

A Review on Antigravity, Levitation, Resonance, and Devices Inspired by the Ouroboros Serpent

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Abstract

This paper is an attempt to review the state-of-the-art on several physical principles related to the movement and levitation of objects. Not only normal, but also paranormal, phenomena are discussed. It is believed that this work contributes to a better understanding of present technologies and techniques used. Starting from ancient times, the antigravity properties of the caduceus carried by Hermes in Greek mythology are discussed. Next, strange paranormal phenomena related to the levitation of inanimate and living objects are systematically presented. The meaning of ether and its role in antigravity phenomena is discussed to an extent. Some magic tricks are discussed. In addition, the philosophical importance of the number eight (8), which if rotated by 90 degrees forms the infinity symbol (∞), is introduced. Based on the latter figure-eight shape, a recently announced theory in physics that shows promise for antigravity effects is discussed. Apart from a better philosophical understanding of nature, the final technological objective of similar research could be the ability to perform interstellar cruises in the future.

Une étude sur la notion d'anti-gravité, de lévitation, de resonance, et des outils inspirés par le serpent Ouroboros

Christopher G. Provatidis, Ph.D.

Résumé

Cet article examine l'état actuel des connaissances des divers principes physiques liés au mouvement et à la lévitation d'objets. On y présente des phénomènes naturels et des phénomènes paranormaux. Cette étude permet une meilleure compréhension des technologies actuelles et des techniques utilisées. Avec un retour vers les temps anciens, on y traite des propriétés du caducée qu'Hermès transportait selon la mythologie grecque. Par la suite, on y présente des phénomènes paranormaux étranges en lien avec la lévitation d'objets inanimés et animés. La signification de l'éther et son rôle dans le phénomène de l'anti-gravité font également l'objet de discussion. On y parle aussi de certains trucs de magie. Enfin, on discute de l'importance philosophique du nombre 8 qui, une fois couché sur le côté (∞), prend la forme du symbole de l'infini. En se basant sur ce dernier point concernant la forme du nombre 8, l'article présente une théorie récente et prometteuse en physique en ce qui a trait aux effets de l'anti-gravité. Outre l'acquisition d'une meilleure compréhension philosophique de la nature, un des objectifs technologiques ultimes d'une recherche similaire pourrait être la capacité de faire des voyages interstellaires dans l'avenir.

Una revisión de Antigravedad, Levitación, Resonancia, y Dispositivos inspirados en la Serpiente Uróboros

Christopher G. Provatidis, Ph.D.

Resumen

Este artículo es un intento de revisar lo último sobre ciertos principios físicos relacionados con el movimiento o levitación de los objetos. No solo se discuten fenómenos normales sino también los paranormales. Se cree que este trabajo contribuye a un mejor entendimiento de las tecnologías o técnicas actualmente utilizadas. Comenzando desde los tiempos antiguos, son discutidas las propiedades de antigravedad de los Caduceos cargados por Hermes de la mitología Griega. Luego, se presentan en forma sistemática, los fenómenos paranormales extraños relacionados con la levitación de objetos inanimados y animados. El significado del éter y su papel en el fenómeno de la antigravedad se discuten ampliamente, como también algunos trucos de magia. Además, se habla de la importancia filosófica del número ocho (8), el cual si es girado 90 grados forma el símbolo del infinito (∞). Luego se discute una teoría física recientemente anunciada que muestra efectos prometedores de la antigravedad y la forma del último número ocho citado. Aparte de un mejor entendimiento filosófico de la naturaleza, el objetivo tecnológico final de investigaciones similares puede ser la habilidad de realizar viajes interestelares en el futuro.

Uma revisão sobre a Antigravidade, Levitação, Ressonância, e Dispositivos inspirados na Serpente Ouroboros

Christopher G. Provatidis, Ph.D.

Resumo

Este estudo é uma tentativa de revisão da tecnologia de ponta dos vários princípios físicos relacionados ao movimento e à levitação de objetos. São discutidos não somente fenômenos normais mas também paranormais. Acredita-se que este trabalho contribui para um entendimento melhor das presentes tecnologias e técnicas utilizadas. Começando desde os tempos antigos, são discutidas as propriedades antigravitacionais do caduceus carregado por Hermes na mitologia grega. A seguir, são apresentados de modo sistemático os estranhos fenômenos paranormais relacionados com levitação de objetos inanimados e animados. É discutido dentro do possível o significado de éter e seu papel no fenômeno antigravitacional. São discutidos alguns truques de magia. Além disso, é feita uma introdução sobre a importância filosófica do número oito (8), que se girado 90 graus forma o símbolo do infinito (∞). Com base na última forma da figura do oito, é discutido uma teoria recentemente anunciada na física que mostra o potencial dos efeitos da antigravidade. Além de uma melhor compreensão filosófica da natureza, o objetivo final de pesquisas tecnológicas semelhantes podem ter a capacidade de realizar cruzeiros interestelares no futuro.

Eine Besprechung der Antigravitation, der Levitation, der Resonanz, und der Verfahren, die durch die Ouroboros-Schlange angeregt werden

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Zusammenfassung

Dieses Forschungspapier ist ein Versuch, den Stand der Wissenschaft in bezug auf verschiedene physikalische Prinzipien im Zusammenhang mit der Bewegung und Anhebung von Objekten zu begutachten. Es werden nicht nur normale sondern auch paranormale Phänomene besprochen. Wir glauben, dass diese Arbeit zu einem besseren Verständnis der gegenwärtigen Technologien und Techniken beiträgt. Beginnend in uralter Vorzeit werden die Anti-Gravitationseigenschaften des von Hermes in der griechischen Mythologie getragenen Caduceus besprochen. Als nächstes werden eigenartige paranormale Phänomene im Zusammenhang mit der Anhebung von leblosen und belebten Objekten systematisch

vorgestellt. Die Bedeutung des Äthers und seine Rolle bei Anti-Gravitationsphänomenen wird besprochen. Einige Zaubertricks werden auch besprochen. Außerdem wird die philosophische Bedeutung der Zahl acht (8), die wenn sie um 90 Grad gedreht wird, das Unendlichkeits-Symbol bildet (∞), eingeführt. Auf der Grundlage der vorigen Figur der Zahl acht, wird eine kürzlich angekündigte Theorie in der Physik, die vielversprechend für die Erklärung der Anti-Gravitationseffekte ist, besprochen. Abgesehen von einem besseren philosophischen Verständnis der Natur, könnte das endgültige technologische Ziel derartiger Forschung die Fähigkeit zum interstellaren Reisen sein.

1. Introduction

In Greek mythology, the god Hermes was always holding his *caduceus*, which was a short staff entwined by two serpents, sometimes surmounted by wings (Fig.1). There are many paintings, vases and sculptures on which Hermes is represented holding his caduceus, either standing or, at most times, flying (Fig.2). A recent dissertation reveals the secret symbolism of Hermes' caduceus, which "represents the first triad of Linear World Law in the creation of the DNA of the universe, and the hidden information of energy production at the intersections of the serpent helixes."¹



Fig.1: The caduceus of Hermes in Greek mythology.

(Source: <http://en.wikipedia.org/wiki/Caduceus>,
<http://img57.imageshack.us/img57/7500/zhuk2si3.jpg>)

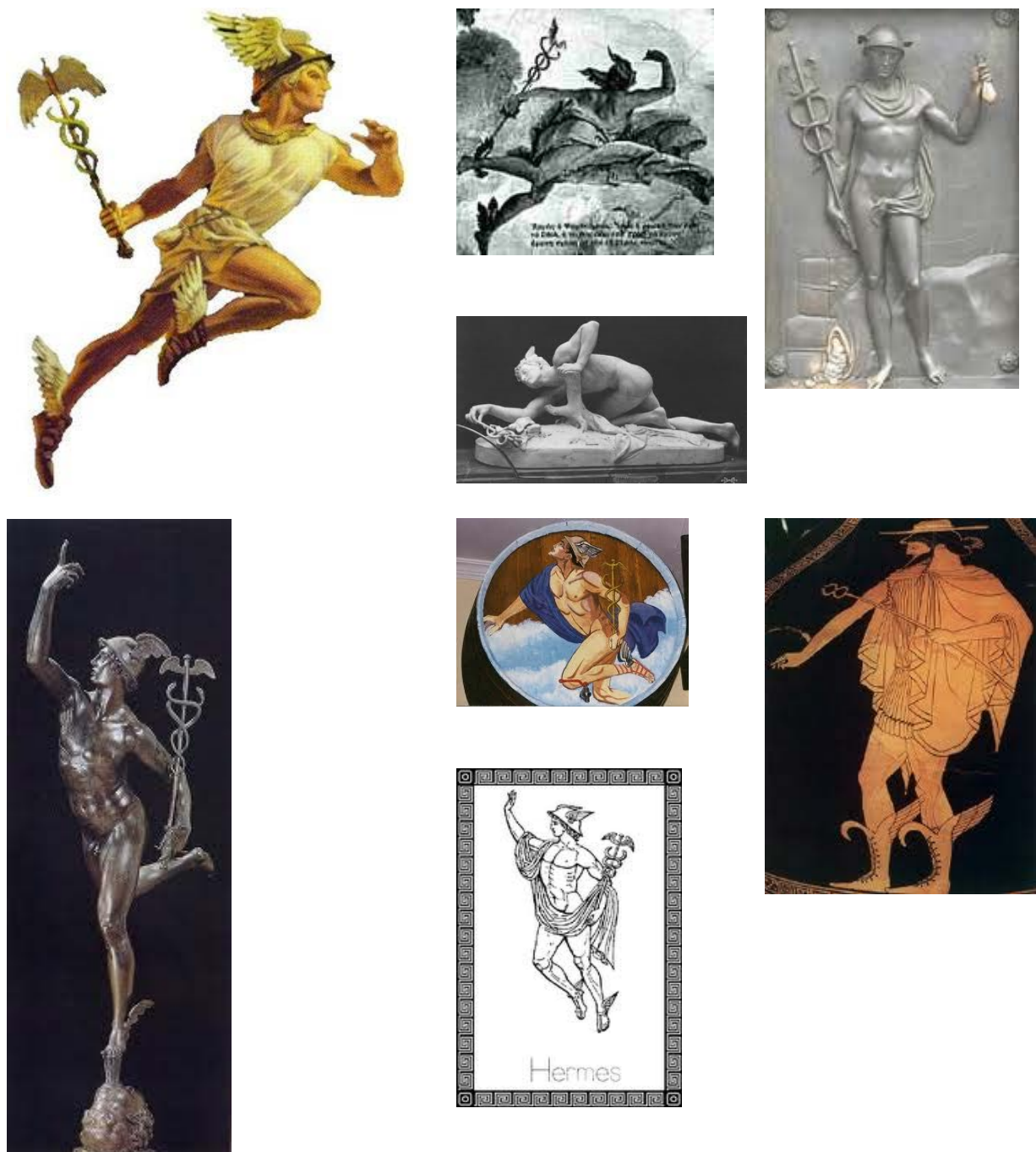


Fig.2: Several images of Hermes holding his caduceus.

(Sources: fr.wikipedia.org, giantbomb.com, myastrologybook.com, thespiritualsanctuary.org, wisdomportal.com, pottery of fifth century BCE: Rome-Vatican museum.)

The two entwined serpents are found also in the Oriental world, as shown in Fig.3.

According to a recent publication by the well-known Russian newspaper *Pravda*, in Oriental mythology gods have the same distinguishing feature of flying.² But even ordinary mortals, albeit very few, also possess this unique art.



Fig.3: An extension of the Greek caduceus in the Oriental world.

(Source:
<http://www.gnosisellas.gr/images/stories/2dvvcav.jpg>.)

“For example, Indian Brahmins, yogis, saint hermits, magicians and fakirs master the art of levitation. The Indian Vedas contain even practical guidelines to levitation. However, most ancient Indic words and concepts lost their meanings and concepts through the years, which makes it impossible to translate the priceless ancient text into modern languages. As to ancient levitators, they could raise themselves up to 90 centimeters above the ground. They did so because the position with feet above the ground was more comfortable for them in terms of their religious rituals. They never levitated to startle anyone. In ancient times levitation was practiced in India and Tibet. Buddhist texts say that in 527 A.D. Hindu founder of Zen Buddhism, Bodhidharma, visited the Tibetan Shaolin Monastery and taught the monks to control the body energy, which is a mandatory condition for levitation. Buddha himself practiced levitation too, as well as his mentor Sammat who could stay in the air for hours.”²

As everyone can understand, the cancellation of gravitation is the main topic to deal with. Newton (1642–1727) himself often told the story that he was inspired to formulate his theory of gravitation by watching the fall of an apple from a tree. Generally, all heavy bodies tend to fall onto the ground when they are released. In contrast, light objects such as a feather can be

caught by the wind. Also, during the evaporation of liquid and the sublimation of solid bodies, the produced vapors tend to rise into the atmosphere, in the opposite direction of the gravity force.

One century after Newton's death and many years before the great inventions were achieved, in the second half of the eighteenth century the bright mind of the French writer Jules Gabriel Verne (1828–1905) captured a great number of these inventions long before their announcement, including those related to the travel of man to the moon. A second bright mind is the English writer Herbert George Wells (1866–1946), whose gravity-blocking substance "[Cavorite](#)" is included in his work "*The First Men in the Moon*."³ Both Verne and Wells predicted the future technologies, including the transportation of man to the moon. Today their books are considered to be classical (Fig.4).

In simple terms, in order to move objects there are three main ways, as follows. The first way is to use friction, like the motion of the wheels of a car on the ground, like the tracks of a tank, or like the friction in the legs of a fly on the wall or the ceiling. The second way is to use the principles of aerodynamics or hydrodynamics, as happens in the lift of helicopters and airplanes as well as the drag in ships, in which the drag or/and the lift forces are produced by the circulation of the fluid along the boundary of the object. The third way is to exploit the principle of action-reaction, as when firing a gun, where the exit of the projectile results in backward movement of the weapon (principle of conservation of linear momentum).

The aforementioned third way is applied for the propulsion of small space vehicles using huge rockets. However, the use of the latter is problematic, because a huge amount of energy is spent for traveling only the first 200 km from the surface of the Earth. According to Wikipedia, "Present-day launch costs are very high ranging from \$10,000 to \$25,000 per [kg] from Earth to low Earth orbit, though some countries subsidize launches to prices nearer \$4,000."⁴ Not only that, and not only do the rockets cause contamination of the environment, but also the interstellar travels are not possible using the present technology.



(a)

(b)

(c)

Fig.4: The front pages of the books (a) "Extraordinary Travels" by Jules Verne, (b) Frontispiece in "The Men in the Moon" and (c) "The Time Machine" by H. G. Wells.

(Sources: http://en.wikipedia.org/wiki/File:Hetzel_front_cover.jpg,
<http://en.wikipedia.org/wiki/File:Menmoonfront.jpg>,
<http://en.wikipedia.org/wiki/File:Timemachinebook.JPG>.)

From the above discussion it becomes evident that the novel method of applying a propulsion force outside the framework of the three aforementioned ways must be a real breakthrough, which will be something seemingly against the usual physical laws. Preliminary findings based on Einstein's theories of relativity have not worked, in the sense that they lead to extremely low antigravity forces.⁵⁻⁷ As a result, it is quite normal that people who wish to contribute to this breakthrough shall be open minds of high level and proper mentality that they can challenge the conventional technology and rely on the physics of the future.

We all know that physics is the descendant of alchemy. The evolution from alchemy to Newton's physics was long.⁸ Despite the high level of university physics, only a small part of the complex nature has been explored. There are still many paranormal phenomena, which today we sometimes characterize as magic tricks, which have to be understood in terms of physics.⁹ From the practical point of view, if these peculiar phenomena are clarified, then the space propulsion industry may have a great benefit in the research of interstellar travels, and later this technology will be transferred to more terrestrial applications.

For the sake of brevity, in this paper some of these phenomena are roughly categorized in three broad categories: antigravity, human levitation, and resonance/paranormal phenomena, despite the fact that these three terms are not quite independent of one another. Again, it is only a first rough attempt to put different things in an order.

2. Antigravity

Although antigravity – as knowledge – existed from the dawn of civilization, only recently it acquired a scientifically theoretical form. The relevant technology, although very impressive, remained on the sidelines for obscure reasons. But to understand antigravity, we need to first understand the mechanism of gravity. An excellent treatise on gravity and antigravity, from both physical and philosophical points of view, was written by David Pratt in 2001 and revised in 2007.^{10,11} Moreover, in the following text of this section we review additional sources,¹²⁻¹⁴ which below have been properly extended.

Despite the simplified mathematical models of Newton and Einstein, gravity is hypothesized not to be an attraction, but a push. The most fundamental particles, which make up matter, suck *ether* from all around. The aforementioned movement of the ether to aggregated material such as the earth is the essence of the gravity. Channeling the flow of ether around a body (so that the ether does not affect the body) can levitate the body so that it becomes weightless, or rises. The interaction with the ether can be done in several ways, including sound, magnetic, electrical, thermal, electromagnetic, or even by the power of mind. Of course, all these indicate a relatively strong direct correlation between the fundamental forces to link the ether, which is called the “fifth element.” However, this theory (known as the “unified field”) is still incomplete because there are few scientists working with more than three dimensions and even fewer accepting the existence of the ether. But what makes the theory inaccessible to the scientific world is the lack of adequate mathematical formulation. Maxwell himself, when he worked on electromagnetic theory, made use of quaternions (numbers of the quaternary system) and mathematics beyond the three-dimensional vectors, but the scientific community of the time accepted only the vector components and cut off the

“transcendent and fantastic elements.” Although the theoretical background of antigravity lacks a mathematical foundation, its techniques demonstrate efficacy and can surprise even the most discerning skeptic.

For example, acoustic antigravity is a technique to control the ether flow through sounds, a technique that seems magical to the observer. But the barriers between magic and ethereal science are fuzzy. Furthermore, when the sound antigravity was developed it was mainly a religious phenomenon. In Tibet, the monks had become adept at this and could lift huge boulders to very high altitudes (200-300 m) very comfortably, even without physical contact. Their only tool was the feast of harmonious sounds of the prayers that they sang, along with the sounds of drums and trumpets. Certainly the noise sources have a special geometry in connection with the subject’s head, and the frequencies of the sounds were carefully selected to keep the ratio 1:4:5 (e.g. Do-Fa-Sol). Witnesses of such demonstrations included the Swede Dr. Jarl (Fig.5), whereas the second case involved an Austrian named Linauer, who observed them while at a remote monastery in northern Tibet during 1930.^{11,15}

According to one theory, the gravitational field is nothing but an expression of the electric and magnetic fields. Therefore, the weight of a body is associated with its magnetic potential. But since all material bodies have weight, they should be magnetic as well. Of course, the relationship between weight and magnetic potential is not linear, while the correlation is not bidirectional; since it is real, antigravity can be achieved using only magnetic media. Unfortunately, the effect of magnetic fields on living organisms (in terms of antigravity) is very small. For example, for the levitation of a man, a special huge oval magnet of strength around 40 Tesla is needed; it is worth mentioning that the creation of such a magnetic field requires the power of about 1 GW, which is around three times the energy needs of a large island like Crete, Greece.¹⁴

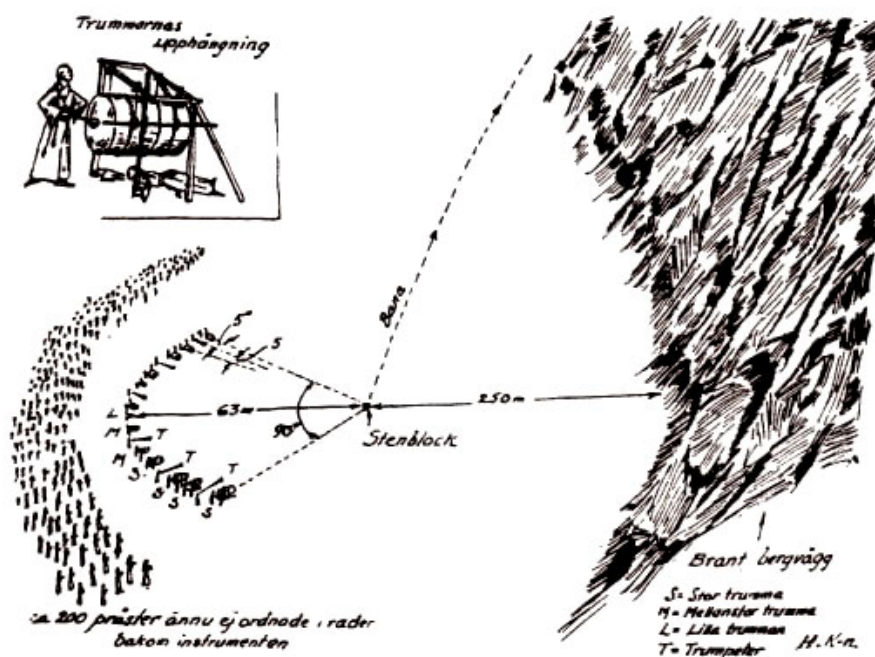


Fig.5: Dr Jarl’s sketch showing how Tibetan monks were able to raise stone blocks into the air using the power of sound (source: From References [11] and [15]).

At the time UFOs reportedly began to appear in America (1947), electro-gravity technology had already begun to develop. Thus it made possible antigravity based exclusively on electric instruments. Five years later, Thomas T. Brown was able to evolve the technology enough to be practically feasible for antigravity (activation voltage: 50 KV, power requirements: 50W). The next few years he developed more technology, wrote books on the theoretical background of the physical phenomenon, which was later called the Biefeld-Brown effect, and built several flying discs.¹⁶ A mild reaction of electro-gravity is the ionization of air around the flying crafts, making them look like bold colors that rotate – a picture surprisingly similar to the reports of most UFO observers in the USA. Experimental demos of aluminum foil lifters of triangular and hexagonal shape can be found on the Internet,^{17a} for which an explanation was later given.^{17b} On the same topic, very recent scientific publications have given a full explanation in terms of computational fluid dynamics.^{18,19}

Less popular, but much more interesting, is the antigravity caused by heat. Although so far levitation through thermo-gravity has not been achieved,^{20,21} Peter Fred²² claims to have managed to reduce the weight of an aluminum hemisphere by 2.9% by heating it with 3 KW infrared for 530 seconds. Additionally, he managed to express the relationship between heat and gravitational acceleration g for a spherical body as: $g = 8\pi RQ/M$, where Q is total heat flux that exits, M is its mass and R is its radius.

Another way to overcome gravity is by the use of electromagnetic means. This is perhaps the best-known method and more understandable. In its simplest version it uses crossed electromagnetic fields.²³

Finally, there is metaphysical antigravity, which utilizes pure human energy. This is a technique known through esotericism and researchers of the occult. Professor Thury claimed that there is a strange substance that permeates all matter, which he calls *psychode*, or *psychic "aether."* The interaction of the mind over the psychode exerts a force, "ectenic force,"²⁴ which is equivalent to Crooke's "psychic force."²⁵ The intended use of that power (in people with stable and strong intention) or unintentionally (in particularly sensitive individuals) can cause levitation phenomena. This distinction was made by HP Blavatsky,²⁶ according to whom the levitation is due to the strongly focused minds of these people.

Of course, there are other techniques, such as that developed by Viktor Schauberger,²⁷ based on etheric energy, utilizing the phenomenon of the vortex. In 1930, the great Austrian-German inventor managed to build flying vehicles based on a technique he developed by investigating this mysterious technology.¹⁶ Unfortunately, after the Second World War the drawings of its machinery fell to the Americans and his discoveries were buried in the postwar silence. In other parts of the world, there were similar inventors who had knowledge of this phenomenon even though they did not build antigravity machines.

Today, the main contributors in antigravity technology are:²⁸ Townsend Brown (electrogravitics, 1920), Viktor Schauberger (flying saucers, 1929), Norman Dean (Dean drive, 1959), John Searle (the Searle effect, 1969), Robert Cook (Cook's device, 1980), Eugene Podkletnov (superconductive materials, 1992), Eric Laithwaite and William Dawson (1999), Vladimir Vitalievich Roschin and Sergei Mikhailovich Godin (magnetic system, 2000), Boris Volfson, (inflationary vacuum state, 2005), Franklin Felber (antigravity propulsion and relativistic hyperdrive, 2005), and Jochem Hauser and Walter Dröscher (gravitation space propulsion, 2007). Review papers are [⁶] and [²⁹]. An edited book and a

review paper with compiled information up through 2010 is authored by Marc Millis.^{30,31} In brief, he divides the relevant technologies into three main categories as follows: (i) propellantless propulsion approaches (26 methods), (ii) faster-than-light approaches (4 methods), and (iii) energy conversion approaches (9 methods). Based on Laithwaite's experiments,³² a new time dilation theory has been recently reported.³³

The role of rotation is important, and it has been a matter of inspiration and research. There is a general feeling that physical laws may be somehow “violated” in rotating systems, and in any case even simple laws are a matter of interest.³⁴ There has been some work on relativistic rotating masses by Browne.³⁵ The gyroscopes are also a source of inspiration,³⁶⁻³⁸ although their capability has been disputed.^{39,40} Also, in all drawings of flying saucers made by Viktor Schauberger (Fig.6) or those created by science fiction enthusiasts, the rotation dominates (Fig.7).^{41,42} It is worth mentioning that the channel through which the fluid moves, in the area of the axis of symmetry of Fig.6, is very similar to Hermes' caduceus. Is it by accident so?

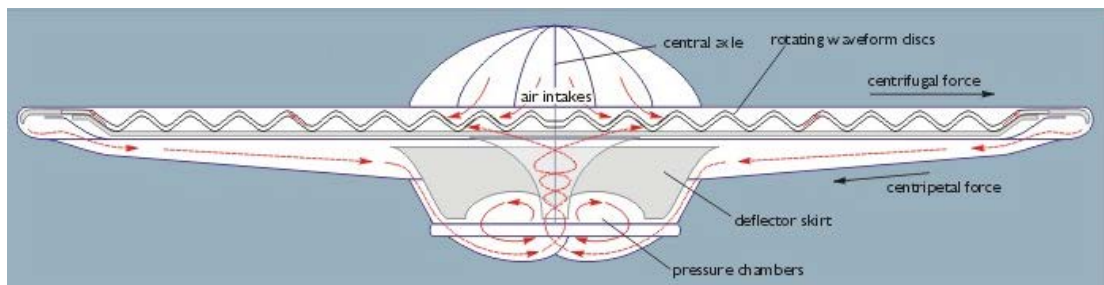


Fig.6: A typical flying saucer (Viktor Schauberger).

(Source: <http://i44.tinypic.com/kafi42.jpg>.)

Despite the apparent complexity of antigravity, it was and is simple and practical, and of particular importance to humans. The techniques developed are a strong testament to the power of humankind and its potential interaction with nature while respecting the environment. It is not unrealistic (not utopianism) to imagine a world where antigravity will play the dominant role in the movement of people and the transport of goods on the planet. It's just a matter of time and maturity.

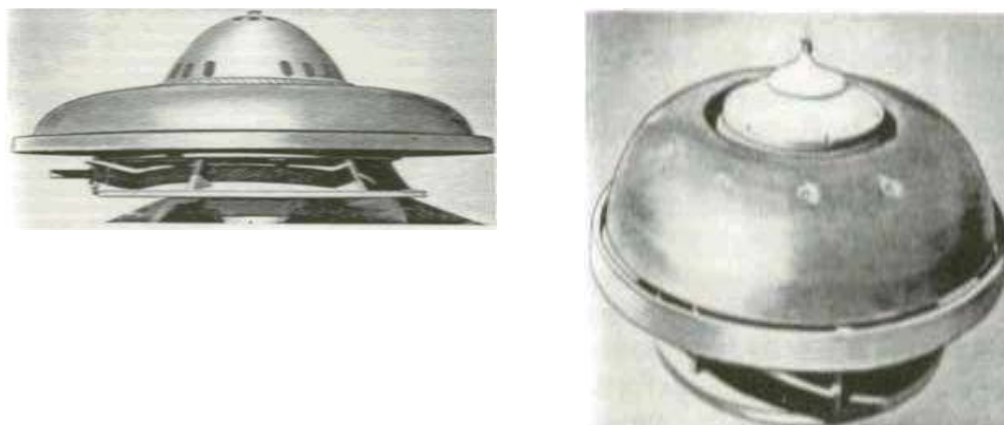


Fig.7: Flying saucers of Viktor Schauberger
(http://en.wikipedia.org/wiki/Viktor_Schauberger).

(Source: http://www.evgars.com/new_page_1.htm.)

3. Levitation of objects

Levitation is the process by which an object is suspended by a physical force against gravity.⁴³

For levitation on Earth, first, a force directed vertically upwards and equal to the gravitational force is required. Second, for any small displacement of the levitating object, a returning force should manifest to stabilize it. The stable levitation can be naturally achieved by, for example, magnetic or aerodynamic forces.

Levitation techniques are useful tools in physics research. For example, levitation methods are useful for studies of molten materials because they eliminate the problem of reaction with containers and allow deep undercooling. The containerless conditions may be obtained by opposing gravity with a levitation force, or by allowing an entire experiment to freefall.⁴⁴

In brief, we can distinguish nine broad categories of levitation in inanimate objects, as follows: (1) magnetic, (2) electromagnetic, (3) electrostatic, (4) aerodynamic, (5) acoustic, (6) gas film, (7) optical, (8) Casimir force, and (9) buoyant levitation.

4. Human (Paranormal) Levitation

4.1 General

Levitation in a paranormal context is the alleged rising of a human body into the air by mystical means.⁴⁵ It is generally believed that at present, there is no compelling evidence to suggest that paranormal levitation is a real phenomenon. The scientific and empiricist communities traditionally attribute such incidents to trickery, illusion, auto-suggestion, and unseen natural causes.

According to Simon Harvey-Wilson, who has authored a Ph.D. thesis on human levitation,⁴⁶ there are two serious books on this topic. The first is by the French Catholic researcher Olivier Leroy⁴⁷ and the second is by Steve Richards.⁴⁸ Harvey-Wilson states that, traditionally, most levitation reports have originated from seven groups: (i) mysticism, (ii) shamanism, (iii) people supposedly possessed by demonic spiritual entities, (iv) those subjected to poltergeist activity, (v) spiritualism, (vi) people who believe they have been abducted by aliens, and (vii) martial arts such as *qigong*.

The spiritualists and [religious](#) communities tend to interpret mystical levitation as the result of [supernatural](#) action of tuning in to the [Holy Spirit](#), [spiritual energy](#), a [deity](#), or sometimes resulting from the influence of a [poltergeist](#). Levitation is an aspect of [psychokinesis](#). [Yogic masters](#) claim that mystical levitation can occur as a [siddhi](#) during higher [levels of consciousness](#), such as [mystical](#) rapture, euphoria, or [astral projection](#).

In the traditions of religions, many reports on human levitation have appeared.

- 1) In Hinduism, it is believed that some Hindu gurus who have become [siddhas](#) (those who have achieved spiritual powers) have the [siddhi](#) (power) of being able to levitate. The power of levitation is called in [Sanskrit](#) *laghiman* (lightness) or *dardura-siddhi* (the frog power). It is said that Hindu [Sadhus](#) have a history of paranormal levitation and that when one progresses on the path of spiritualism, levitation comes naturally.

[Autobiography of a Yogi](#) has accounts of [Hindu](#) Yogis who used to levitate in the course of their meditation. Levitation is said to be possible by mastering the [Hindu philosophy](#) of [yoga](#): [Yogi Subbayah Pullavar](#) (1936). [Shirdi Sai Baba](#), an Indian [yogi](#), is described in the [Sri Sai Satcharitra](#) to have mastered the art of levitation while sleeping, and the [Transcendental Meditation movement](#) claim that practitioners of the [TM-Sidhi program](#) of [Maharishi Mahesh Yogi](#) achieve what they call "[Yogic Flying](#)."

- 2) In [Buddhism](#), it is recounted as one of the [Miracles of Buddha](#) that [Gautama Buddha](#) *walked on water* by levitating over a stream in order to convert a [brahmin](#) to [Buddhism](#). [Yogi Milarepa](#), a [Vajrayana Buddhist](#) guru, was rumored to have possessed a range of additional abilities during levitation, such as the ability to walk, rest, and sleep; however such were deemed occult powers.
- 3) In Hellenism (the [pagan religion](#) of [Ancient Greece](#) and [Ancient Rome](#)), according to the testimony of [Philostratus](#), [Apollonius of Tyana](#) underwent [heavenly assumption](#) upon his death by levitating into [Elysium](#).
- 4) According to some [New Age](#) teachings, it is believed by the adherents of the [Ascended Master Teachings](#) (a group of [New Age](#) religions based on [Theosophy](#)) that the [Ascended Masters](#) have the ability to levitate.
- 5) In [Gnosticism](#), [Simon Magus](#), a [Gnostic](#) who claimed to be an incarnation of [God](#) (as conceived by the Gnostics), reportedly had the ability to levitate along with many other [magical powers](#). As a dissenter from the [orthodox](#) Christianity of the time, this was branded by Christians as evil magic and attributed to demonic powers.
- 6) In [Christianity](#), there are many Catholic, Roman, Eastern Roman, and Byzantine Orthodox Saints who claimed to have levitated.⁷⁸ They include Saint Bessarion of Egypt (d. 466), [Saint Francis of Assisi](#) (1181–1226), [St. Alphonsus Liguori](#) (1696–1787), [St. Joseph of Cupertino](#) (1603–1663), [St. Teresa of Avila](#) (1515–1582), [Ignatius of Loyola](#) (1491–1556), Saint [Martín de Porres](#) (1579–1639), [Blessed Mariam Theresia](#) (1876–1926), [Girolamo Savonarola](#) (1452–1498), [Seraphim of Sarov](#) (1759–1833), and [Padre Pio](#) (1887–1968). In addition to holy persons, there are reports also for the so-called "Demonic" Levitation in Christianity: Clara Germana Cele (1906) reportedly levitated in a rigid position, and the effect was apparently only reversed by the application of Holy water, leading to the belief that it was caused by demonic possession. Another example is Magdalena de la Cruz (1487–1560), a Franciscan nun of Cordova, Spain.

Moreover, many mediums have claimed to have levitated during séances, especially in the nineteenth century in Britain and America. Many have been shown to be frauds, using wires and stage magic tricks. The most prolific and well documented levitator (of himself and other objects) was [Daniel Dunglas Home](#). He was said to repeatedly defy gravity over a career of forty years. He was reputedly observed levitating out of a building through a third story window and back into the building via a different window. He could also cause [tables](#) and [chairs](#) to rise feet into the air and was never demonstrated to be a fraud by hundreds of purportedly [skeptical](#) witnesses, except one. He remained in full consciousness throughout these feats, and attributed them to the action of some kind of [magical energy](#). Home's fame grew, fueled by his feats of levitation. [Physicist William Crookes](#)^{49,50} claimed to have observed more than fifty occasions in which Home levitated, many of these at least five to seven feet above the floor, "in good light." More common were feats recorded by [Frank Podmore](#): "We all saw him rise from the ground slowly to a height of about six inches, remain there for about ten seconds, and then slowly descend." One of Home's levitations occurred in 1868. In front of three witnesses (Adare, Captain Wynne, and [Lord Lindsay](#)) Home was said to have levitated out of the third story

window of one room, and into the window of the adjoining room. "It was so dark I could not see clearly how he was supported" [outside of the three story window]. A characteristic lithograph of [Daniel Dunglas Home](#) is shown in Fig.8.



Fig.8: The levitation of [Daniel Dunglas Home](#) at [Ward Cheney](#)'s house interpreted in a lithograph from Louis Figuier, *Les Mystères de la science* 1887.

(Source: <http://en.wikipedia.org/wiki/File:Daniel-Dunglas-Home-levitation.jpg>.)

Significant information is provided by Helena P. Blavatsky (1831-1891).²⁶ Her work is devoted to the Theosophical Society that was established in 1875 in New York, aiming at studying similar topics. Blavatsky was trained in human levitation and similar feats during her visits to Nepal and Tibet, among other countries. In her work *Isis Unveiled*, which is full of interesting notes, she proved to be capable of handling large amounts of information in many disciplines, not only contemporary information but also information from the distant past. She was fond of Schopenhauer (1788-1860) and Kant (1724-1804). In many places in her book, she argues against the famous professors Faraday (1791-1867) and Tyndall (1820-1893), who were both strongly faithful. It is worth mentioning that both professors were discoverers of *diamagnetism*, which is the property of an object which causes it to create a magnetic field in opposition to an externally applied magnetic field, thus causing a repulsive effect. From her book, one can find extensive literature related to the fight between conformist scientists and supporters of magic, in which many people were involved (Count Agenor De Gasparin (1810-1871), Thomas Henry Huxley (1825-1895), Roger Gougenot des Mousseaux (1805-1876), Jules de Mirville (1802-1873), and Sir William Crookes (1832-1919), who developed eight possible theories,^{49,50} et cetera). We also learn that in 1850 the French Academy established official committees to investigate topics such as human elevation and turning tables (rotating tables for which the motion is induced by the mind of a mentalist), whereas earlier, the Imperial University of St. Petersburg established another committee under the leadership of the renowned chemist professor Dmitri Ivanovich Mendeleev (1834-1907).

Concerning controlled levitation experiments, the only somewhat compelling and thorough case of controlled scientific tests performed recently were those of [Nina Kulagina](#), a [Russian "psychokinetic,"](#) in the 1960s. She demonstrated the power to levitate small objects repeatedly under conditions that satisfied Russian, Czech, and American scientists, although she never levitated herself. She levitated objects such as table tennis balls, wine glasses, and matches under conditions engineered to make use of hidden magnets, wires, and similar "tricks" *seem* impossible. However, two things should be taken into consideration: first, these feats are commonly reproduced on stage by illusionists, and, second, scientists can be fooled by tricks of skillful illusionists — as was proven by James Randi's Project Alpha in 1979. In fact, Kulagina's use of a stick was actually photographed by parapsychologists.

Concerning possible scientific explanation, some physicists think that levitation, if scientifically confirmed, could be the result of the mind "tapping into" the quantum vacuum zero point energy in an altered state of consciousness.⁴⁵

4.2 A Skeptical Approach

As stated above, until not too long ago, human levitation was seen as an issue of occultism and was ridiculed by many scientists. Yet the past four to five years have seen more coverage both in popular media and in scientific literature. The Russian newspaper *Pravda*² presented a full article on February 29, 2008. It covers the period from Oriental mythology through 1999, referring to an experiment in Japan. In Japan in 1991, a scientific paper about some intelligent tricks of human levitation was published.⁵¹

Two other scientific papers from the parapsychological and the consciousness point of view are [^{46,52}], whereas a quite recent mathematical approach based on geometric topology was presented by the same Japanese professor who also published in 1991.⁵³ Concerning older literature, one of the most compact texts is that of Madam Helena Blavatsky,²⁶ which has been translated into many languages.

As mentioned above, the study of the mechanics of magic tricks is very important and may lead to promising findings.⁹ In addition, there are several technological means to create illusions.⁵⁴

Below we refer to some events the author has identified from Internet sources, events that have been characterized by some as reality and by others as tricks.

I. *Indian trick No.1*

Along with the history of levitation, the English professor Steven Connor⁵⁵ has described performances by the Dutch magician Wouter Bijdendijk on 22 October 2007. Bijdendijk, who performs under the name Ramana, hovered cross-legged outside the White House, apparently without support. An investigation revealed a Dutch TV video that shows him not only to be cross-legged but also in contact with a vertical beam.⁵⁶ Another independent BBC video revealed that the existence of the vertical beam is closely related to the secret of Indian yogis for centuries, which is only a trick.⁵⁷

II. *Indian trick No.2*

In contrast, another event is the so-called “Indian rope trick,”⁵⁸ which, to the best of our knowledge, is not a trick. The key point is that the supposed magician uses repetitious music in order to tune the rope’s dynamical behavior with the sound energy. This physical phenomenon is called “resonance” and is reported even in high school books (of course not for the Indian rope). When the rope unfolds from the basket in which they have folded it and assumes a vertical position, it becomes so stiff that a small child can climb up it. On this topic there is rich scientific literature. One of the first papers is by the academician Ilia Blekhan,⁵⁹ but it was written in the Russian language and the English translation appeared many years later. Examples of relevant Western literature are [⁶⁰⁻⁶⁵].

III. *The Criss Angel Phenomenon*

Christopher Nicholas Sarantakos, better known by the name Criss Angel, is an American illusionist. He is best known for starring in the television show *Criss Angel Mindfreak* and for his live performance illusion show *Criss Angel Believe* at the Luxor casino in Las Vegas, Nevada in artistic collaboration with *Cirque du Soleil*. Criss is also the creator of MagicPlace.com website, which is billed as a lifestyle portal for all things magic that also sells his magic kits.⁶⁶

In a way similar to Indian trick No.1, in some festive TV programs, we have seen him levitate above the ground,⁶⁷ from building to building,⁶⁸ or walk on the water of a swimming pool.⁶⁹ The usual answer is that this is none other than individual or collective hallucination or delusion. The other possibility is that they may all be tricks, as suggested in relevant videos [⁷⁰⁻⁷²] that reveal the aforementioned [⁶⁷⁻⁶⁹] cheating and entertainment tricks, respectively.

IV. *A Shamanism Trick*

Another example is an African shaman performing levitation,⁷³ who is debunked by Trickbusters.⁷⁴

5. **Resonance and Paranormal**

In physics, “resonance” is the tendency of a system to oscillate at a greater [amplitude](#) at some [frequencies](#) than at others. These are known as the system's *resonant frequencies*. At these frequencies, even small [periodic](#) driving forces can produce large amplitude oscillations, because the system stores vibrational energy. In physics and chemistry, resonance appears as mechanical, electrical, acoustic, orbital, nuclear magnetic (NMR), particle, shape, Feshbach, and Fano resonance.

The aforementioned phenomenon extends from physics to many other fields, such as psychology and consciousness, where there are morphic resonance, limbic resonance, synchronicity, etc. A branch of physics explores normal and paranormal phenomena like love, telepathy, etc. Although some scientific papers are reviewed below, a detailed approach is outside the scope of this paper, which focuses mostly on technical matters.

What is colloquially called the paranormal, academics refer to as parapsychology. In his book *An Introduction to Parapsychology*, Dr. Harvey Irwin (2004) claims that parapsychology’s three basic concerns are “authenticity, underlying process, and phenomenology.”⁷⁵

Ostensible paranormal experiences have been the subject of continuous scientific investigation since the founding of the British Society for Psychical Research in 1882. During this extensive period, certain categories of analysis emerged to become salient within both the professional discipline and popular culture. These are exemplified by such standard nomenclature as *extrasensory perception*, *telepathy*, *precognition*, *clairvoyance*, *psychokinesis*, *survival of the human personality after death*, and *reincarnation* (see [76], and papers therein).

Although the existence of phenomena such as telepathy⁷⁷ or remote viewing is not doubted, skeptics frequently claim that because they are largely internal experiences, they are hard to define or measure. In contrast, human levitation is clearly visible and hard to fake.

6. Devices Inspired by the Ouroboros Serpent

An extensive analysis concerning the Ouroboros serpent as well as the meaning of the figure eight (8) and the closely related symbol of infinity (∞) is provided in Appendix A.

In the sequence, two innovations related to the figure eight shape will be reported.

6.1 Gearless power transmission

Given two separate coaxial shafts, it is possible to determine a mechanical system between them so as when one shaft turns clockwise the other turns anti-clockwise. This system is called (mechanical) differential and consists of four gears as shown in [79]. The aforementioned differential device exists in all terrestrial vehicles, from the smallest passenger car up to the heaviest truck.

After thirteen years of intensive concentration and meditation by the inventor, the Ouroboros serpent showed the way in the early 1980s. Since the motion should be continuous, the cyclic and constant motion of the Ouroboros serpent reflected to a concrete design as shown in Fig.9.

The entire technical study, accompanied by numerous publications in the period 1981-1987, was reported in 2003.⁸⁰ Besides the differential device, the same idea is applicable to gearboxes and novel motors.

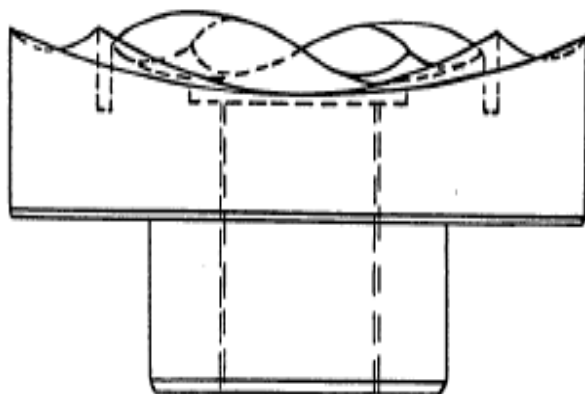


Fig.9: Perspective view of the figure eight shaped cam-track disk in a gearless differential mechanism.

(Source: Courtesy reference [⁸⁰]; it concerns the European Patent Number: 0066122, USA Patent Number: 4,509,388, Canadian Patent Number: 1195144, Japanese Patent Number: 1612048, Korean Patent Number: 26451, Spanish Patent Number: 512.403, Argentinean Patent Number: 228.492, Brazilian Patent Number: 8202966, Australian Patent Number: 548573.)

The above idea led to a specific device that was successfully demonstrated in the European Exhibition EUREKA (Brussels, Belgium) in December 1983, where it won first prize.⁸⁰ The next year, October 1984, it was demonstrated in the international exhibition FIAC in *Grande Palais* in Paris, France. The late journalist Constantine Stamatiou (1929-1991) wrote in the daily newspaper NEA⁸¹ (Athens, Greece) that FIAC was a trade fair covering an area of 15,000m,² divided into 135 galleries, with 2,950 creative works and 500 creators, where every kind of “innovation,” including devices of perpetual motion, could be found.

6.2 Figure-Eight-Shaped Antigravity Mechanism

6.2.1 General

The operation of the Ouroboros serpent, and particularly its self-reflexivity, was again a source of inspiration for another, much different problem, which is the antigravity effect. As mentioned in Section 2, antigravity is a controversial matter that, according to various claims, can be achieved by several means. A state-of-the-art has been presented in an international Conference,⁸² whereas another paper was recently published.²⁸

For the completeness of this paper, it is necessary to point out that the idea of using aggregated masses to produce the so-called inertial propulsion is a very old concept. The first application on record is probably the use of dumbbells (*halteres*; in Greek : ἄλτηρες) that have been used in athletic games such as the long jump in ancient Greece.^{83,84} As illustrated in Fig.10 and Fig.11, the jumper holds the dumbbells by passing his hands through the openings (the latter shown in the right side of Fig.11), and he rotates them on the vertical plane. In this way the linear momentum of the dumbbells is transferred to the body of the jumper, thus increasing its velocity and the length of the long jump.



Fig.10: Young boy holding a [discus](#) at the [palaestra](#). Near him, a pick to prepare the landing ground for the long jump and a pair of dumbbells ([halteres](#)) used to maintain equilibrium during the jump. Interior of an [Ancient Greek](#) Attic [red-figure kylix](#), 510–500 BC, [Louvre](#) Museum, Paris.

(Source: http://en.wikipedia.org/wiki/File:Discobolus_Kleomelos_Louvre_G111.jpg.)



Fig.11: Dumbbells ([halteres](#)) used in athletic games in ancient Greece, [National Archaeological Museum, Athens](#).

(Source: http://en.wikipedia.org/wiki/File:Halteres_from_ancient_Greece.JPG.)

Twenty-five centuries later, in the mid-1950s, a US citizen named Norman Dean proposed the use of two contra-rotating eccentric masses to convert rotary motion to unidirectional motion.⁸⁵ He claimed that in this way one could achieve thrust, thus producing motion of the object to which this system was attached. Since then, Dean's mechanism was internationally named the "Dean drive" or "Dean space drive." This subject attracted the attention of many scientists, science fiction writers and philosophers.⁸⁶⁻⁹⁰ In the pure scientific domain, from the book of the reputable Russian academician Prof. I.I. Blekhman, which was translated into English twelve years ago,⁹¹ we learn that the applicability of Dean's drive to air or space propulsion has been discussed in two Russian language works. As was previously mentioned, Prof. Blekhman dealt also with the Indian rope trick.⁵⁹

A brief explanation of the incapability of Dean's drive could be that every rotating mass passes through a point at a certain velocity; exactly after a whole period of 360 degrees, the same mass passes through the same point at exactly the same velocity. As a result, the change of linear momentum is zero. Therefore, since no other external force is exerted, the net impulse per period vanishes; thus inertia propulsion is not possible. From a different point of view, when the mass traces the upper half of the circle the corresponding impulse is positive, while when it traces the lower half it becomes negative (both of equal absolute value). This topic has been thoroughly studied during the last three years,⁹²⁻⁹⁴ while he has recently cooperated to extend it to its electromagnetic equivalent.⁹⁵

6.2.2 Rotating gyros

The first scientific attempt to study rotating gyroscopes is probably attributable to Bruce Eldridge De Palma (1935-1997), who was working at MIT as a lecturer in photographic science. Based on photographic experiments, he claimed to have measured a delay in a falling gyro or an increase of its maximum altitude in an oblique shoot. His work was published in a parareligion book.⁹⁶ Thirteen years later, Hayasaka and associates measured a weight reduction of gyros when rotating in the right direction (spin vector pointing downward);^{97,98} he showed that the

higher the gyro revolutions per minute, the higher the weight loss. This finding was disputed by many others.⁹⁹⁻¹⁰⁶ One of the latest papers concerning gyroscopes, and particularly Laithwaite's experiments, is a paper by Wayte,¹⁰⁷ who reported a weight loss of eight percent (it is noted that the aforementioned loss has been calculated as a time integral of measured impulse of the reaction force).

In their monograph, the Correias¹⁰⁸ comment of the controversial findings by some of the aforementioned researchers,⁹⁹⁻¹⁰⁶ who emphasized that all relevant experiments were conducted at quite different angular velocities and provided explanations based on the resonances of the aetherometric mesh.

Moreover, after twelve years of research, Benjamin Solomon³³ concluded that time dilation can be the source of gravitation effects. He has also presented the hypothesis that time dilation causes a shift in the center of mass.

For completeness, it is worth mentioning that in the field of relativistic physics based on rotation, the first clear reference to antigravity was made by Forward⁵ in 1963, although he uses findings by Thirring-Lense in 1918-1921 that were translated into English by Mashhoon et. al.¹⁰⁹ Clearly, when a horizontal ring rotates around its vertical axis of symmetry, not only the usual Newtonian centrifugal force but also axial relativistic force appears; the latter is the antigravity force. In this context, one of the most recent papers is that of Tajmar.⁷

6.2.3 The Physics of the Dean Drive

Concerning the Dean space drive, the results obtained in previous works⁹²⁻⁹⁴ show that it works like a catapult, by transforming the angular momentum of the eccentric rotating masses into linear momentum of the object. In this way, it is possible for the object to move upwards like a projectile in a vertical upward trajectory and then fall down.

As was previously mentioned, the circular path on which the eccentric masses move causes positive and negative vertical impulses when the mass moves above or below the horizontal level through the center, respectively. The latter movement cancels the effect of the first movement and prevents the system from producing a thrust. Therefore, in order to overcome the cancellation resulting from the lower part of the motion, many attempts have been made.²⁸

6.2.4 The Revolutionary Change in the Shape and Operation of Dean Drive for Achieving the Selective Cancellation of the Centrifugal Force

As previously mentioned, the inspiration to overcome the canceling action of the centrifugal forces, that is, to selectively strengthen the action of the centrifugal forces in the upper or the lower part of the circular path traced by the aggregated masses, came first from the Ouroboros serpent; a relevant video showing such a "flying" snake is [¹¹⁰]. The idea was further reinforced by the motion of the hummingbird (see Appendix B).

The analysis of the figure-eight path, which transforms the circumference of a circle (on which an eccentric mass moves), is as follows.

The transformation of the "wrong" circle into a figure-eight shaped path is achieved by deforming the "circle" in two successive ways. First the "circle" is folded by rotating its lower part around the vertical axis of symmetry, thus producing a crossed figure-eight shape, which

entirely lies on the vertical plane. Secondly, the latter planar path is further bent in such a way that it lies perfectly over the surface of a hemisphere, the latter having a center 'O' and a radius r . These two successive deformation steps lead to a new, fully three-dimensional, curvilinear path that lies entirely above or entirely below the center of the hemisphere; hence it is called a "figure-eight-shaped" path. Clarifying further, in this final configuration of the mechanism, the immobile end of every connecting bar is pinned to the center of the hemisphere while the second end carries the corresponding mass. Consequently, one could say that, in this way, the proposed procedure creates a new path on which only the upper half, or only the lower half of the initially considered circular path, operates. Despite this fact, it has been theoretically verified that the maximum upward force is equal and opposite to the maximum downward force; thus antigravity is still impossible.⁸² The mechanical device capable of producing the aforementioned figure-eight-shaped path has been presented in [^{28,82,111}] and for completeness, it is shown in Fig.12.

In brief, the device consists of two electric motors. The first motor produces the figure-eight-shaped path on which the yellow concentrated masses at the ends of the two rods move; the trajectory is shown on the right part of Fig.12. The second motor produces a spin of the entire frame around the vertical axis of symmetry.

It is of particular interest that, if the second rotation is characterized by an angular velocity that is not an integer multiple of the first one, a *non-rational* ratio of the two aforementioned rotations ensures that the mass should never pass through the same point in the 3D Cartesian space; illustrative simulations for several ratios may be found in reference.¹¹² In other words, the *synchronization* between two rotations, the first being the 8-shape, is the technical solution to produce mechanical antigravity.

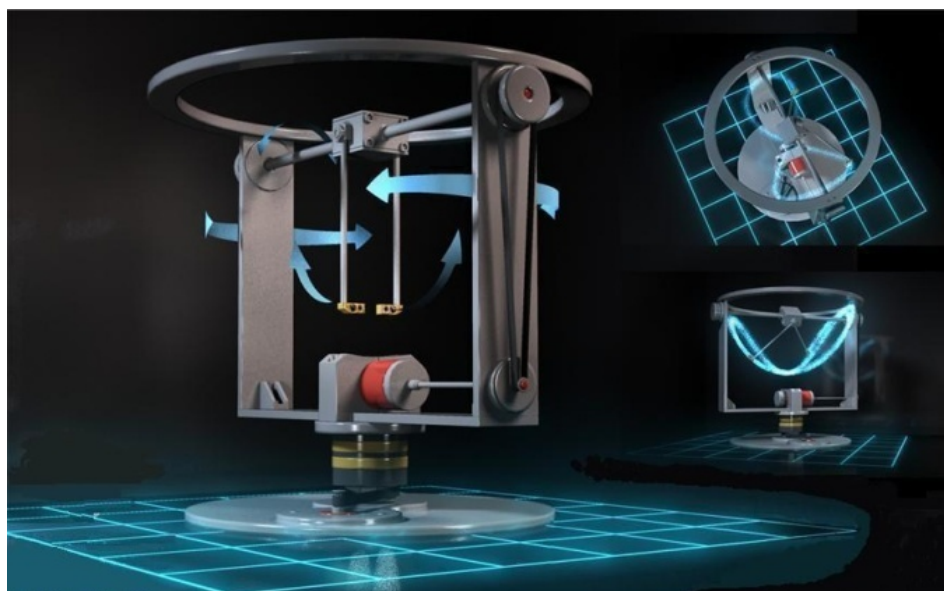


Fig.12: The prototype antigravity mechanism. On the left, the arrows show the directions of the two simultaneous rotations, while on the right the figure-eight-shaped path is clearly illustrated from two different views.
(Source: reference [¹¹²].)

6.3 The Correlation between the Two Proposed Mechanisms

As was mentioned above, both the differential device and the antigravity mechanism were inspired by the Ouroboros serpent. In the first device, the figure-eight shape is the real curve that is part of the cam-track-disk of the differential (Fig.13, left), which aims to transmit the power from the engine to the wheels. In contrast, in the second device, the figure-eight shape is not a particular materialized component but merely the path formed by the rotating masses mounted at the ends of the two rods (Fig.13, right); the vertical center line denotes the direction toward which motion can be easily made.

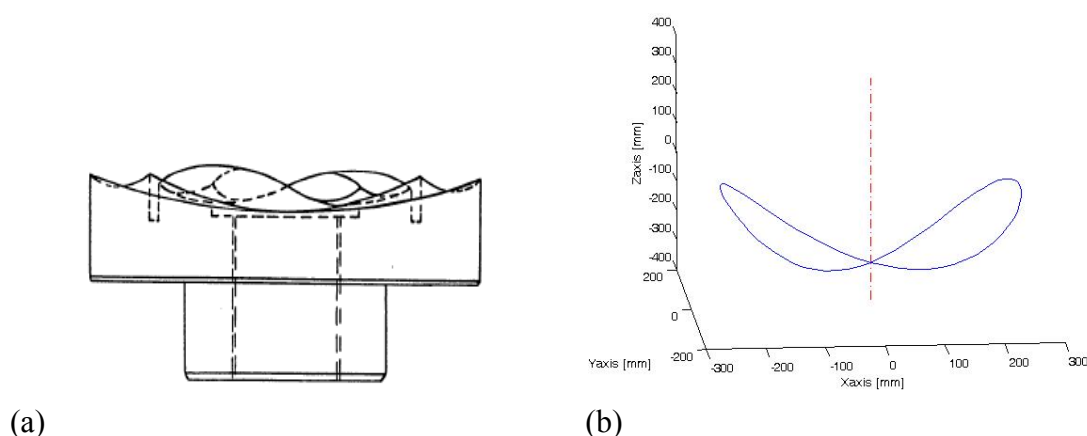


Fig.13: A comparison between (a) the first (differential mechanism) and (b) the second (antigravity device) figure-eight-shaped curves.
(Source: references [^{80,112}].)

7. Conclusion

This study systematically examined not only various theories of antigravity but also prototype devices that have actually been constructed. The deep knowledge of physical principles related to the movement and levitation of objects is a *conditio sine qua non* for the successful replacement of conventional rockets and the development of future space vehicles capable of performing interstellar travel. Despite the strong technological character of the latter need, a good knowledge of parapsychology is believed to play a significant pedagogical role and enable enlightened scientists eventually to achieve this goal. Additional inspiration will also come when trying to decode ancient writings such as those related to the caduceus carried by Hermes in Greek mythology, which was supposed to cause antigravity effects, and also when trying to mimic nature.

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APPENDIX A

Number Eight, the Symbol of Infinity and the Ouroboros Serpent

A.1 The Number Eight

In ancient Egyptian culture, “four” is the number of totality and completeness. “Eight,” as four doubled, and hence intensified, appears to be used symbolically in some cases, as when the god Shu created eight *heh* deities to help support the legs of the goddess Nut in her guise as the great heavenly cow. The number often appears in relation to Hermopolis, the “City of Eight,” where the eight-deity “ogdoad” led by the god Thoth was revealed.¹¹³

The contextual connection between the number 8 and the name of Jesus is amplified in this, one of the greatest alphanumeric identities linking the Greek and Hebrew languages to each other and to the central doctrine of historic Christianity:¹¹⁴

Jesus		The Salvation of our God
Ιησους	= 888 =	ישועת אלהינו
Iesous		Yeshoth Elohenu

The many numerous ramifications of this number are discussed in the Gematria Reference under the Number 888.

In Christianity, the number 8 has the following meanings:

- The spiritual Eighth Day, because the number 7 refers to the days of the week which repeat themselves.
- The number of Beatitudes.
- The Anti-Christ, the eighth king according to the Book of Revelations.

Also, eight is considered a lucky number in both the Chinese and Japanese cultures.

A.2 The Role of the Symbol of Infinity

It has been previously written that the Tarot fortune-telling card deck consists of seventy-eight cards and has been traced back to Renaissance Europe. The nineteenth-century French physician Gérard Encausse, writing under the pen name of Papus, conjectured that the Egyptian magi may have purposefully created Tarot cards as an alternative way of ensuring the survival of their sacred knowledge. In particular, many taroists teach that Arcana 1 through 10 portray principles governing the creation of the physical universe, while Arcana 11 through 21 describe matters relating to human evolution and spiritual development. A detailed description can be found in [¹¹⁵].

The story of creation makes its true start with Arcanum 1. The Marseilles arcanum depicts a magician wearing a hat in the form of an *infinity sign*, whereas the corresponding Rider-Waite tarot deck is shown in Fig.14a. In a very similar Egyptian fresco, the magus (priest) stands before a cubical stone altar, he wears a white robe secured about his waist by a serpent biting its tail, the ancient Egyptian symbol of eternity and also the symbol for the cosmic ocean, Nun.



(a)



(b)

Fig.14: Typical mystical uses of the figure eight or the symbol of infinity, in the Rider-Waite tarot deck: (a) Arcana 1, (b) Arcana 8 or 11.

(Source: <http://i327.photobucket.com/albums/k464/jlehmman1030420/magicianBIG.jpg>, http://en.wikipedia.org/wiki/File:RWS_Tarot_08_Strength.jpg.)

A.3 The Role of Ouroboros Serpent and the Role of Figure-Eight

The *Ouroboros* is an ancient symbol depicting a serpent eating its own tail (Fig.15). It often represents self-reflexivity or cyclicity, especially in the sense of something constantly re-creating itself, the eternal return, and other things perceived as cycles that begin anew as soon as they end. It can also represent the idea of primordial unity related to something existing in or persisting before any beginning with such force or qualities that it cannot be extinguished. The *Ouroboros* has been important in religious and mythological symbolism, but has also been frequently used in alchemical illustrations, where it symbolizes the circular nature of the alchemist's opus. It is also often associated with Gnosticism and Hermeticism. Carl Jung interpreted the *Ouroboros* as having an archetypal significance to the human psyche.¹¹⁶ The *Ouroboros* is contained in the Egyptian Book of the Netherworld.¹¹⁷

The *Ouroboros* was popular after the Amarna period, the latter marked by the reign of Amenhotep IV, who changed his name to Akhenaten (1353–1336 BC) in order to reflect the dramatic change of Egypt's polytheistic religion into one where a sun-god, Aten, was worshiped over all other gods.

The infinity symbol (∞) is also sometimes depicted as a special variation of the ancient *Ouroboros* snake symbol (Fig.15b and Fig.16). The snake is twisted into the horizontal eight

configuration while engaged in eating its own tail, a uniquely suitable symbol for endlessness.

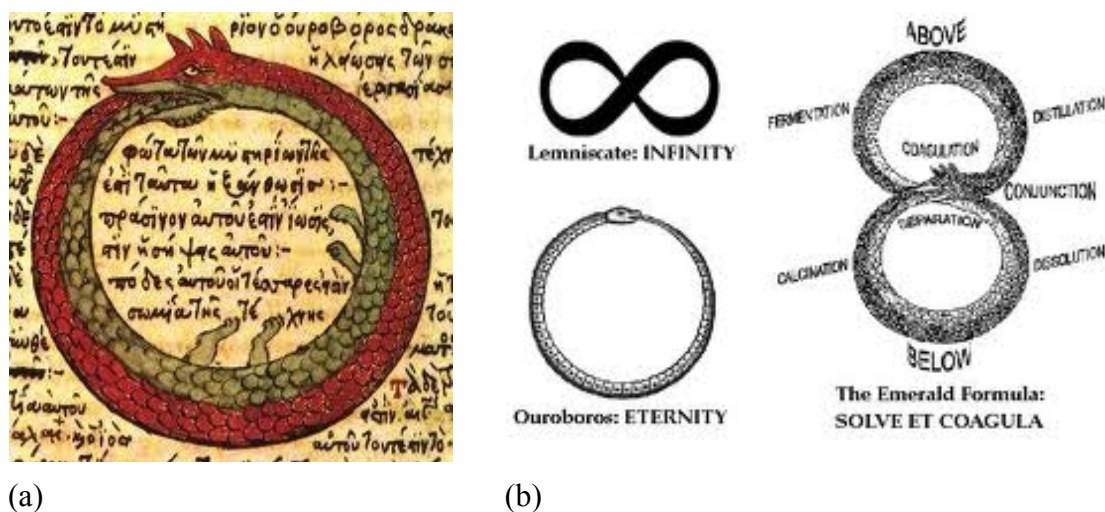


Fig.15: The Ouroboros serpent in two different options: (a) single loop, and (b) figure-eight-shaped.

(Source: http://en.wikipedia.org/wiki/File:Serpiente_alquimica.jpg.)

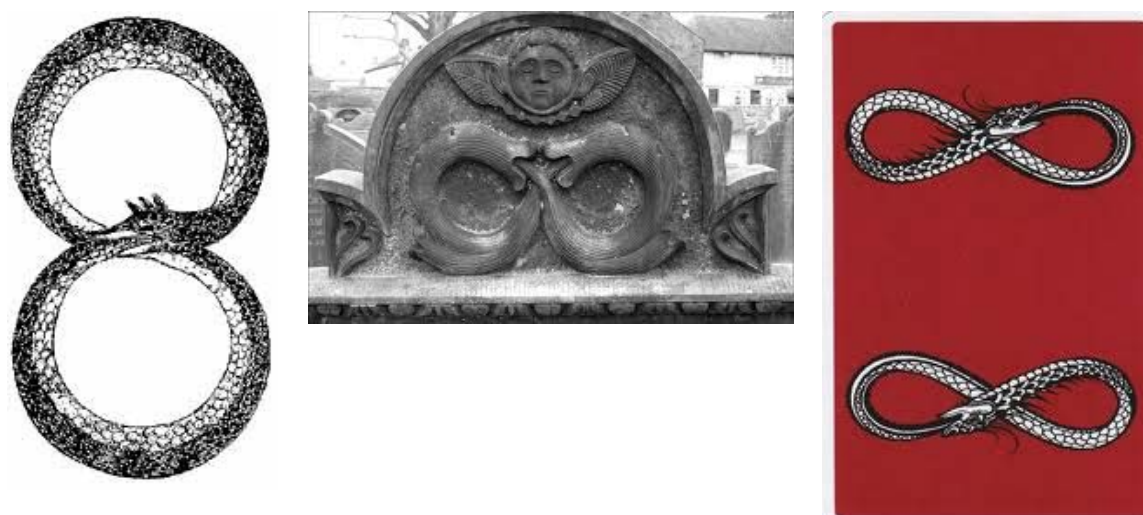


Fig.16: Several figure-eight-shaped Ouroboros snakes.

(Source: http://nemetwr.pa-sy-a.gr/2010/05/22/00-00/feminist_masonic_8_snake.jpg.)

APPENDIX B

The hummingbird

Hummingbirds are birds that comprise the family Trochilidae (Fig.17). The hummingbird can hover almost motionless thanks to the extreme elastic deformation of its wings, of which the tips form a figure-eight shape (the entire figure-eight shape is shown better in a video, whereas only half of it is shown in Fig.17-right). Hummingbirds possess an extraordinary capability: in order to hover, a hummingbird's wings move back and forth horizontally drawing a narrow but elegant figure-eight in the air with each full stroke. The stroke is continuous –like a Möbius strip– which is the symbol of infinity. The hummingbird can hover for 50 minutes, while moving its wings 53 times per second (approx. 3,000 rounds per minute).^{118,119} The interested reader may consult many Internet videos such as those in [¹²⁰].



Fig.17: The hummingbird eating from natural (left) and artificial (right) source.

(Source: <http://en.wikipedia.org/wiki/File:Colibri-thalassinus-001-edit.jpg>,
<http://www.youtube.com/watch?v=9NQv89pCYU8&feature=fvst>.)