mathematical objects may be some sort of archetypes built into human brains, transmitted through the centuries embedded in games (as the **Tarot**).

Other things that might similarly represent [archetypal](#) structures include, but are not limited to:

the [I Ching](#), which models binary numbers and 8x8 [Clifford algebras](#);

and

the Torah and the Sephirot of [Kabbala](#).
[The TORAH is a sequence of 304,805 letters.](#)

[The Sephirot is a pattern of 10 vertices linked by 22 lines.](#)

[Why does the Sephirot use only 22 lines ?](#)

[Symmetry of the 22 Hebrew letters plus 5 Finals.](#)

[The \(3,10\) Torus Knot.](#)

[3x3x3 Magic Cube with 27 elements.](#)

[\$3^5 = 243\$ was used by Plato to construct a musical scale.](#)

The Tarot has 78 cards.

To describe them, use the notation 0 = Fool;
1, ... , 21 = major arcana;
K = King, Q = Queen,
k = knight or prince, j = jack or princess;
and suits of the minor arcana being
s = swords, w = wands, c = cups, p = pentacles or disks.

The 22 Major Arcana cards (including 0)
can be identified with the 22-letter Hebrew alphabet,
in which
3 letters are Elementary (compare Quaternion imaginaries);
7 letters are Double (compare Octonion imaginaries); and
12 letters are Simple ([compare signs of the zodiac](#)).

The total number of Minor Arcana cards
is $4(4+10) = 56$
If the 4 knight or prince cards are omitted,
and the 4 princess cards are termed jacks,
the remainder of the Minor Arcana is
just the commonplace 52-card deck of playing cards.

All 78 **Tarot** cards can be identified with
the 78 dimensions of the **E6** Lie algebra
of the [D4-D5-E6 physics model](#).

Here is a way to visualize 78 dimensions:

First, try to visualize 6-dimensional space this way:
Start with the 2-dimensional space of the [Gaussian integers](#)
of the complex numbers, which have as a basis +1, +i, -1, and
-i

$$\begin{array}{c} +i \\ | \\ -1 \text{ -- } 0 \text{ -- } +1 \\ | \\ -i \end{array}$$

You can extend this pattern to cover
the entire 2-dimensional complex number plane with a square
lattice.

Notice that the origin 0 (zero),
as well as any other vertex point in the square tiling of the
plane,
has 4 nearest neighbor points (in the case of 0, the nearest
neighbors are the 4 points shown: +1, +i, -1, and -i).

Now consider each of those 4 nearest neighbor points to be
"doorways" to one of 4 "new" dimensions "beyond" the 2-dim
plane.

That gives you $2 + 4 = 6$ dimensions in total,
and it is one way to visualize 6-dimensional space.

Now look at the origin in 6-dim space,
and ask:
What are the "nicely-symmetrical" ways we can arrange nearest
neighbor points to get a lattice that "tiles" 6-dim space?

The most dense 6-dim lattice that is known is the **E6** lattice,
in which each point has 72 nearest neighbors.

If you combine the 6 "old" dimensions of 6-dim space
with the 72 "new doorway" dimensions of the nearest
neighbors,
you get the $6 + 72 = 78$ dimensions that correspond to
the 78-dimensional **E6** Lie algebra
that I use in the D4-D5-**E6** physics model, and that (in my
opinion) correspond to the 78 cards of the **Tarot**.

One (of many) interesting things about the 78-card **Tarot** is
that the popular 52-card Playing Card Deck is a subset of it,
and
there is a corresponding 52-dimensional sub - algebra, called
F4,
of the 78-dimensional Lie algebra **E6**.

Just as I started out with 52 Playing Cards
before I learned about **Tarot**,
when I started building my physics model
I tried to use the Lie algebra F4
before I realized that I needed **E6**.

F4 was smaller and less complicated,
so when I started with it


```

      7   8   9
    2   3       10
1      6
    4   5

```

This is Spin(5) = Sp(2).

```

      7   8   9
    2   3       10
1      6       15
    4   5       14
      11  12  13

```

This nest of 2 hexagons
is Spin(6) = SU(4).

```

      16  17  18  19
      7   8   9       20
    2   3       10       21
1      6       15
    4   5       14
      11  12  13

```

This is Spin(7).

```

      16  17  18  19
      7   8   9       20
    2   3       10       21

```

This is

D4=Spin(8).

1		6		15		Qc
cards						
	4	5		14		Qw
cards.						
	11	12	13			Qs
		Ks	Kw	Kc	Kp	

Here I have used all four of the 9- and three of the 10-

Now there are 3 nested hexagons. [Compare the 28 Hsiu.](#)

			Qp	ks	kw	kc	kp	
	16	17	18	19			js	
7	8	9		20			jw	This is
Spin(9).								
2	3		10		21		jc	
1		6		15		Qc		
	4	5		14		Qw		
	11	12	13			Qs		
		Ks	Kw	Kc	Kp			

			Qp	ks	kw	kc	kp	
	16	17	18	19			js	
	7	8	9		20		jw	
2	3		10		21		jc	This is
D5=Spin(10)								
45 = 28+16+1.								with dimension
1		6		15		Qc	0	

The 16 form an 8-dim complex space
with 8-dim real [Shilov boundary](#).

4 5 14 Qw 9c

11 12 13 Qs 9w

Ks Kw Kc Kp 9s

jp 10s 10w 10c 10p

Here there are 4 nested hexagons.

To get to 78-dim **E6** from 45-dim D5=Spin(10), you need 33 more
cards: 32 = 4x8 from the minor arcana plus one (for which I
used 0=Fool).

1s 2s 3s 4s 5s 6s 7s 8s 1c 2c 3c 4c 5c 6c 7c 8c
9p

1w 2w 3w 4w 5w 6w 7w 8w 1p 2p 3p 4p 5p 6p 7p 8p

They do NOT form more hexagons,
as they represent Spinor representations
as opposed to vector representations,
so the final **tarot** pattern for **E6** is
the D5 4-level nest of hexagons plus the 33:

Qp ks kw kc kp

16 17 18 19 js

7 8 9 20 jw

2 3 10 21 jc

1 6 15 Qc 0

4 5 14 Qw 9c

11 12 13 Qs 9w

Ks Kw Kc Kp 9s

jp 10s 10w 10c 10p

1s 2s 3s 4s 5s 6s 7s 8s 1c 2c 3c 4c 5c 6c 7c 8c
9p

1w 2w 3w 4w 5w 6w 7w 8w 1p 2p 3p 4p 5p 6p 7p 8p

E6 has dimension $78 = 45+32+1$.

The 32 form a 16-dim complex space with 16-dim real [Shilov boundary](#).

[Compare the 16 original members of the 18 Lohan.](#)

Also, compare the two $U(1)$'s in the fibrations

E6 / ($Spin(10) \times U(1)$) and $Spin(10)$ / ($Spin(8) \times U(1)$)

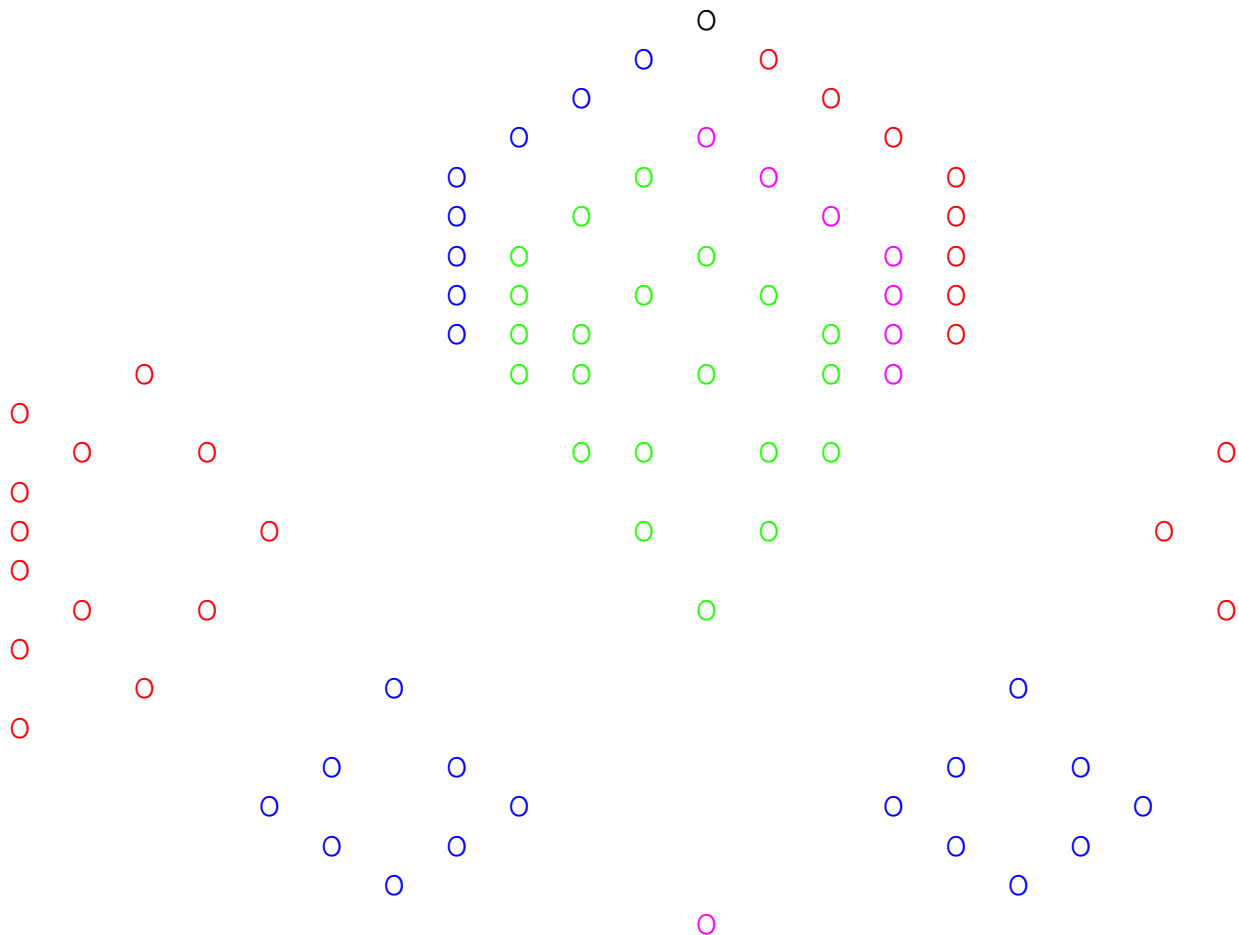
with the [two Lohan additional to the original 16](#)

and

with [two of the 9 Moving Stars](#) additional to the [7 of the Big Dipper](#).

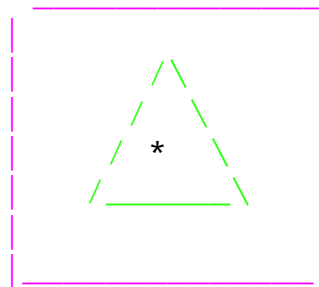
E6 is related to the [Tai Hsaun Ching](#).

A 78-card **Tarot** Spread based on the hexagonal D4-D5-**E6** structure is



An alternative, but equally valid, way to build a representation is to represent D5, not by nested hexagons, but by the following triangle:

The 78-card Triangular Spread is related to the **Tarot** structure described around 1910 by P. D. Oupensky:



In Oupensky's structure:

the 4-sided (magenta = red+blue) square corresponds to the $4 \times 14 = 56$ minor arcana, to the material world, to the [Internal Symmetry Space](#) of the [D4-D5-E6 physics model](#), and to the [Octonion co - associative square](#):

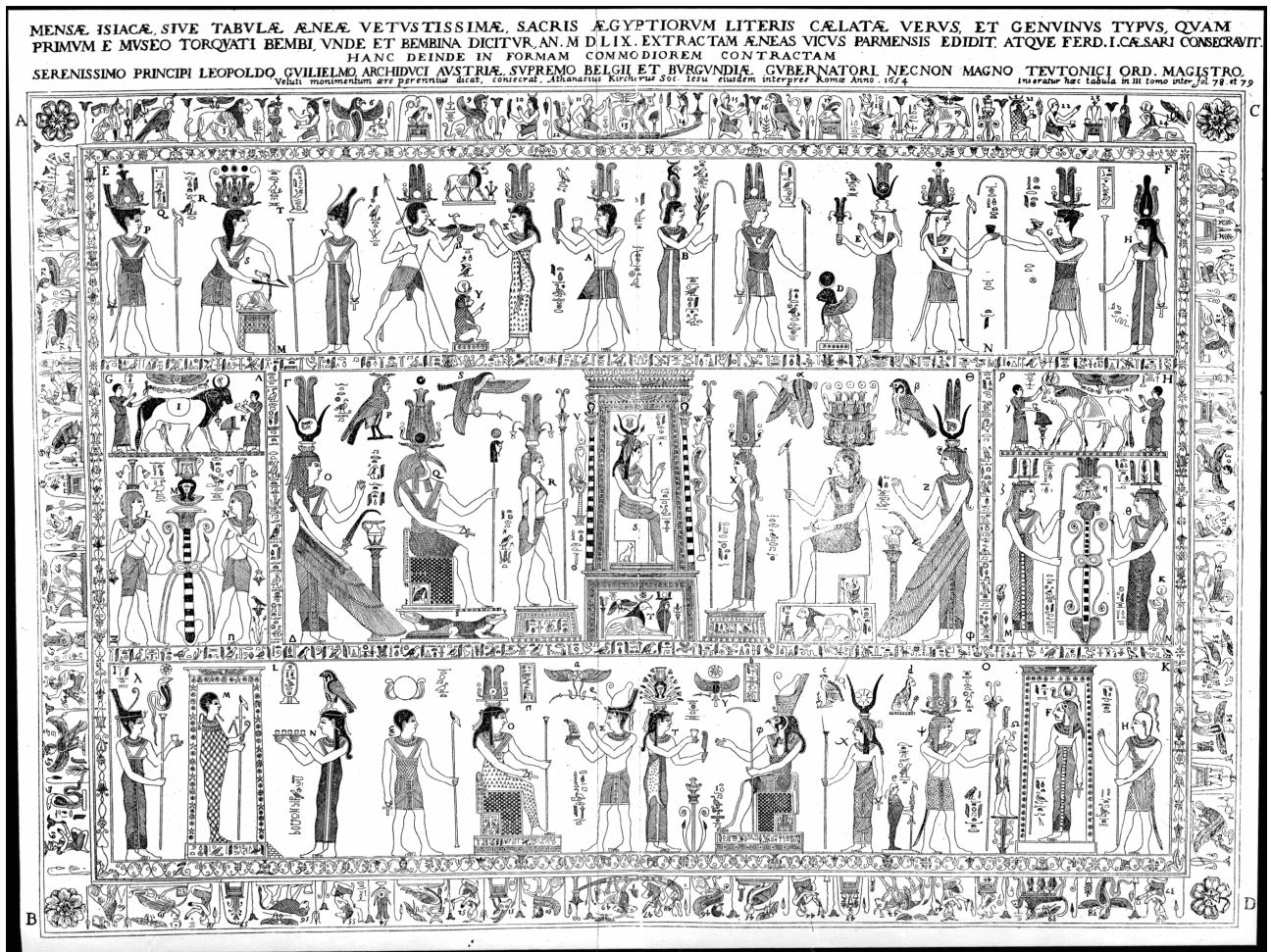
the 3-sided (green) triangle corresponds to the $3 \times 7 = 21$ major arcana, to the mental world, to the [Space of Spacetime](#) of the [D4-D5-E6 physics model](#), and to the [Octonion associative triangle](#); and

the single (black) central point corresponds to the single Fool, to the spirit world, to the [Time of Spacetime](#) of the [D4-D5-E6 physics model](#), and to the [Octonion real axis](#).

Manly P. Hall considered the first 6 rows of the triangle

1						Spin(2)=U(1)	
	2	3				Spin(3)=SU(2)=Sp(1)=S3	
	4	5	6			Spin(4)=Spin(3)x Spin(3)	
	7	8	9	10		Spin(5) = Sp(2)	
	11	12	13	14	15	Spin(6) = SU(4)	
	16	17	18	19	20	21	Spin(7)

to represent the major arcana (not including 0=Fool) of the **Tarot**, basing his conclusion upon study of the Bembine Tablet of Isis:



According to Hall, the bronze and silver Tablet was bought by Cardinal Bembo, who was historiographer of the Republic of Venice and later librarian of St. Marks, after the Sack of Rome in 1527. Following the death of Cardinal Bembo in 1547, the Tablet of Isis was kept in the museum of the House of Mantua until 1630, was exhibited in the Bibliotheque Nationale in Paris in 1809, and was last known to have been exhibited in the center of Gallery 2 of the Museum of Antiquities in Turin.

The border of the Tablet

contains 4 corner figures plus 74 other figures,
for a total of 78, the dimension of **E6**.

Let the 4 corner figures represent
the 4 Cartan sub - algebra elements of **E6** that
are in its Spin(8) sub - algebra.

The rest of the top bar of the border contains 24 figures,
which represent the vertices of a 4-dimensional 24-cell,
the root vector polytope of 28-dimensional Spin(8).

The top full panel of the Tablet

contains 12 large figures and 2 small figures,
and represents the 14-dimensional rank 2 Lie algebra G2,
the Lie algebra of the automorphism group of the Octonions.

The two side central full panels of the Tablet

each contain a top level with 3 large and 1 small figures,
and a bottom level with 3 large figures,
and each represents a 7-dimensional sphere S7.

Together, the top and side central full panels
represent the fibre-product $G2 \times S7 \times S7 = Spin(8) = D4$:

The center central full panel contains 7 large figures,
and represents the 7-sphere that
represents the 7 imaginary Octonions $\{i, j, k, E, I, J, K\}$:

The center part of the bottom full panel contains 8 large
figures,
and represents the 8-dimensional Octonions $\{1, i, j, k, E, I, J, K\}$:

Taken together, the center central and center bottom full
panels
represent the $7+8=15$ -dimensional 15-sphere,

which has a Hopf fibration into the 7-sphere and the 8-
sphere.

The two side bottom full panels

each contain one large figure separated from
the central part by a barrier, or large figure in a box.
The 2 large figures represent the $\{F, G\}$ elements

of the 10-dimensional Sephirot algebra,
and the prominent separating figure-in-box figures indicate
that an important property (division algebra) is lost
when you go from the 8-dim Octonions to
the 10-dim Sephirot algebra, which is then represented by
the entire bottom full panel:

Another Egyptian representation of the **Tarot**
may be found in the [design of the Temple at Luxor](#),
which also is related to the [D4-D5-E6 physics model](#),
and to [sedenions](#).

References:

The **Tarot**, by Cynthia Giles, Fireside (1992, 1994);
The Encyclopedia of **Tarot**, vol. I, by Stuart R. Kaplan,
U. S. Games Systems, Inc. (1978);
The Isiac Tablet, by W. Wynn Westcott,
The Philosophical Research Society, Inc. (1976);
The Secret Teachings of All Ages, by Manly P. Hall,
The Philosophical Research Society, Inc. (1988).

Sephirot and [Torah](#):

The Sephirot is a pattern of 10 vertices linked by 22 lines.

This diagram of the **Sephirot** (and the English words for each vertex) come from a figure on page 193 of the book *The Jew in the Lotus*, by Rodger Kamenetz (HarperCollins 1994). I added the 3 colors for the lines. There exist other, slightly different, arrangements of the **22** lines, such as those shown on the [web pages of Michael Graffam](#).

The **Sephirot** has some structure that is similar to the structure of [Singularities](#).

The **22** lines can be put in correspondence with the **22** letters of the [Hebrew alphabet](#).

The [Hebrew alphabet has 22 letters](#)

(compare the 0 plus 21 Major Arcana of the [Tarot](#));

3 are Elementary (compare Quaternion imaginaries)(**green Sephirot** lines);

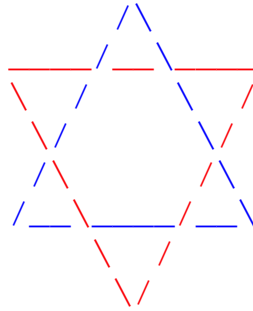
7 are Double (compare [Octonion imaginaries](#))(**red Sephirot** lines); and

the remaining 12 are Simple (compare the [12 Branches](#))(**cyan Sephirot** lines);

as shown in this table that lists a correspondence with ASCII characters that can be used in an internet version of the [Torah](#):

Elementary	Double	Simple	Final
ALEF	A		
	BET	B	
	GIMEL	G	
	DALET	D	
		HEY	H
		VAV	V
		ZAYIN	Z
		HET	X
		TET	+
		YUD	Y
	KAF	K	
		LAMED	L
MEM	M		
		NUN	N
		SAMEH	\$
		AYIN	O
	PEH	P	
		TZADE	C
		QOF	Q
SHIN/SIN	S		
	RESH	R	
	TAV	T	
			KAF SOFIT k
			MEM SOFIT m
			NUN SOFIT n
			PEH SOFIT p
			TZADE SOFIT c

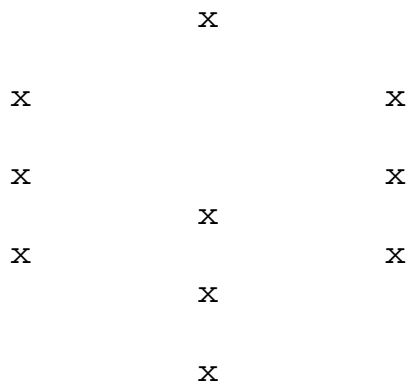
The 12 Simple letters correspond to the 12 vertices (both concave and convex) of the [Mogan David](#):



In addition to the **22** Hebrew letters, there are 5 Finals that also appear in the [Torah sequence](#). [Stan Tenen](#) is studying relationships between the **22 Hebrew letters and the 5 Final**, and has shown [how the 27 letters correspond to a Magic Cube](#).

The **Sephirot** has $3+7 = 10$ vertices (compare the [10 Stems](#)).

It is basically 3 columns:

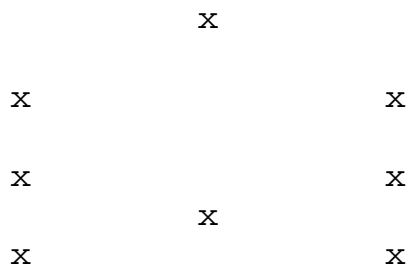


3 vertices - 4 vertices - 3 vertices

The pattern of 10 vertices could correspond to the 10-dimensional Poincare group or the 10-dimensional compact Spin(5) deSitter group, by letting the left column represent Spin(3) rotations, the right column represent Spin(3) Lorentz boosts, and the central column represent 4-dimensional spacetime.

The central column has a 1+3 structure like spacetime, with the top vertex representing time.

Consider the 8 vertices:



Now consider the Octonions, with basis $\{1, i, j, k, E, I, J, K\}$.

The 8-vertex set could represent the Octonions:

	1	
i		I
j		J
	E	
k		K

This part of the **Sephirot** could represent the Octonion vector representation space of the D4 Lie algebra Spin(8) of the [D4-D5-E6-E7 physics model](#).

What about the other two vertices, F and G?

	1	
i		I
j		J
	E	
k		K
	F	
	G	

If they are added to the Octonionic 8 vertices, you get the 10-dimensional vector representation space of the D5 Lie algebra Spin(10) of the [D4-D5-E6-E7 physics model](#).

The D5 Lie algebra Spin(10) is 45-dimensional, representing all possible connecting lines between the 10 vertices of the **Sephirot**.

The traditional Jewish Rabbinical Kabbala uses only **22** of the 45 lines that connect **Sephirot** vertices.

Those **22** lines, plus the 10 vertices, form a total of 32 things, called the 32 Paths of Wisdom.

The 32 Paths of Wisdom correspond to the 32-dimensional full Spinor representation of D5 = Spin(10).

Adding the 45 dimensions of the adjoint representation of D5 and the 32 dimensions of the full Spinor representation of D5 plus 1 more dimension (mathematically, a complex U(1)), gives the 45+32+1=78-dimensional Lie algebra E6 of the [D4-D5-E6-E7 physics model](#).

Why does the Kabbala use only 22 lines ?

There may be many reasons.

One reason may be to show underlying [Octonionic](#) structure:

2 lines connect i to j and j to k
orienting the [associative triangle](#) ijk;

6 lines connect ijk to E and E to IJK
defining the [co - associative square](#) EIJK
whereby E acts to mirror ijk and IJK;

3 lines connect ijk to IJK
identifying the triangle subspace
of the EIJK co - associative square;

2 lines connect I to J and J to K
orienting the triangle subspace
of the EIJK co associative square;

2 lines connect ij to JI
defining i and j as
the [algebraically independent generators of the Quaternions](#);

3 lines connect 1 to iEI
defining the [associative triangle](#) iEI;

2 lines connect E to F and F to G
defining EFG as a mirror of IJK and of ijk; and

2 lines connect k to F and F to K
orienting the triangle kFK related to
the associative triangle kEK.

What about the 23 lines that are not shown on the **Sephirot**?

They also indicate Octonionic structure:

Since i and 1 form the complex numbers,

there is a line from i to 1

but the 2 lines from j or k to 1 are omitted;

Since I mirrors i,
 the 2 lines from J or K to l are omitted;
 Since k is not algebraically independent,
 the 1 line from k to i is omitted;
 Since K mirrors k,
 the 1 line from K to I is omitted;
 Since k and IJ are in mirror image triangles,
 the 2 lines from k to I and from k to J are omitted;
 Since K mirrors k,
 the 2 lines from K to i and from K to j are omitted;
 Since G is not Octonion.
 and is algebraically dependent on E and F through EFG,
 G is connected only to F
 and the other 8 lines from G are omitted; and
 Since F, also not Octonion, is the middle element of EFG,
 and E mirrors i and F mirrors j,
 the 1 line from F to l is omitted,
 but is implicitly defined through E.
 Since F is algebraically independent of E within EFG,
 the mirror property of F is shown by the kFK lines
 from F to k and from F to K.
 The 4 lines of the iFI and jFJ are omitted,
 but are implicitly defined through E.

The 5 implicit lines from F correspond to the 5 Finals.
 Added to the **22** explicit Hebrew letter lines,
 the full 27-letter alphabet of the [Torah sequence](#) is formed.

Since EFG is a mirror of IJK and of ijk,
 and
 since ijk, the imaginary Quaternions, form a 3-sphere S3,
 and
 since l represents a point,
 a nice representation of the **Sephirot**
 is by a point and three 3-spheres:

1

S3

S3

S3

What if you expand the Quaternionic 3-spheres S3
 to Octonionic 7-spheres S7 ?

Then you get the configuration:

1

S7

S7

S7

with $1 + 3 \times 7 = 22$ vertices,
corresponding to the **22** lines of the **Sephirot**,
and to the **22** letters of the Hebrew alphabet,
and to the [21 Major Arcana plus 0 of the Tarot](#),
and to the 21-dimensional [Lie algebra](#) Spin(7) plus U(1).

If you connect all **22** vertices to each other,
you would have $22 \times 21 / 2 = 231$ lines,
corresponding to pairs of the **22** Hebrew letters.

Papyrus of Ani and Four Sons of Brahma

The story begins here, in italics, with the author's annotations below each passage.

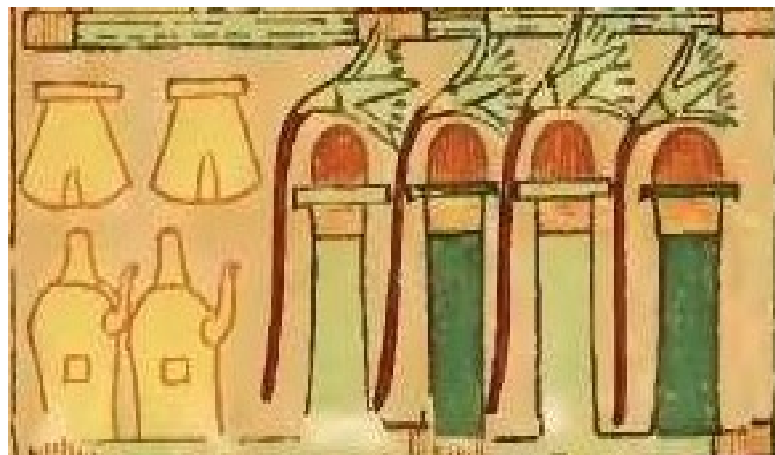
The four Kumaras roamed around at their free will with their cosmic powers all over the universe.

This sentence reveals that the Four Brothers belong to the stable 8 x 8 Satvic form of matter, and that they rotate outside the nucleus, which is symbolized by Vishnu, below. Thus, they are probably electrons or photons, since they roam the entire Universe. In the Ani Papyrus, they must be lighter than a feather or risk being eaten by the crocodile figure.

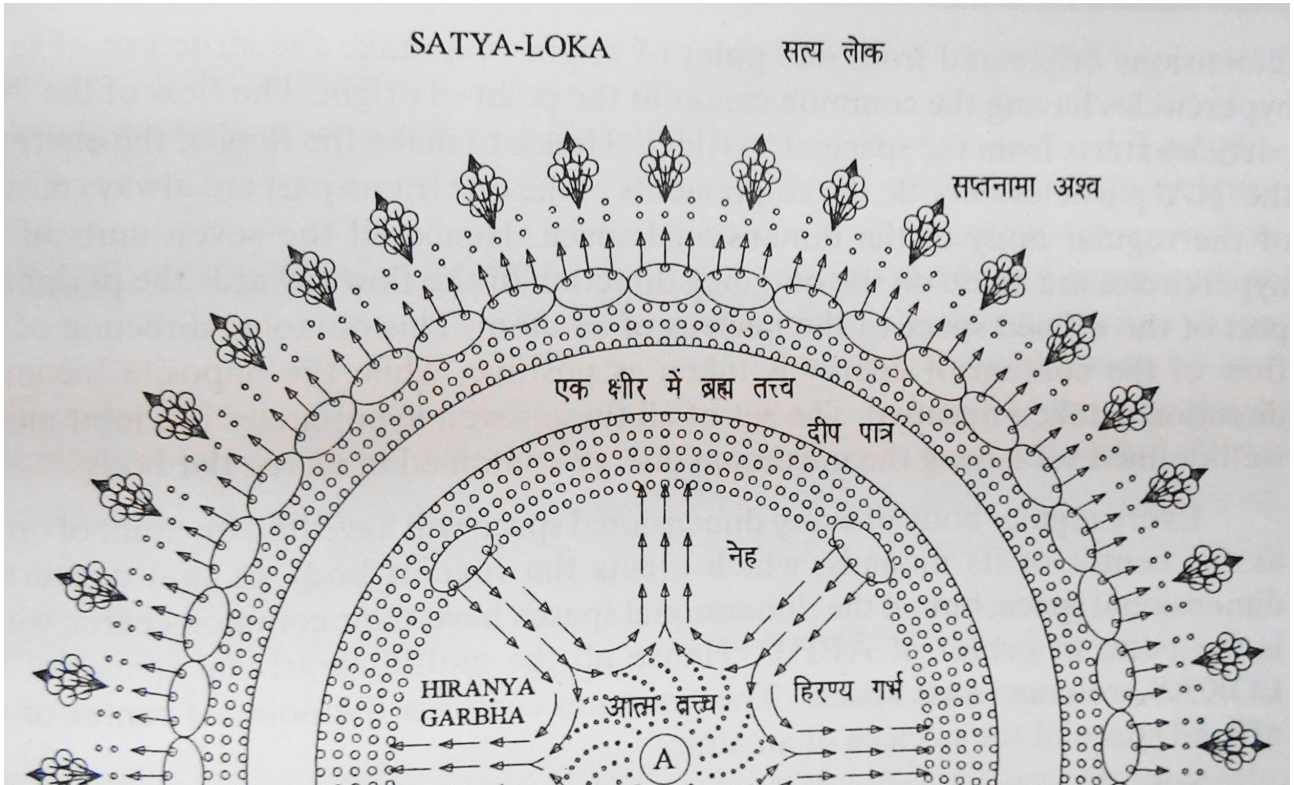




Not stated here, the four brothers are unable to procreate, and thus raise the ire of Brahma, their father. In Vedic Particle Physics, Brahma symbolizes Dark Matter. The Four Sons may be represented in the Ani Papyrus by groups of four symbols, such as the four beer containers, or the four lotus flowers.



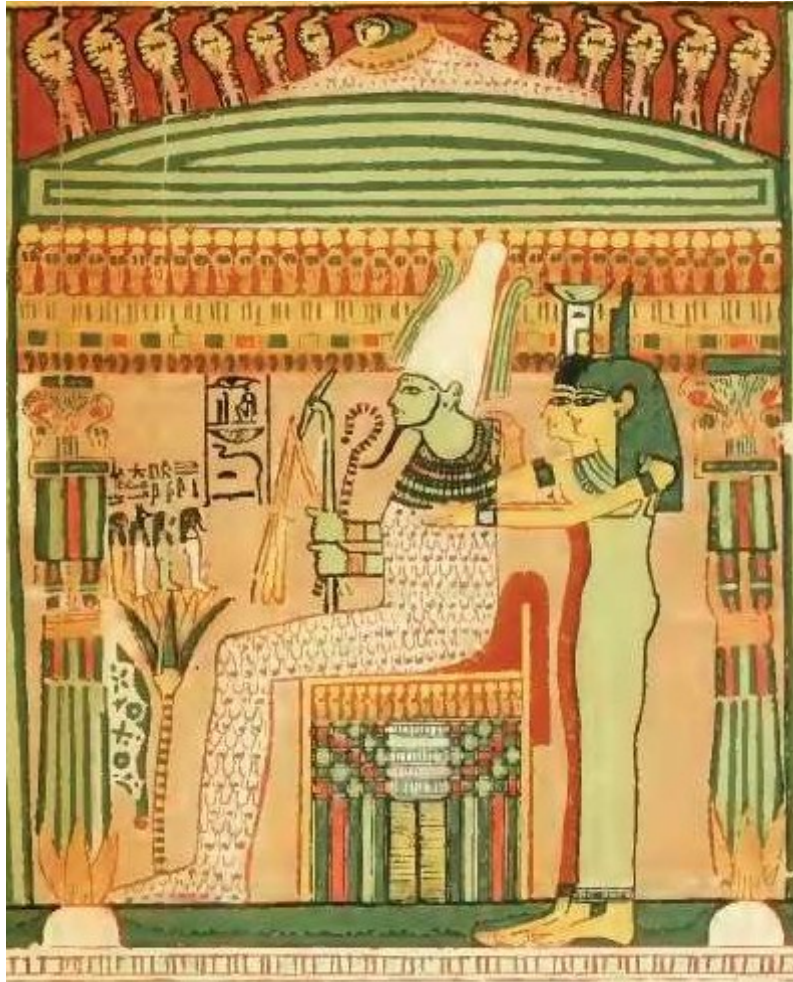
Vishnu exists at the atomic nucleus and is symbolized by the letter A in Vedic Particle Physics.



A sits at the center of the atomic nucleus, extruding RTA, which is functional Dark Matter. The next level is the Hiranya Garbha, exchanges flow with the nuclear center. Note the direction of the arrows. The exterior consists of H7 Hyper Sphere particles.

During one of their sojourns, they arrived at [Vaikuntha](#), the abode of Vishnu. The city, with the residence of Vishnu located at the center of seven circular walls, is considered as a place of bliss and purity. It has seven gates of entry. The four Kumaras passed through the first six gates without any hindrance.

Vaikuntha symbolizes the atomic nucleus, where Vishnu resides, and which may contain seven openings, or Octonionic spaces named Spinors in nuclear physics. Alternatively, the seven Lokas or atomic levels outside of the atomic nucleus may be referred to here by this passage.



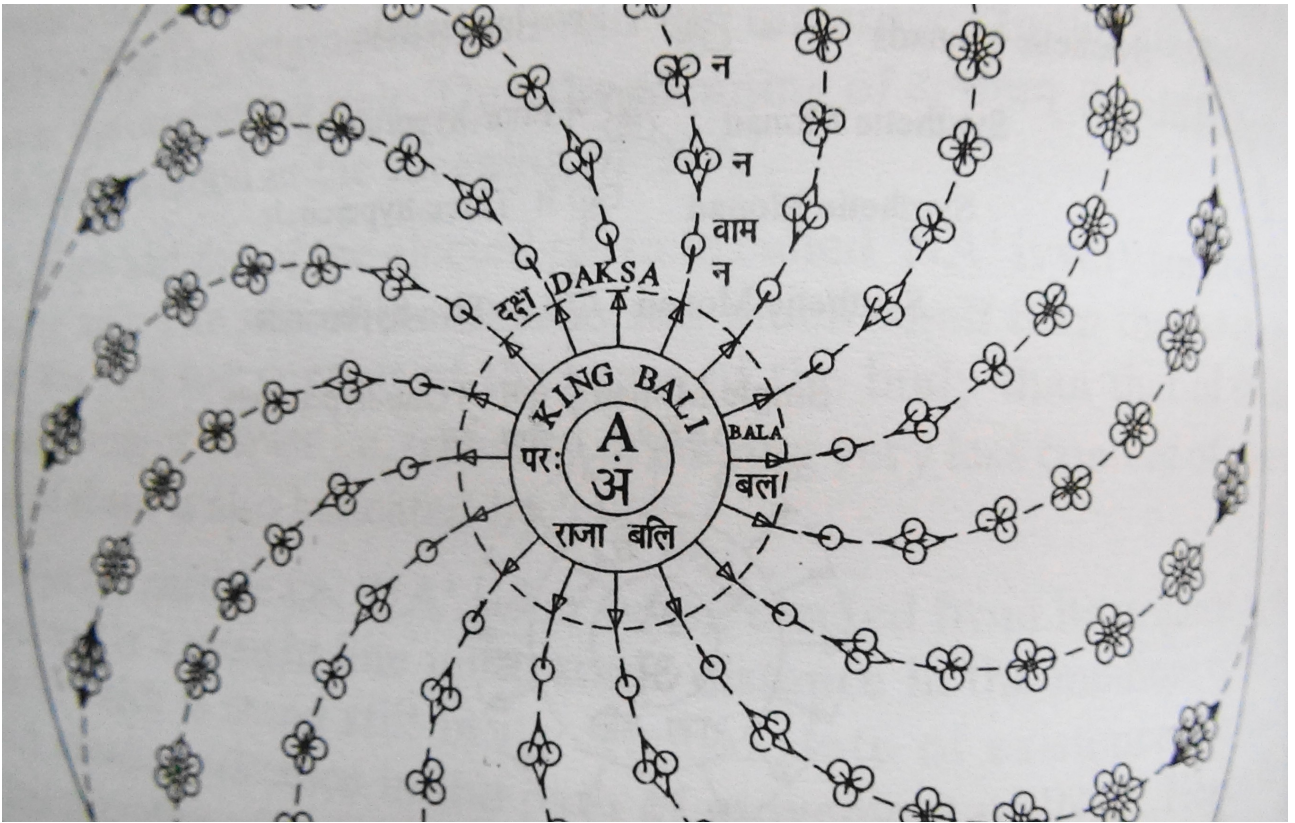
Note the four tiny human figures facing Osiris, the equivalent of Shiva in Egyptian symbolism. Osiris wears the white crown, which is associated with the 22 nomes (administrative units) of the Nile Delta. The number 22 corresponds to the number of letters in the Hebrew alphabet, and so has relations with Cabala and Tarot. Twelve cobras guard the top register.

The seventh gate was guarded by [Jaya and Vijaya](#), the two [dvarapalas](#) (door-guards) of Vishnu's palace. The angry guardians stopped the four Kumaras and laughed at them since they looked like children and were also naked, and did not permit them to enter through the seventh gate. The four Kumaras were perplexed by the behaviour of the gatekeepers, as they had not faced such a situation and ridicule anywhere else. They expected Jaya and Vijaya to be like their master Vishnu, who does not differentiate among beings.



The telekinetic couple arrives at the gates, which stand in front of the 42 Assessors. Just as the Four Sons were confronted by two guards, this couple confronts guardians at the gates, and continue to perform their telekinesis.

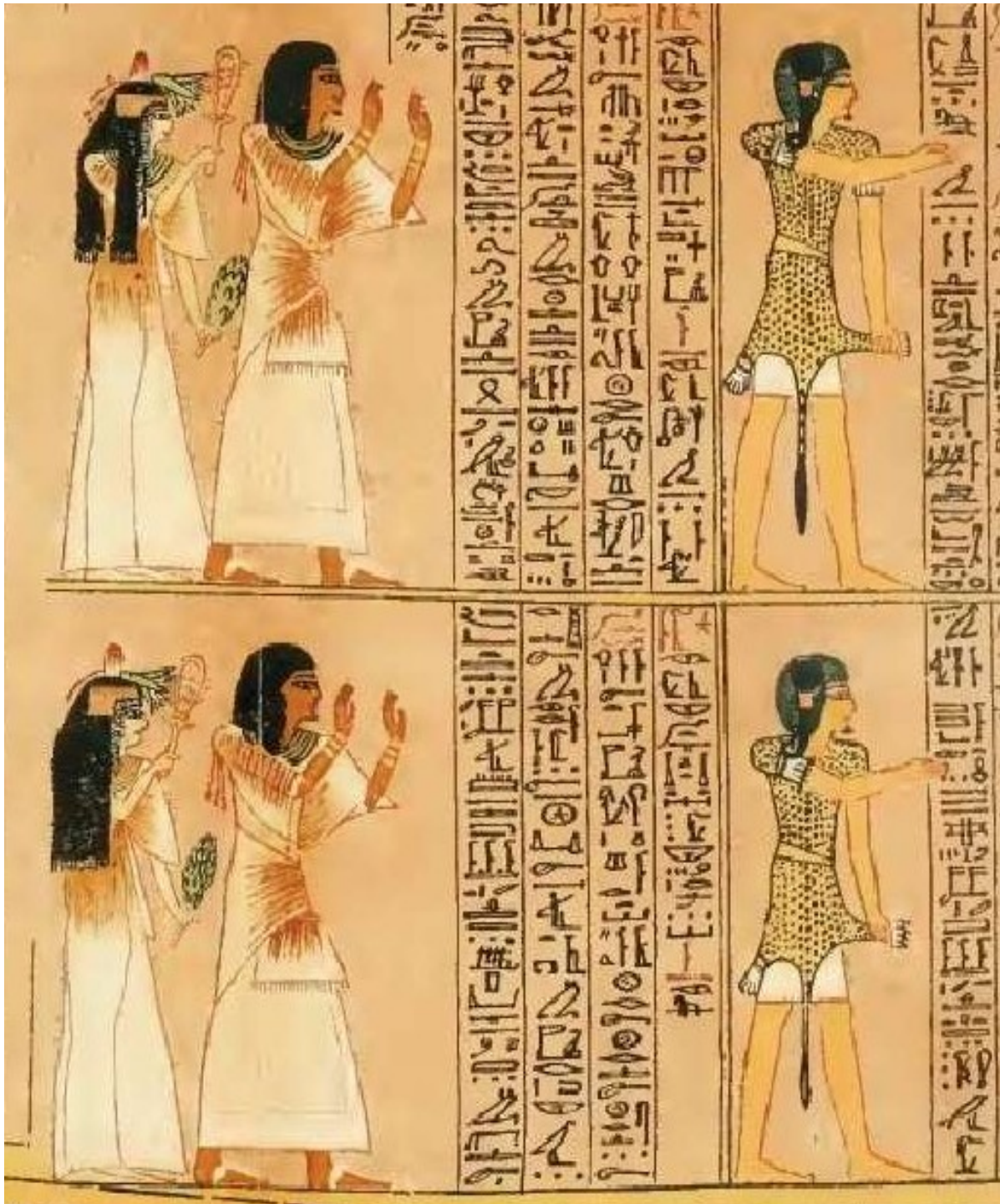
The Four Brothers are moving from the electron shells of seven negative Loka, past the seven positive shells or Loka adjacent to the atomic nucleus. As in western nuclear physics, the shell closest to the nucleus admits only two electrons, as in the Hydrogen and Helium atoms. In any event, electrons may not enter the Dark Matter nucleus without the consent of the nucleus itself, or the nuclear ruler.



The nuclear center in Vedic Particle Physics, denoted by the A, surrounded by King Bali. RTA Dark Matter emanates from the center in 16 channels, forming Na Particles and eventually the H7 Hyper Sphere, which is probably the isomorph of the S7 Sphere (Hopf or Bloch Fibration).

Enraged, the Kumaras cursed them to be born on earth thrice, as three villains with characteristics of "lust, anger and greed". The gatekeepers accept the curse and bowed to the Kumaras and begged for their forgiveness.

The two electrons in the first nuclear shell probably modulate through three phases into different levels of particles.



In the Ani Papyrus, two guards eventually allow the telekinetic couple to pass into the abode of Osiris.

Vishnu, who learned of the incident, appeared before the Kumaras, in all his glory with his retinue. The four Kumaras, who were on their first visit to Vaikuntha, took in by the sight and the glittering divine figure of Vishnu. With deep devotion, they appealed to him to accept them as his devotees and allow them to offer worship at his feet for all time to come and let his feet be their final emancipation.

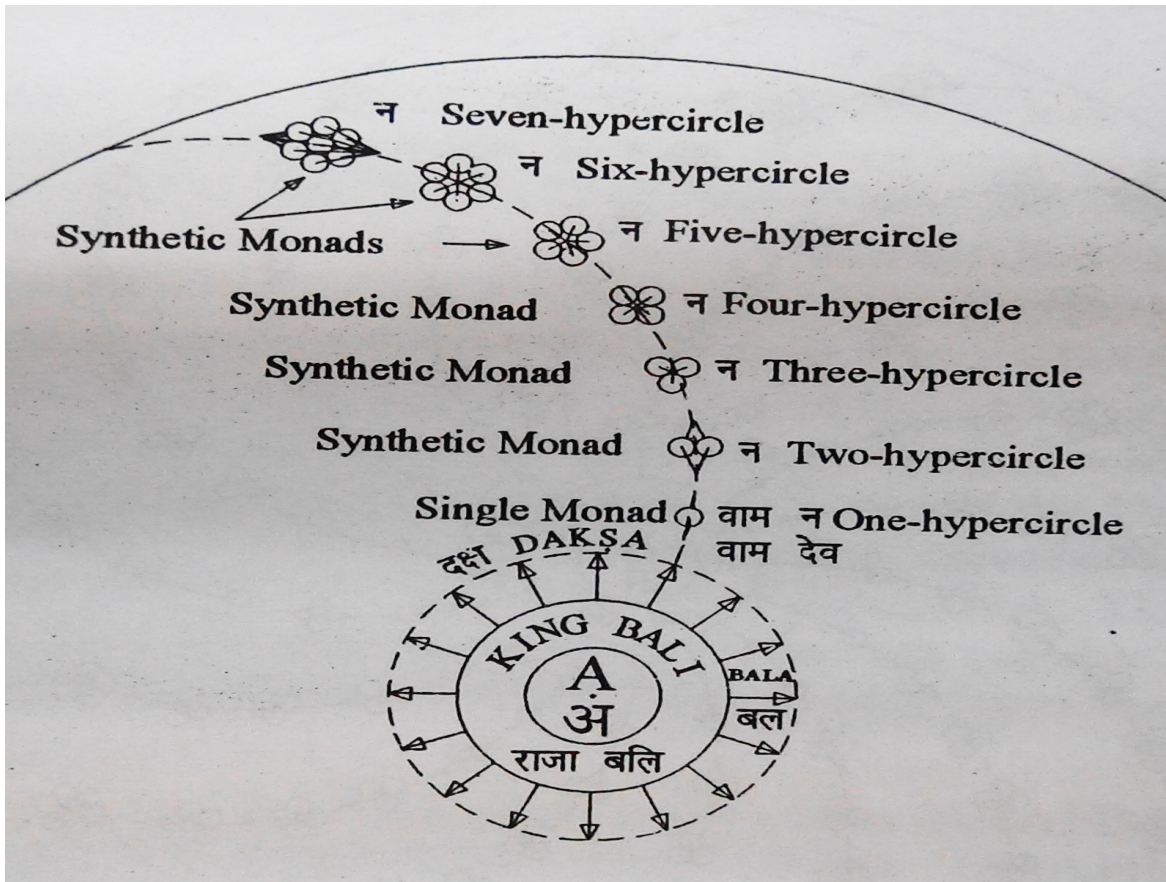
Vishnu complied with their request and assured Jaya and Vijaya that they would be born as demons on earth but would be released from all births by an [avatar](#) of Vishnu. The two guards were dismissed by Vishnu to go and suffer the curse of the Kumaras on Earth, and only afterward, return to his abode, after the end of the curse. The two banished guards were then born on Earth, at an inauspicious hour, to the sage [Kashyapa](#) and his wife [Diti](#) as [asuras](#) who were named [Hiranyakashipu](#) and [Hiranyaksha](#).^{[2][17]}



Four small human figures, standing on a large lotus blossom, face Osiris and Isis, the Egyptian equivalent of Shiva and Parvati. Isis holds the Ankh symbol, which could signify Thaamasic Dark Matter, non – functional Dark Matter of the Substratum, which exists eternally, whether or not a Universe exists, unseen and invisible.

Vishnu Loka

Atomic shells are called Lokas in Vedic Particle Physics, so the Vishnu Loka is the same as A above, the atomic nuclear center.



Vaikuntha (Sanskrit वैकुण्ठ, *vaikunṭha*), **Vaikuntha-loka**, **Brahmaloka-sanatana** or *Abode of Brahman*, *Brahmajyoti*, **Param Padam** ('supreme abode'), or **Paramapadam** is the home of the Supreme Lord Vishnu. It is the eternal abode of *Narayana* or *Vishnu* or *Hari*, his consort Lakshmi, and Shesha, upon whom they rest.^[1]^[not in citation given] In most of the extant Puranas, and Vaishnava traditions, *Vaikuntham* (Vishnuloka) is located in the direction of the *Makara Rashi* ([Shravana Zodiac](#)) which coincides with the Capricorn constellation. Vishnu's eye is supposed to be located at the South Celestial Pole as well.

The [Rig veda](#) (1.22.20) states,

तद्विष्णोः परमं पदं सदा पश्यन्ति सूरयः । दिवीव चक्षुराततम्

Om *tad viṣṇoḥ paramam padam sadā paśyanti sūrayaḥ*:

"All the suras (devas) look towards the Supreme Abode of Lord Vishnu", referring to Vaikuntha, the Supreme Abode. Vaikuntha is considered by [Vaishnavites](#) to be the ultimate destination of souls who attain [moksha](#) or liberation.^[citation needed]

Vaikuntha is known as **Paramdhama** where liberated souls dwell for eternity enjoying pure bliss and happiness in the company of God Narayana or Vishnu. *Vaikuntha* is beyond the periphery of the material universe and hence, cannot be perceived or measured by material science and logic.^[citation needed]

Ksheera Sagara or Ocean of milk is known to be the topmost realm in the material universe where Sheshashayee Lord Vishnu rests on Ananta Shesha. Cosmologically, the Ksheera Sagara is supposed to be situated to the South of the Jambudvipa-globe (the Earth-sphere), and is depicted as being in the Southern Hemisphere in related Hindu Cosmography (Cartography).

The Ksheera Sagara is sometimes known as local Vaikuntha of the material universe which is approachable by devas or [demigods](#) in order to meet Lord Vishnu in case of any emergency or disturbance in the equilibrium of the universe. Vaikuntha itself, is beyond the material universe and so is free from the universal creation and annihilation which happens again and again.^[citation needed]

Lord Brahma was shown a glimpse of the eternal and supreme abode Vaikuntha, by Supreme Lord Narayana at the time of the creation of the cosmos when [Brahma](#) satisfied Lord Narayana by the penance after being born on the lotus emanated from the navel of Lord Narayana (Vishnu). According to the [Bhagavata Purana](#), which is considered to be the essence of vedic knowledge and the greatest of all puranas^[2]^[need quotation to verify]^[3]^[not in citation given], this event is described as follows:^[4]

The Personality of Godhead, being thus very much satisfied with the penance of Lord Brahma, was pleased to manifest His personal abode, Vaikuntha, the supreme planet above all others. This transcendental abode of the Lord is adored by all self-realized persons freed from all kinds of miseries and fear of illusory existence.^[5]

In that personal abode of the Lord, the material modes of ignorance and passion do not prevail, nor is there any of their influence in goodness. There is no predominance of the influence of time, so what to speak of the illusory,

external energy; it cannot enter that region. Without discrimination, both the demigods and the demons worship the Lord as devotees.[6]

The inhabitants of the Vaikuntha planets are described as having a glowing sky-bluish complexion. Their eyes resemble lotus flowers, their dress is of yellowish color, and their bodily features very attractive. They are just the age of growing youths, they all have four hands, they are all nicely decorated with pearl necklaces with ornamental medallions, and they all appear to be effulgent.[7]

Some of them are effulgent like coral and diamonds in complexion and have garlands on their heads, blooming like lotus flowers, and some wear earrings. [8] The Vaikuntha planets are also surrounded by various airplanes, all glowing and brilliantly situated. These airplanes belong to the great mahatmas or devotees of the Lord. The ladies are as beautiful as lightning because of their celestial complexions, and all these combined together appear just like the sky decorated with both clouds and lightning.[9]

The goddess of fortune in her transcendental form is engaged in the loving service of the Lord's lotus feet, and being moved by the black bees, followers of spring, she is not only engaged in variegated pleasure -- service to the Lord, along with her constant companions -- but is also engaged in singing the glories of the Lord's activities.[10]

Lord Brahma saw in the Vaikuntha planets the Personality of Godhead, who is the Lord of the entire devotee community, the Lord of the goddess of fortune, the Lord of all sacrifices, and the Lord of the universe, and who is served by the foremost servitors like Nanda, Sunanda, Prabala and Arhana, His immediate associates.[11]

The Personality of Godhead, seen leaning favorably towards His loving servitors, His very sight intoxicating and attractive, appeared to be very much satisfied. He had a smiling face decorated with an enchanting reddish hue. He was dressed in yellow robes and wore earrings and a helmet on his head. He had four hands, and His chest was marked with the lines of the goddess of fortune.[12] The Lord was seated on His throne and was surrounded by different energies like the four, the sixteen, the five, and the six natural opulences, along with other insignificant energies of the temporary character. But He was the factual Supreme Lord, enjoying His own abode.[13]

Papyrus of Ani and Four Sons of Brahma

The story begins here, in italics, with the author's annotations below each passage. The Ani Papyrus features a male and female, who perform telekinesis with their upraised hands probably in state of deep meditation, which is known in India today.

The four Kumaras roamed around at their free will with their cosmic powers all over the universe.

This sentence reveals that the Four Brothers belong to the stable 8 x 8 Satvic form of matter, and that they rotate outside the nucleus, which is symbolized by Vishnu, below. Thus, they are probably electrons or photons, since they roam the entire Universe, and must be lighter than a feather. Vishnu exists at the atomic nucleus and is symbolized by the letter A in Vedic Particle Physics.

During one of their sojourns, they arrived at [Vaikuntha](#), the abode of Vishnu. The city, with the residence of Vishnu located at the center of seven circular walls, is considered as a place of bliss and purity. It has seven gates of entry. The four Kumaras passed through the first six gates without any hindrance.

Vaikuntha symbolizes the atomic nucleus, where Vishnu resides, and which may contain seven openings, or Octonionic spaces named Spinors in nuclear physics. Alternatively, the seven Lokas or atomic levels outside of the atomic nucleus may be referred to here by this passage.

The seventh gate was guarded by [Jaya and Vijaya](#), the two [dvarapalas](#) (door-guards) of Vishnu's palace. The angry guardians stopped the four Kumaras and laughed at them since they looked like children and were also naked, and did not permit them to enter through the seventh gate. The four Kumaras were perplexed by the behaviour of the gatekeepers, as they had not faced such a situation and ridicule anywhere else. They expected Jaya and Vijaya to be like their master Vishnu, who does not differentiate among beings.

The telekinetic couple arrives at the first nuclear shell (left registers below), with its two guards, and the seven gates of the atomic nucleus on the right. Note that the upper gates are guarded by triplets, which might correspond to Pythagorean Triplets or to Hurwitz Triplets, or other sets of triplets.

The Four Brothers move from the electron shells of seven negative Loka, past the seven positive shells or Loka adjacent to the atomic nucleus. As in western nuclear physics, the shell closest to the nucleus admits only two electrons, as in the Hydrogen and Helium atoms. In any event, electrons may not enter the Dark Matter nucleus without the consent of the nucleus itself, or the nuclear ruler.

Enraged, the Kumaras cursed them to be born on earth thrice, as three villains with characteristics of "lust, anger and greed". The gatekeepers accept the curse and bowed to the Kumaras and begged for their forgiveness.

The two electrons in the first nuclear shell probably modulate through three phases into different levels of particles. Note the four small figures before the Egyptian equivalent of Shiva and Parvati, his wife.

Vishnu, who learned of the incident, appeared before the Kumaras, in all his glory with his retinue. The four Kumaras, who were on their first visit to Vaikuntha, took in by the sight and the glittering divine figure of Vishnu. With deep devotion, they appealed to him to accept them as his devotees and allow them to offer worship at his feet for all time to come and let his feet be their final emancipation.

The Dark Matter at the atomic nucleus will ultimately accept some electrons back into the Thaamic Substratum, provided that those electrons or muons meet the test of the two electrons at the first shell, and the 42 Assessors, which are related to the Sedenions.



Vishnu complied with their request and assured Jaya and Vijaya that they would be born as demons on earth but would be released from all births by an [avatar](#) of Vishnu. The two guards were dismissed by Vishnu to go and suffer the curse of the Kumaras on Earth, and only afterwards, return to his abode, after the end of the curse. The two banished guards were then born on Earth, at an inauspicious hour, to the sage [Kashyapa](#) and his wife [Diti](#) as [asuras](#) who were named [Hiranyakashipu](#) and [Hiranyaksha](#).^{[2][17]}

Tetragens

Wikipedia states that another name for the electrons or Muons is tetragen, and research online shows this to be regarded as a part of the gene code which produces birth defects. Thus the Kumara curse may be played out in reality through this genetic defect.

Bhagavata Purana

Bhagavata Purana 2.9.9
Bhagavata Purana 2.9.10
Bhagavata Purana 2.9.11
Bhagavata Purana 2.9.12
Bhagavata Purana 2.9.13
Bhagavata Purana 2.9.14
Bhagavata Purana 2.9.15
Bhagavata Purana 2.9.16
Bhagavata Purana 2.9.17
Bhagavata Purana 12.13.16

Please see Appendix II for English translations of these slokas. A future version of this paper will provide the Sanskrit characters for these slokas.

Raksasas

The unstable particle which has not got its stationary state of structure of its body and its motion on some orbit of the Loka, becomes the body of the unwanted Raksasa in that Loka of Devas (gods). This body of the Raksasa forms an obstacle to the performing of the Yajna (function) of this process, so this Raksasa is evacuated from the spaces of all the Lokas existing inside the whole atomic nucleus. The body of the God Indra in the form of the Ka particle, a set of ten basic mass particles, plays an important role in evacuating the space of Svarga Loka of the Devas, inside the nucleus, from the bodies of the Raksasas.

This Ka particle gets extra energy from the Marutas flow and of Goddess Sarasvati to make this function of fighting against the Raksasas to evacuate the space of Svarga Loka of the Devas, from them.

The term Raksasas appears in the Rig Veda:

RG – 1 – 33 – 5

परा॑ चिच्छी॒र्षा व॑वृ॒जुस्त॑ इन्द्राय॑ज्वानो॒ यज्व॑भिः॒ स्पर्ध॑मानाः
प्र॒ यद्वि॑वो ह॒रिवः॑ स्थातरु॒ग्र निर॑व्र॒ताँ अ॑ध॒मो रोद॑स्योः

Oh, Indra! The units of creation which are not taking part in the process of Yajna are competing with those units of Devas. These sub – atomic particles form obstacles to the Yajna performance, which the Devas are performing in a well – defined way. The Raksasas are not charged with any Yajna function in their bodies. Hence, these Raksasas changed their paths, taking about – turn of their heads of Energy Vectors from the axes of their movement, and radiate from that space which was occupied by the Devas. Oh God Indra, you have the horses (Asva) in the form of vectors of force and energy and you are always consistent in the performing process of the Yajna of the Devas. These bodies of Raksasas are in the cyclic form of RTA and are called by the name of Vrta. (Sharma pp. 440 - 441)

अयु॑युत्सन्न॑नवृ॒द्यस्य॑ से॒ना॒मया॑तयन्त॑ क्षि॒तयो॑ नव॑ग्वाः
वृ॒षा॒युधो॑ न व॒ध्रयो॑ निर॑ष्टाः प्र॒व॒द्भि॒रिन्द्रा॑च्चि॒तय॑न्त॑ आयन्

The units of Raksasas which were not taking part in the Yajna function of the Devas, desired to fight war with the army of graceful god Indra. This military force of Indra was encouraged by such groups of Devas, which were crossing the nine stages of development by taking nine steps , one by one, systematically of their path in the function of performance of the Yajna of creation. This Yajna was performed by such Rtvijas over nine months (the gestation period of a human fetus).

The nine steps include the five stages inside the Suvaha Loka, one stage of Bhuvaha Loka, one stage of Bhuhu Loka, one stage of the negative Patala Lokas and a final stage of the Naga Loka, which releases radiation energy into the outer space of the RCA of an atom.

After all the radiation releasing units of the eight hyper circles H8 of the energetic space of the RCA of an atom, this outer space of the Dyou consists of low – intensity space energy, which makes all the radiation – releasing units inert with their concepts of charges. These inert RTA units run far away from god Indra, converting themselves from the stage of mass – containing particles into the quanta of RTA energy of pure Dark Matter.

RG – 1 – 33 – 7

त्वमेतान्द्रुदतो जक्षतश्चायोधयो रजस इन्द्र पारे
अवादहो दिव आ दस्युमुच्चा प्र सुन्वृतः स्तुवृतः शंसमावः

How does the god Indra eliminate these unwanted obstacle creating Raksasas units from the highly – intensified space energy of the RCA of an atom?

Oh, God Indra! You killed these weeping and laughing Raksasas, who are called by the name Vrtras, inside the part of the RCA of an atom which has Paraha state of its RTA inside its space. You have thrown the dead bodies of these Raksasas down from the high space of Dyou, after burning them. You have created security by your own force, who is getting the Soma extract and prays before you to seek your help.

This concept repeats at

RG – 1 – 164 – 50

यज्ञेन यज्ञमयजन्त देवास्तानि धर्माणि प्रथमान्यासन्
ते ह नाकं महिमानः सचन्त यत्र पूर्वं साध्याः सन्ति देवाः

and

RG – 1 – 95 – 10

धन्व॒न्त्स्रो॑तः कृ॒णु॑ते गा॒तु॒मूर्मि॑ शु॒क्रैरु॒र्मिभि॑र॒भि न॑क्षति॒ क्षाम्
विश्व॑ा स॒नानि॑ ज॒ठरे॑षु धत्तेऽन्त॑र्न॒वासु॑ चरति प्र॒सूषु॑

In the space of barren land of an RCA, where no Samkalpa arises to develop the performance of any type of Yajna, or any type of growth inside the flow of RTA of that RCA, in the space of that very land, the flow of RTA of Angira is made capable to move forward by the god Agni. This flow of RTA of Angira presents the waves in its content and irrigates the earth of Asna and Ghrta Prstha by mixing bright waves of Samkalpas in all the bodies of the units of particles of these parts everywhere. These final particles represent the accumulation of all the properties of the previous particles in their stomachs and move among those new particles, which behave just like the mothers which give birth to their new issues and breast feed them.

Raksasas

Wikipedia

Vedic and Puranic stories[[edit](#)]

Death of Hiranyaksha, the son of Diti at the hands of Vishnu's [avatar](#), [Varaha](#). It is said^{[citation needed](#)} that Rakshasas were created from the breath of [Brahma](#) when he was asleep at the end of the [Satya Yuga](#). As soon as they were created, they were so filled with bloodlust that they started eating Brahma himself. Brahma shouted "*Rakshama!*" (Sanskrit for "protect me!") and [Vishnu](#) came to his aid, banishing to Earth all Rakshasas (thus named after Brahma's cry for help).

Their literary origins can be traced to Vedic sources through Hymn 87 of the tenth mandala of the Rig Veda. Here they are classified amongst the Yatudhanas, demonic creatures who consume the flesh of the humans.^{[\[1\]](#)[\[2\]](#)}

Some sources credit [Kashyapa](#) with the origin of the rakshasa, although the Hymns of the Vedas for artistic reasons fail to do so. The knowledge of the Rakshasa lineage traceable to Kashyapa may have been known at the time of the compilation of the Vedas, but lineages are altogether foreign to the style of the Vedas and thus would have appeared out of place. This might explain why the Puranans and Hindu epics elaborate on their lineage, but the Vedas do not.

Origins[[edit](#)]

Kashyapa was married to the thirteen daughters of Daksha. Among them were Aditi, Diti and Danu.

His sons with Danu are the Danavas

His sons with Diti are the Daityas

His sons with Aditi are the Adityas, the Devas and called Suras.

Description[[edit](#)]

Rakshasa were most often depicted as ugly, fierce-looking and enormous creatures and with two [fangs](#) protruding down from the top of the mouth as well as sharp, claw-like fingernails. They are shown as being mean, growling like beasts and as insatiable [cannibals](#) who could smell the scent of flesh. Some of the more ferocious ones were shown with flaming red eyes and hair, drinking [blood](#) with their palms or from a human skull (similar to [vampires](#) in later Western mythology). Generally they could fly, vanish, and had *Maya* (magical powers of illusion), which enabled them to change size at will and assume the form of any creature. The female equivalent of asura is asuri.^{[\[3\]](#)}

In Hindu epics^[edit]

In the world of the [Ramayana](#) and [Mahabharata](#), Rakshasas were a populous race. There were both good and evil rakshasas, and as warriors they fought alongside the armies of both good and evil. They were powerful warriors, expert magicians and illusionists. As shape-changers, they could assume different physical forms, and it was not always clear whether they had a true or natural form.^[citation needed] As illusionists, they were capable of creating appearances which were real to those who believed in them or who failed to dispel them. Some of the rakshasas were said to be man-eaters, and made their gleeful appearance when the slaughter on the battlefield was at its worst. Occasionally they serve as rank-and-file soldiers in the service of one or the other warlord.

Aside from its treatment of unnamed rank-and-file Rakshasas, the epic tells the stories of certain members of the race who rose to prominence, some of them as heroes, most of them as villains.

In the *Ramayana*^[edit]

The Battle of Lanka pitted an army of Rakshasas under [Ravana](#) against an army of [Vanaras](#) or monkeys under [Rama](#) and [Sugriva](#).

Taraka

[Ravana](#), a Rakshasa with ten heads, was the King of the Rakshasas and the mortal enemy of [Rama](#), the hero of the [Ramayana](#). In the [Ramayana](#) (Book III: Vana Parva, Section 271 ff.), the Sage [Markandeya](#) recounts the story of how Ravana kidnapped Rama's wife [Sita](#) and whisked her off to his stronghold [Lanka](#), and how Rama, aided by the monkey King [Sugriva](#) and his army of monkeys, laid siege to Lanka, slew Ravana, and rescued Sita.

[Vibhishana](#), [Ravana](#)'s younger brother, was a rare good-hearted Rakshasa; he was beautiful, pious and assiduous in his religious observances. When [Brahma](#) granted him a boon, he asked never to swerve from the path of righteousness and to be illumined by divine knowledge (Book III, Vana Parva: Section 273.) Vibhishana joined [Rama](#) in his campaign against Ravana, and helped Rama's army to cross the ocean into Lanka (Section 281). When invisible Rakshasas infiltrated Rama's camp, Vibhishana caused them to become visible, and Rama's monkey soldiers destroyed them (Section 283). After Rama's final victory over Ravana, the loyal Vibhishana was made king of [Lanka](#) (Section 289).

[Kumbhakarna](#) was another brother of [Ravana](#). A fearsome warrior and master of illusion, he slept through most of the Battle of [Lanka](#) (having long before requested and received a gift of long-lasting sleep from [Brahma](#)), but arose and took the field when Ravana awakened him with alarming news about the progression of the conflict. Upon marching out of the city, Kumbhakarna was immediately swarmed by [Rama](#)'s monkeys,

causing him only to laugh and to wreak great mayhem among them. When the monkey king [Sugriva](#) attacked, Kumbhakarna grabbed him and started to drag him off. It was at that point that [Rama](#) and his brother [Lakshmana](#) used arrows and a secret [Brahmastra](#) ("Brahma's weapon") to kill [Kumbhakarna](#), dropping the Rakshasa like a huge tree cleft in twain by a thunderbolt. (Ramayana, Book III: Vana Parva, Section 285.)

Other Rakshasa that appear in the Ramayana include [Kabandha](#), [Tataka](#), [Surpanakha](#), [Maricha](#), [Subahu](#), [Khara](#), [Indrajit](#), [Prahasta](#), [Akshayakumara](#), and [Atikaya](#).

In the Mahabharata[\[edit\]](#)

The [Pandava](#) hero [Bhima](#) was the nemesis of forest-dwelling Rakshasas who dined on human travellers and terrorized human settlements.

[Hidimba](#) was a cannibal Rakshasa who was slain by Bhima. The [Mahabharata](#) (Book I: Adi Parva, Section 154) describes him as a cruel cannibal with sharp, long teeth and prodigious strength. When Hidimba saw the Pandavas sleeping in his forest, he decided to eat them. He made the mistake of sending his sister [Hidimbi](#) to reconnoiter the situation, and the damsel fell in love with the handsome Bhima, whom she warned of the danger. Infuriated, Hidimba declared himself ready to kill not only the Pandavas but also his sister, but he was thwarted by the heroism of Bhima, who defeated and killed him in a duel.

Hidimbi - the sister of Hidimba

[Ghatotkacha](#), was the son of Bhima and Hidimbi. His name refers to his round bald head with *ghata* meaning pot and *utkacha* meaning head in Sanskrit.

Ghatotkacha, when he was young, lived with his mother Hidimbi, when one day he had a fight with [Abhimanyu](#), his cousin, without knowing that Abhimanyu was Arjuna's son.

Ghatotkacha is considered to be a loyal and humble figure. He made himself and his followers available to his father Bhima at any time; all Bhima had to do was to think of him and he would appear. Like his father, Ghatotkacha primarily fought with the mace.

His wife was [Ahilawati](#) and his son was [Barbarika](#).

In the Mahabharata, Ghatotkacha was summoned by Bhima to fight on the Pandava side in the [Kurukshetra War](#). Invoking his magical powers, he wrought great havoc in the Kaurava army. In particular after the death of [Jayadratha](#), when the battle continued on past sunset, his powers were at their most effective (at night).

At this point in the battle, the Kaurava leader [Duryodhana](#) appealed to his best fighter, [Karna](#), to kill Ghatotkacha as the whole Kaurava army was

coming close to annihilation due to his ceaseless strikes from the air. Karna possessed a divine weapon, Shakti, granted by the god Indra. It could be used only once, and Karna had been saving it to use on his arch-enemy, the best Pandava fighter, Arjuna.

Unable to refuse Duryodhana, Karna used the Shakti against Ghatotkacha, killing him. This is considered to be the turning point of the war. After his death, the Pandava counselor Krishna smiled, as he considered the war to have been won for the Pandavas now that Karna no longer had a divine weapon to use in fighting Arjuna.

There is a temple in [Manali, Himachal Pradesh](#), for Ghatotkacha near the [Hidimba Devi Temple](#).

Bakasur was a cannibalistic forest-dwelling Rakshasa who terrorized the nearby human population by forcing them to take turns making him regular deliveries of food, including human victims. Unfortunately for Bakasur, the [Pandavas](#) travelled into the area and took up residence with a local [Brahmin](#) whose turn had come up to make the delivery. As the [Brahmin](#) and his family debated which one of them would have to be sacrificed, the rugged Bhima volunteered to take care of the matter. Bhima went into the forest with the food delivery (consuming it on the way to annoy Bakasur) and engaged Bakasur in a ferocious wrestling match, which ended with Bhima breaking his opponent's back. The human townspeople were amazed and grateful, and the local Rakshasas begged for mercy, which Bhima granted them on the condition that they give up cannibalism. The Rakshasas agreed to the proposal, and soon acquired a reputation for being peaceful towards humans. (Book I: Adi Parva, Sections 159-166.)

[Kirmira](#), the brother of Bakasur, was a cannibal and master illusionist. He haunted the wood of Kamyaka, dining on human travellers. Like his brother before him, Kirmira made the mistake of fighting the Pandav hero [Bhim](#), who killed him with his bare hands (Book III: Varna Parva, Section 11).

Jatasur was a cunning Rakshas who, disguised as a [Brahmin](#), attempted to steal the [Pandavas'](#) weapons and to ravish their wife [Draupadi](#). Bhima arrived in time to intervene, and killed Jatasur in a duel. (Book III: Varna Parva, Section 156). Jatasur's son was Alamvush, who fought on the side of the [Kauravas](#) at [Kurukshetra](#).

Karna Attacks Ghatotkacha

Rakshasas heroes fought on both sides in the Kurukshetra war.

[Ghatotkacha](#), a hero fighting on the side of the Pandavas, was the son of Bhima and the Rakshasa Hidimbi, the sister of a being slain by Bhima. After performing many heroic deeds on the battlefield and fighting

numerous duels with other great warriors (including the Rakshasa Alamvusha, the elephant-riding king [Bhagadatta](#), and [Aswatthaman](#), the son of [Drona](#)), Ghatotkacha was himself slain by the human hero [Karna](#). In order to defeat Ghatotkacha, Karna found himself compelled to use a one-time secret weapon that he had been intending to reserve for use against his bitter rival [Arjuna](#). When [Arjuna](#) defeated [Karna](#) in battle, it was in no small part because Karna had already expended his secret weapon. (Book VII: Drona Parva, Section 179.)

Alamvusha was a Rakshasa skilled at fighting with conventional weapons and the powers of illusion. According to the Mahabharata, he fought on the side of the [Kauravas](#). [Arjuna](#) defeated him in a duel (Book VII: Drona Parva, Section 167), as did Arjuna's son [Abhimanyu](#) (Book VI: Bhishma Parva, Section 101–102). However, Alamvusha was able to kill [Iravan](#), Arjuna's son by a [Nāga](#) princess [Ulupi](#), when the Rakshasa used his powers of illusion to take on the form of [Garuda](#). Alamvusha was also defeated by [Bhima](#) (Book VII: Drona Parva, Section 107), and he was slain by above-mentioned Rakshasa Ghatotkacha (Book VII: Drona Parva, Section 108).

[Bhasmasura](#)

[Ghatotkacha](#)

[Hidimba](#)

[Hidimbi](#)

[Indrajit](#)

[Khara \(Mythology\)](#)

[Kumbhakarna](#)

[Maricha](#)

[Mahishasura](#)

[Prahasta](#)

[Rava](#)

[Soorapadam](#)

[Subahu](#)

[Tataka](#)

[Vibhishana](#)

[Viradh](#)

[Vatapi](#)

[Raktabija](#)

[Shukra](#), the guru of [Rakshasas](#) and [Asuras](#)

[Jalandhara](#)

[Narakasura](#)

[Rahu](#)

[Raktabija](#)

Conclusion

This paper has demonstrated how the Ani Papyrus of Ancient Egypt tells a story similar to that of the story of Brahma's Four Sons from Vedic Literature. The author hypothesizes that scrutiny of the latter in terms of Scientific Sanskrit will reveal more about the atomic nucleus, where Vishnu resides. At the same time, scrutiny of the hieroglyphs of the Ani Papyrus in the equivalent of Scientific Sanskrit will yield similar or more information about the atomic nucleus.

The correlations between the two documents indicates that both ancient cultures shared in the same or similar advanced technology, as our own civilization has only relatively recently discovered the Higgs Boson. The question remains: did those two cultures develop similar technology independent of each other; did one borrow the advanced technology from the other; or did the two cultures inherit advanced science and technology from an earlier, more advanced culture?

This paper mark an initial working paper in what may prove to be a rich vein of research in Sanskrit and in Egyptian Hieroglyphs. In earlier papers, the author has shown significant Egyptian knowledge of higher mathematics, including the Exceptional Lie Algebra G2 and the Sedenions. The Ani Papyrus provides perhaps the best description of the 42 Assessors, and these require re – translation in terms of a scientific hieroglyphic, along the lines of Scientific Sanskrit.

The Four Brothers pertain specifically to which concepts of western nuclear physics?

The author believes that the case for the Four Brothers as symbols of the Higgs Boson, which disintegrates into two electrons and two muons, perhaps provides the most apt isomorph to the Four Brothers. Please refer to the Appendix for related Wiki entries, to examine how the Higgs Boson fits closely the description of the Four Brothers, as well as their Egyptian counterparts in the Ani Papyrus given above.

The massive [W+](#), [W-](#), and [Z bosons](#) are known as Vartmas in Vedic Particle Physics, and the author has written about them in an earlier paper on the Vixra server. Bosons are similar to but not exactly the same as Vartmas.

Smith writes about the Bembine Tablet:

The border of the Tablet

contains 4 corner figures plus 74 other figures,
for a total of 78, the dimension of **E6**.

Let the 4 corner figures represent
the 4 Cartan sub - algebra elements of **E6** that
are in its Spin(8) sub - algebra.

The rest of the top bar of the border contains 24 figures,
which represent the vertices of a 4-dimensional 24-cell,
the root vector polytope of 28-dimensional Spin(8).

The top full panel of the Tablet

contains 12 large figures and 2 small figures,
and represents the 14-dimensional rank 2 Lie algebra G2,
the Lie algebra of the automorphism group of the Octonions.

The two side central full panels of the Tablet

each contain a top level with 3 large and 1 small figures,
and a bottom level with 3 large figures,
and each represents a 7-dimensional sphere S7.

Together, the top and side central full panels
represent the fibre-product $G2 \times S7 \times S7 = Spin(8) = D4$:

The center central full panel contains 7 large figures,
and represents the 7-sphere that
represents the 7 imaginary Octonions $\{i, j, k, E, I, J, K\}$:

The center part of the bottom full panel contains 8 large
figures,
and represents the 8-dimensional Octonions $\{1, i, j, k, E, I, J, K\}$:

Taken together, the center central and center bottom full
panels
represent the $7+8=15$ -dimensional 15-sphere,

which has a Hopf fibration into the 7-sphere and the 8-sphere.

In Vedic Particle Physics, the combination of the H7 and H8 Hyper Spheres produce the maxima, and the equivalent operation in western mathematical physics would be the combination of SU 7 and SU 8, involving the Exceptional Lie Algebra E8 and its related group, in what is known as E8 x E8 Heterotic String Theory. There are no larger particles than the 15 Sphere in Vedic Particle Physics. From that point on, particles decay and diminish in size and dimension.

The Bembine Tablet, then, under Smith's analysis, contains the essential components of the nuclear process, the development and growth of nuclear particles. This paper has shown that the Spiritual Geography of Ancient Egypt reflects this nuclear process, and that the mathematics of the nuclear process lie deeply embedded in the Spiritual Geography of Ancient Egypt.

Appendix I

The muon (/ˈmjuˌoʊn/; from the [Greek](#) letter [mu](#) (μ) used to represent it) is an [elementary particle](#) similar to the [electron](#), with unitary negative [electric charge](#) of -1 and a [spin of 1/2](#), but with a much greater mass ($105.7 \text{ MeV}/c^2$). It is classified as a [lepton](#), together with the [electron](#) (mass $0.511 \text{ MeV}/c^2$), the [tau](#) (mass $1777.8 \text{ MeV}/c^2$), and the three [neutrinos](#). As is the case with other leptons, the muon is not believed to have any sub-structure; namely, it is not thought to be composed of any simpler particles.

The muon is an unstable [subatomic particle](#) with a [mean lifetime](#) of $2.2 \mu\text{s}$. Among all known unstable [subatomic particles](#), only the neutron and some [atomic nuclei](#) have a longer decay lifetime; others decay significantly faster. The decay of the muon (as well as of the [neutron](#), the longest-lived unstable [baryon](#)), is mediated by the [weak interaction](#) exclusively. Muon decay always produces at least three particles, which must include an [electron](#) of the same charge as the muon and two [neutrinos](#) of different types.

Like all elementary particles, the muon has a corresponding [anti - particle](#) of opposite charge ($+1$) but equal [mass](#) and spin: the **anti - muon** (also called a *positive muon*). Muons are denoted by μ^- and antimuons by μ^+ . Muons were previously called **mu mesons**, but are not classified as [mesons](#) by modern particle physicists (see [History](#)), and that name is no longer used by the physics community.

Muons have a [mass](#) of $105.7 \text{ MeV}/c^2$, which is about 200 times that of the electron. Due to their greater mass, muons are not as sharply accelerated when they encounter electromagnetic fields, and do not emit as much [bremsstrahlung](#) (deceleration radiation). This allows muons of a given energy to penetrate far more deeply into matter than electrons, since the deceleration of electrons and muons is primarily due to energy loss by the bremsstrahlung mechanism. As an example, so-called "secondary muons", generated by [cosmic rays](#) hitting the atmosphere, can penetrate to the Earth's surface, and even into deep mines.

Because muons have a very large mass and energy compared with the [decay energy](#) of radioactivity, they are never produced by [radioactive decay](#). They are, however, produced in copious amounts in high-energy interactions in normal matter, in certain [particle accelerator](#) experiments with [hadrons](#), or

naturally in [cosmic ray](#) interactions with matter. These interactions usually produce [pi mesons](#) initially, which most often decay to muons.

As with the case of the other charged leptons, the muon has an associated [muon neutrino](#), denoted by ν_{μ} , which is not the same particle as the [electron neutrino](#), and does not participate in the same nuclear reactions.

Muons are unstable elementary particles and are heavier than electrons and neutrinos but lighter than all other matter particles. They decay via the [weak interaction](#). Because [lepton numbers](#) must be conserved, one of the product neutrinos of muon decay must be a muon-type neutrino and the other an electron-type antineutrino (antimuon decay produces the corresponding antiparticles, as detailed below). Because charge must be conserved, one of the products of muon decay is always an electron of the same charge as the muon (a positron if it is a positive muon). Thus all muons decay to at least an electron, and two neutrinos. Sometimes, besides these necessary products, additional other particles that have no net charge and spin of zero (e.g., a pair of photons, or an electron-positron pair), are produced.

The dominant muon decay mode (sometimes called the Michel decay after [Louis Michel](#)) is the simplest possible: the muon decays to an electron, an electron antineutrino, and a muon neutrino. Antimuons, in mirror fashion, most often decay to the corresponding antiparticles: a [positron](#), an electron neutrino, and a muon antineutrino.

The mean lifetime of the (positive) muon is $(2.1969811 \pm 0.0000022) \mu\text{s}$.^[1] The equality of the muon and antimuon lifetimes has been established to better than one part in 10^4 .

The muon [decay width](#) is, from [Fermi's golden rule](#):

where Γ and G_F is the [Fermi coupling constant](#) and x is the fraction of the maximum energy transmitted to the electron.

The decay distributions of the electron in muon decays have been parameterised using the so-called [Michel parameters](#). The values of these four parameters are predicted unambiguously in the [Standard Model](#) of [particle physics](#), thus muon decays represent a good test of the space-time structure of the [weak interaction](#). No deviation from the Standard Model predictions has yet been found.

For the decay of the muon, the expected decay distribution for the [Standard Model](#) values of Michel parameters is

where θ is the angle between the muon's polarization vector and the decay-electron momentum vector, and F is the fraction of muons that are forward-polarized. Integrating this expression over electron energy gives the angular distribution of the daughter electrons:

The electron energy distribution integrated over the polar angle (valid for) is

Due to the muons decaying by the weak interaction, [parity](#) conservation is violated. Replacing the term in the expected decay values of the Michel Parameters with a term, where ω is the Larmor frequency from [Larmor precession](#) of the muon in a uniform magnetic field, given by:

where m is mass of the muon, e is charge, g is the muon [g-factor](#) and B is applied field.

A change in the electron distribution computed using the standard, unprecessional, Michel Parameters can be seen displaying a periodicity of π [radians](#). This can be shown to physically correspond to a phase change of π , introduced in the electron distribution as the angular momentum is changed by the action of the [charge conjugation operator](#), which is conserved by the weak interaction.

The observation of Parity violation in muon decay can be compared to the concept of violation of parity in weak interactions in general as an extension of [The Wu Experiment](#), as well as the change of angular momentum introduced by a phase change of π corresponding to the charge-parity operator being invariant in this interaction. This fact is true for all [lepton](#) interactions in The Standard Model.

Certain neutrino-less decay modes are kinematically allowed but forbidden in the Standard Model. Examples forbidden by lepton flavour conservation are:

$$\mu^- \rightarrow e^- + \gamma \text{ and}$$

$$\mu^- \rightarrow e^- + e^+ + e^- .$$

Observation of such decay modes would constitute clear evidence for theories [beyond the Standard Model](#). Upper limits for the branching fractions of such decay modes were measured in many experiments starting more than 50 years ago. The current upper limit for the $\mu^+ \rightarrow e^+ + \gamma$ branching fraction was measured 2013 in the [MEG](#) experiment and is 5.7×10^{-13} .^[7]

Muonic atoms^[edit]

The muon was the first [elementary particle](#) discovered that does not appear in ordinary [atoms](#). Negative muons can, however, form muonic atoms (also called [mu-mesic atoms](#)), by replacing an electron in ordinary atoms. Muonic hydrogen atoms are much smaller than typical hydrogen atoms because the much larger mass of the muon gives it a much more localized [ground-state wavefunction](#) than is observed for the electron. In multi-electron atoms, when only one of the electrons is replaced by a muon, the size of the atom continues to be determined by the other electrons, and the atomic size is nearly unchanged. However, in such cases the orbital of the muon continues to be smaller and far closer to the nucleus than the [atomic orbitals](#) of the electrons.

Muonic [helium](#) is created by substituting a muon for one of the electrons in helium-4. The muon orbits much closer to the nucleus, so muonic helium can therefore be regarded like an isotope of helium whose nucleus consists of two neutrons, two protons and a muon, with a single electron outside. Colloquially, it could be called "helium 4.1", since the mass of the muon is roughly 0.1 [au](#). Chemically, muonic helium, possessing an unpaired [valence electron](#), can [bond](#) with other atoms, and behaves more like a hydrogen atom than an inert helium atom.^{[8][9][10]}

A positive muon, when stopped in ordinary matter, can also bind an electron and form an exotic atom known as [muonium](#) (Mu) atom, in which the muon acts as the nucleus. The positive muon, in this context, can be considered a pseudo-isotope of hydrogen with one ninth of the mass of the proton. Because the [reduced mass](#) of muonium, and hence its [Bohr radius](#), is very close to that of [hydrogen](#), this short-lived "atom" behaves chemically — to a first approximation — like [hydrogen](#), [deuterium](#) and [tritium](#).

The **Higgs boson** or **Higgs particle** is an [elementary particle](#) in the [Standard Model](#) of [particle physics](#). Its main relevance is that it allows scientists to explore the **Higgs field**^{[6][7]} – a fundamental [field](#) first suspected to exist in the 1960s that unlike the more familiar [electromagnetic field](#) cannot be "turned off", but instead takes a non-zero constant value almost everywhere.

The presence of this field – now believed to be confirmed – explains [why some fundamental particles have mass](#) even though the [symmetries](#) controlling their interactions should require them to be massless, and also answers several other long-standing puzzles in physics, such as the reason the [weak force](#) has a much shorter range than the [electromagnetic force](#). Despite being present everywhere, the existence of the Higgs field is very hard to confirm. It can be detected through its [excitations](#) (i.e. Higgs particles), but these are extremely hard to produce and detect. The importance of this [fundamental question](#) led to a [40 year search](#) for this elusive particle, and the construction of one of the world's most [expensive and complex experimental facilities](#) to date, [CERN's Large Hadron Collider](#),^[8] able to create Higgs bosons and other particles for observation and study.

On 4 July 2012, the discovery of a new particle with a mass between 125 and 127 [GeV/c²](#) was announced; physicists suspected that it was the Higgs boson.^[9] ^{[10][11]} By March 2013, the particle had been proven to behave, interact and decay in many of the ways predicted by the Standard Model, and was also tentatively confirmed to have positive [parity](#) and zero [spin](#),^[1] two fundamental attributes of a Higgs boson.

This appears to be the first elementary [scalar particle](#) discovered in nature.^[12] More data is needed to know if the discovered particle exactly matches the predictions of the Standard Model, or whether, as predicted by some theories, multiple Higgs bosons exist.^[3]

The Higgs boson is named after [Peter Higgs](#), one of [six physicists who, in 1964](#), proposed [the mechanism](#) that suggested the existence of such a particle. Although Higgs's name has come to be associated with this theory, several researchers between about 1960 and 1972 each independently developed different parts of it.

In mainstream media the Higgs boson has often been called the "God particle", from [a 1993 book on the topic](#); the nickname is strongly disliked by many physicists, including Higgs, who regard it as inappropriate [sensationalism](#).^{[13][14]} On December 10, 2013 two of the original researchers, Peter Higgs and [François Englert](#), were awarded the [Nobel Prize in Physics](#) for their work and prediction.^[15] Englert's co-researcher [Robert Brout](#) had died in 2011 and the [Nobel Prize is not ordinarily given posthumously](#).

In the Standard Model, the Higgs particle is a [boson](#) with no [spin](#), [electric charge](#), or [colour charge](#). It is also very unstable, [decaying](#) into other particles almost immediately. It is a [quantum excitation](#) of one of the four components of the Higgs field. The latter constitutes a [scalar field](#), with two neutral and two electrically charged components, and forms a complex [doublet](#) of the [weak isospin SU\(2\)](#) symmetry. The field has a "[Mexican hat](#)" shaped potential with nonzero strength everywhere (including otherwise empty space), which in its [vacuum state](#) breaks the weak isospin symmetry of the electroweak interaction.

When this happens, three components of the Higgs field are "absorbed" by the SU(2) and U(1) [gauge bosons](#) (the "[Higgs mechanism](#)") to become the longitudinal components of the [now-massive W and Z bosons](#) of the [weak force](#). The remaining electrically neutral component separately couples to other particles known as [fermions](#) (via [Yukawa couplings](#)), causing these to [acquire mass](#) as well. Some versions of the theory predict more than one kind of Higgs fields and bosons. Alternative "[Higgsless](#)" [models](#) would have been considered if the Higgs boson was not discovered.

Properties of the Standard Model Higgs [\[edit\]](#)

In the Standard Model, the Higgs field consists of four components, two neutral ones and two charged component [fields](#). Both of the charged components and one of the neutral fields are [Goldstone bosons](#), which act as the longitudinal third-polarization components of the massive [W⁺, W⁻, and Z bosons](#). The quantum of the remaining neutral component corresponds to (and is theoretically realised as) the massive Higgs boson.^[85] Since the Higgs field is a [scalar field](#) (meaning it does not transform under [Lorentz transformations](#)), the Higgs boson has no [spin](#). The Higgs boson is also its own [antiparticle](#) and is [CP-even](#), and has zero [electric](#) and [colour charge](#).^[86]

The Minimal Standard Model does not predict the mass of the Higgs boson.^[87] If that mass is between 115 and 180 GeV/c², then the Standard Model can be valid at energy scales all the way up to the [Planck scale](#) (10¹⁹ GeV).^[88] Many theorists expect new [physics beyond the Standard Model](#) to emerge at the TeV-scale, based on unsatisfactory properties of the Standard Model.^[89] The highest possible mass scale allowed for the Higgs boson (or some other electroweak symmetry breaking mechanism) is 1.4 TeV; beyond this point, the Standard Model becomes inconsistent without such a mechanism, because [unitarity](#) is violated in certain scattering processes.^[90]

It is also possible, although experimentally difficult, to estimate the mass of the Higgs boson indirectly. In the Standard Model, the Higgs boson has a number of indirect effects; most notably, Higgs loops result in tiny corrections to masses of W and Z bosons. Precision measurements of electroweak parameters, such as the [Fermi constant](#) and masses of W/Z bosons, can be

used to calculate constraints on the mass of the Higgs.

As of July 2011, the precision electroweak measurements tell us that the mass of the Higgs boson is likely to be less than about $161 \text{ GeV}/c^2$ at 95% [confidence level](#) (this upper limit would increase to $185 \text{ GeV}/c^2$ if the lower bound of $114.4 \text{ GeV}/c^2$ from the LEP-2 direct search is allowed for[91]). These indirect constraints rely on the assumption that the Standard Model is correct. It may still be possible to discover a Higgs boson above these masses if it is accompanied by other particles beyond those predicted by the Standard Model.[92]

Quantum mechanics predicts that if it is possible for a particle to decay into a set of lighter particles, then it will eventually do so.[97] This is also true for the Higgs boson. The likelihood with which this happens depends on a variety of factors including: the difference in mass, the strength of the interactions, etc. Most of these factors are fixed by the Standard Model, except for the mass of the Higgs boson itself. For a Higgs boson with a mass of $126 \text{ GeV}/c^2$ the SM predicts a mean life time of about $1.6 \times 10^{-22} \text{ s}$. [Note 2]

The Standard Model prediction for the [branching ratios](#) of the different decay modes of the Higgs particle depends on the value of its mass.

Since it interacts with all the massive elementary particles of the SM, the Higgs boson has many different processes through which it can decay. Each of these possible processes has its own probability, expressed as the *branching ratio*; the fraction of the total number decays that follows that process. The SM predicts these branching ratios as a function of the Higgs mass (see plot).

One way that the Higgs can decay is by splitting into a fermion–antifermion pair. As general rule, the Higgs is more likely to decay into heavy fermions than light fermions, because the mass of a fermion is proportional to the strength of its interaction with the Higgs.[99] By this logic the most common decay should be into a [top](#)–antitop quark pair.

However, such a decay is only possible if the Higgs is heavier than $\sim 346 \text{ GeV}/c^2$, twice the mass of the top quark. For a Higgs mass of $126 \text{ GeV}/c^2$ the SM predicts that the most common decay is into a [bottom](#)–antibottom quark pair, which happens 56.1% of the time.[98] The second most common fermion decay at that mass is a [tau](#)–antitau pair, which happens only about 6% of the time.[98]

Another possibility is for the Higgs to split into a pair of massive gauge bosons. The most likely possibility is for the Higgs to decay into a pair of W bosons (the light blue line in the plot), which happens about 23.1% of the time for a Higgs boson with a mass of $126 \text{ GeV}/c^2$. [98] The W bosons can

subsequently decay either into a quark and an antiquark or into a charged lepton and a neutrino. However, the decays of W bosons into quarks are difficult to distinguish from the background, and the decays into leptons cannot be fully reconstructed (because neutrinos are impossible to detect in particle collision experiments). A cleaner signal is given by decay into a pair of Z-bosons (which happens about 2.9% of the time for a Higgs with a mass of $126 \text{ GeV}/c^2$),^[98] if each of the bosons subsequently decays into a pair of easy-to-detect charged leptons ([electrons](#) or [muons](#)).

Decay into massless gauge bosons (i.e., [gluons](#) or [photons](#)) is also possible, but requires intermediate loop of virtual heavy quarks (top or bottom) or massive gauge bosons.^[99] The most common such process is the decay into a pair of gluons through a loop of virtual heavy quarks. This process, which is the reverse of the gluon fusion process mentioned above, happens approximately 8.5% of the time for a Higgs boson with a mass of $126 \text{ GeV}/c^2$.^[98]

Much rarer is the decay into a pair of photons mediated by a loop of W bosons or heavy quarks, which happens only twice for every thousand decays.^[98] However, this process is very relevant for experimental searches for the Higgs boson, because the energy and momentum of the photons can be measured very precisely, giving an accurate reconstruction of the mass of the decaying particle.^[99]

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Appendix II

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- vaikuṅtha-vijayaḥ the victory of the Lord of Vaikuṅtha; [SB 2.10.4](#)
- vaikuṅtha the transcendental kingdom of God; [SB 3.7.20](#)
- vaikuṅtha-nilayam the abode named Vaikuṅtha; [SB 3.15.13](#)
- vaikuṅtha-mūrtayaḥ having a four-handed form similar to that of the Supreme Lord, Viṣṇu; [SB 3.15.14](#)
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- vaikuṅtha of the Lord; [SB 6.2.14](#)
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- vaikuṅtha-cintā by thoughts of Kṛṣṇa; [SB 7.4.39](#)
- vaikuṅtha Lord Viṣṇu; [SB 8.7.31](#)
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- vaikuṅtha-loke in Vaikuṅthaloka, the spiritual world; [CC Adi 1.8](#)
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vaikuṅṭha-loke in Vaikuṅṭhaloka, the spiritual world; [CC Adi 5.13](#)
vaikuṅṭha-ādi dhāma all the places known as Vaikuṅṭhaloka; [CC Adi 5.15](#)
vaikuṅṭha-bāhire outside the Vaikuṅṭha planets; [CC Adi 5.31](#)
vaikuṅṭha-bāhire outside the Vaikuṅṭhalokas; [CC Adi 5.32](#)
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vaikuṅṭha-bāhire outside the Vaikuṅṭha planets; [CC Adi 5.51](#)
vaikuṅṭha the spiritual planets of Vaikuṅṭha; [CC Adi 5.52](#)
vaikuṅṭha the spiritual world; [CC Adi 5.99](#)
vaikuṅṭha-ādi-pure in the abodes of the Vaikuṅṭha planets; [CC Adi 5.222](#)
vaikuṅṭha spiritual world; [CC Adi 17.105](#)
śrī-vaikuṅṭha-purī a spiritual Vaikuṅṭha planet; [CC Madhya 3.156](#)
vaikuṅṭha to the spiritual world; [CC Madhya 6.230](#)
ananta vaikuṅṭha innumerable Vaikuṅṭha planets; [CC Madhya 8.135](#)
śrī-vaikuṅṭha-dhāma to the spiritual kingdom, known as Vaikuṅṭha; [CC Madhya 9.315](#)
vaikuṅṭha-vartmasu unto persons on the path back home, back to Godhead; [CC Madhya 11.32](#)
vaikuṅṭha-sampat all the opulence of the spiritual world; [CC Madhya 14.219](#)
vaikuṅṭha-ādi-dhāma innumerable Vaikuṅṭha planets; [CC Madhya 15.175](#)
vaikuṅṭha dekhila saw the spiritual world; [CC Madhya 18.136](#)
vaikuṅṭha-ādye in the Vaikuṅṭha planets; [CC Madhya 19.193](#)
vaikuṅṭha the spiritual world; [CC Madhya 20.150](#)
vaikuṅṭha a Vaikuṅṭha planet; [CC Madhya 20.211](#)
vaikuṅṭha other, lower planets, known as Vaikuṅṭhas; [CC Madhya 20.256](#)
vaikuṅṭha the avatāra named Vaikuṅṭha; [CC Madhya 20.326](#)
vaikuṅṭha Vaikuṅṭha planets; [CC Madhya 21.3](#)
vaikuṅṭha the spiritual planets; [CC Madhya 21.5](#)
ananta vaikuṅṭha unlimited Vaikuṅṭha planets; [CC Madhya 21.6](#)
vaikuṅṭha Vaikuṅṭha planets; [CC Madhya 21.7](#)
vaikuṅṭha Vaikuṅṭha planets; [CC Madhya 21.17](#)
vaikuṅṭha all the Vaikuṅṭha planets; [CC Madhya 21.29](#)
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vaikuṅṭha-guṇa-anuvarṇane in describing the transcendental character of Kṛṣṇa; [CC Madhya 22.137-139](#)

vaikuṅṭha O Lord of the spiritual kingdom; [MM 28-29](#)

Appendix III 42 Nomes

A **nome** (/noʊˈnɑːm/^[1] from [Greek](#): Νομός, “district”) was a subnational administrative division of [ancient Egypt](#). Today's use of the Greek νομή, *nomé* rather than the [Egyptian](#) term *sepat* came about during the [Ptolemaic](#) period, when use of Greek was widespread in Egypt. The availability of Greek records on Egypt influenced the adoption of Greek terms by later historians.

The division of [ancient Egypt](#) into nomes can be traced back to the [Predynastic Period](#) (before [3100 BC](#)). These nomes originally existed as autonomous city-states^{*citation needed*}, but later began to unify. According to ancient tradition, the ruler [Menes](#) completed the final unification.^[2]

Not only did the division into nomes remain in place for more than three millennia, the areas of the individual nomes and their ordering remained remarkably stable. Some, like [Xois](#) in the [Delta](#) or [Khent](#) in Upper Egypt, were first mentioned on the [Palermo stone](#), which was inscribed in the [Fifth Dynasty](#). The names of a few, like the nome of [Bubastis](#), appeared no earlier than the [New Kingdom](#). Under the system that prevailed for most of pharaonic Egypt's history, the country was divided into 42 nomes.

[Lower Egypt](#), from the Old Kingdom capital [Memphis](#) to the [Mediterranean Sea](#), comprised 20 nomes. The first was based around Memphis, [Saqqara](#), and [Giza](#), in the area occupied by modern-day [Cairo](#). The nomes were numbered in a more or less orderly fashion south to north through the [Nile delta](#), first covering the territory on the west before continuing with the higher numbers to the east. Thus, [Alexandria](#) was in the Third Nome; Bubastis was in the Eighteenth.

[Upper Egypt](#) was divided into 22 nomes. The first of these was centered around [Elephantine](#) close to Egypt's border with [Nubia](#) at the First Cataract – the area of modern-day [Aswan](#). From there the numbering progressed downriver in an orderly fashion along the narrow fertile strip of land that was the Nile valley. Waset (ancient [Thebes](#) or contemporary [Luxor](#)) was in the Fourth Nome, [Amarna](#) in the Fourteenth, and [Meidum](#) in the Twenty-first.

The nomarch^[edit]

Nomarchs were the semi-[feudal](#) rulers of [Ancient Egyptian](#) provinces. Serving as provincial governors, they each held authority over one of the 42 [nomes](#) ([Egyptian](#): *sepat*) into which the country was divided. *Nome* is derived from the Greek *nomos*, meaning a province or district, and *nomarch* is derived from the Greek title *nomarches* (νομάρχης), the ruler of a *nomos*.^[1] The nomarchs exercised considerable power.

The division of the kingdom into nomes can be documented as far back as

the [Old Kingdom](#) (in the 3rd millennium BCE) and continued even up until the [Roman](#) period.

At the head of each nome stood a [nomarch](#). The position of the nomarch was at times hereditary, while at others they were appointed by the [pharaoh](#). Generally, when the national government was stronger, nomarchs were the king's appointed governors. When the central government was weaker, however – such as during foreign invasions or civil wars – individual nomes would assert themselves and establish hereditary lines of succession. Conflicts between these different hereditary nomarchies were common during, for example, the [First Intermediate Period](#) – a time that saw a breakdown in central authority lasting from the seventh through the eleventh dynasties, until one of the local rulers was once again able to assert control over the entire country as pharaoh.

List of nomes^{[[edit](#)]} Lower Egypt^{[[edit](#)]}

The nomes are listed in separate tables for [Upper](#) and [Lower Egypt](#).

N.	Egyptian Name	Capital	Modern name of capital site	Translation
1	Aneb-Hetch	Ineb Hedj / Men-nefer / Menfe (Memphis)	Mit Rahina	White Walls
2	Khensu	Khem (Letopolis)	Ausim	Cow's thigh
3	Ahment	Imu (Apis)	Kom el-Hisn	West
4	Sapi-Res	Ptkheka	Tanta	Southern shield
5	Sap-Meh	Zau (Sais)	Sa el-Hagar	Northern shield
6	Khaset	Khasu (Xois)	Sakha	Mountain bull
7	A-ment	(Hermopolis Parva, Metelis)	Damanhur	West harpoon
8	A-bt	Tjeku / Per-Atum (Heroopolis, Pithom)	Tell al-Maskhuta	East harpoon
9	Ati	Djed (Busiris)	Abu Sir Bara	Andjeti
10	Ka-khem	Hut-hery-ib (Athribis)	Banha (Tell Atrib)	Black bull
11	Ka-heseb	Taremu (Leontopolis)	Tell al-Urydam	Heseb bull
12	Theb-ka	Tjebnutjer (Sebennytos)	Samanud	Calf and Cow
13	Heq-At	Iunu (Heliopolis)	Materiya (suburb of Cairo)	Prospering Sceptre
14	Khent-abt	Tjaru (Sile, Tanis)	Tell Abu Sefa	Eastmost
15	Tehut	Ba'h / Weprehwy (Hermopolis Parva)	Baqliya	Ibis
16	Kha	Djedet (Mendes)	Tell al-Rub	Fish
17	Semabehdet	Semabehdet (Diospolis Inferior)	Tell el-Balamun	The throne
18	Am-Khent	Per-Bastet (Bubastis)	Tell Bastah (near Zagazig)	Prince of the South
19	Am-Pehu	Dja'net (Leontopolis Tanis)	Tell Nebesha or San el-Hagar	Prince of the North
20	Sopdu	Per-Sopdu	Saft al-Henna	Plumed Falcon

N.	Egyptian Name	Capital	Modern Capital	Translation
1	Ta-Seti	Abu / Yebu (Elephantine)	Aswan	Land of the bow
2	Wetjes-Hor	Djeba (Apollonopolis Magna)	Edfu	Throne of Horus
3	Nekhen	Nekhen (Hierakonpolis)	al-Kab	Shrine
4	Waset	Niw-rst / Waset (Thebes)	Karnak	Sceptre
5	Herui	Gebtu (Coptos)	Qift	The two falcons
6	Aa-ta	Iunet / Tantere (Tentyra)	Dendera	The crocodile
7	Seshesh	Seshesh (Diospolis Parva)	Hu	Sistrum
8	Abdju	Abdju (Abydos)	al-Birba	Great land
9	Min	Apu / Khen-min (Panopolis)	Akhmim	Min
10	Wadjet	Djew-qa / Tjebu (Aphroditopolis)	Edfu	Cobra
11	Set	Shashotep (Hypselsis)	Shutb	The creature associated with Set
12	Tu-ph	Hut-Sekhem-Senusret (Antaeopolis)	Qaw al-Kebir	Viper mountain
13	Atef-Khent	Zawty (z3wj-tj, Lycopolis)	Asyut	Upper Sycamore and Viper
14	Atef-Pehu	Qesy (Cusae)	al-Qusiya	Lower Sycamore and Viper
15	Wenet	Khemenu (Hermopolis Magna)	al-Ashmunayn	Hare [4]
16	Ma-hedj	Herwer ?	Hur?	Oryx [4]
17	Anpu	Saka (Cynopolis)	al-Kais	Anubis
18	Sep	Teudjoi / Hutnesut (Alabastronopolis)	el-Hiba	Set
19	Uab	Per-Medjed (Oxyrhynchus)	el-Bahnasa	Two Sceptres

20	Atef-Khent	Henen-nesut (Herakleopolis Magna)	Ihnasiyyah al- Madinah	Southern Sycamore
21	Atef-Pehu	Shenakhen / Semenuhor (Crocodylopolis , Arsinoe)	Madinat al-Fayyum	Northern Sycamore
22	Maten	Tepihu (Aphroditopolis)	Atfih	Knife

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Dedication



Some men see things the way they are, and ask, "Why?"

I dream of things that have never been, and ask, "Why not?"

So let us dedicate ourselves to what the Greeks wrote so long ago:
to tame the savageness of man and to make gentle the life of this world.

Robert Francis Kennedy