

A Wikipedia Reader

5	Introduction
7	Uta Barth
17	Ginny Cook
27	Krysten Cunningham
43	Ken Ehrlich
67	Luke Fischbeck & Sarah Ra Ra
83	Brendan Fowler
101	Emilie Halpern
121	David Horvitz
141	Lindsay Ljungkull
155	Guthrie Lonergan
165	Laurel Nakadate
181	John Sisley
201	Index

For this book I asked artists with varying interests to create a thread of linking Wikipedia articles starting with something they found interest in, and continuing to other topics from links within the page. The results are a group of similar or dissimilar topics that are all linked together linearly.

There were two initial purposes in this project. The first was to create a small game that explored surfing through information using keywords. I wanted to explore how within a digital system categories of knowledge have become almost irrelevant in accessing the information they once contained. The Siege of Paris is no longer confined under World History, France, Franco-German or Franco-Prussian War 1870-1871 (DC281-326.5), as it is in the Library of Congress. It is just as much a part of French History as it is in the story of the elephants Castor and Pollux, the Paris Commune, things that happened September 19, 1870, and balloon mail lore. And it is just as immediately accessible from any of these places, as well as the possibility of ending up in a multitude of other diverse places. Instead of topics organized and accessed by a tree model going from larger branches to smaller ones (World History, French History, etc...), I picture a new model where there are no branches, but a pile of scattered leaves where one leaf overlaps many other leaves. Everything is interrelated. It always has been.

The second purpose of this project is to present a list of ideas that reflect the interests of each artist. Ideally, one could be able to use these articles as supplementary to understanding the artist's practice and work. The exception is with those who chose to use this opportunity to perform a conceptual game about the task itself (like with Brendan Fowler's contribution).

Because of the nature of Wikipedia, many of these articles have been updated since the artists did their initial search. Some of these may even no longer be linked together. And, some may contain errors (grammatical, factual, etc...).

I did my own search. I found my way from boredom to balloon mail. In real situation a few years ago in Los Angeles, I found myself a little bored and wandering through a bookstore one-night. I came across a title that caught my attention: Here is Where We Meet. It was a newly released book by John Berger. I opened the book and found a description of trapped Parisians sending distant loved ones letters by unguided balloons. That was the first time I got to balloon mail from boredom.

Dusk
Dawn
Twilight
Midnight Sun
Polar Night

Dusk is the time of day between sunset and night. It is the time of day when the sun is below the horizon but its light is still visible. The word "dusk" is also used to refer to the time of day between sunrise and dawn. The word "dusk" is also used to refer to the time of day when the sun is below the horizon but its light is still visible. The word "dusk" is also used to refer to the time of day when the sun is below the horizon but its light is still visible.

Dusk or civil dusk is the time at which the sun is 6 degrees below the horizon in the evening.

At this time objects are distinguishable and some stars and planets are visible to the naked eye.

Nautical dusk is when the sun is 12 degrees below the horizon in the evening. At this time, objects are no longer distinguishable, and the horizon is no longer visible to the naked eye.

Dawn is the period of time immediately preceding sunrise.

It is recognized by the presence of weak sunlight, while the sun itself is still below the horizon. There are a number of more technical definitions of dawn, including the following:

- Astronomical dawn is the moment after which the sky is no longer completely dark, formally defined as the time at which the sun is 18 degrees below the horizon in the morning.
- Nautical dawn that time at which there is just enough sunlight for the horizon and some objects to be distinguishable, formally defined as the time at which the sun is 12 degrees below the horizon in the morning.
- Civil dawn is that time at which there is enough light for objects to be distinguishable and that outdoor activities can commence, formally defined as the time at which the sun is 6 degrees below the horizon in the morning.

Dawn should not be confused with sunrise, which is the moment when the leading edge of the sun itself appears above the horizon.

Dawn Changes with Location

The length of time that dawn lasts varies greatly with the observer's latitude. In equatorial

Twilight is the time before sunrise or after sunset when sunlight scattered in the upper atmosphere illuminates the lower atmosphere and the surface of the Earth

Twilight is the time of day when the sun is below the horizon but its light is still visible. The word "twilight" is also used to refer to the time of day when the sun is below the horizon but its light is still visible. The word "twilight" is also used to refer to the time of day when the sun is below the horizon but its light is still visible.

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Often confused with dusk, twilight is specifical-ly defined as the period either side of night-time during which it is possible to conduct outdoor activities without the aid of artificial light. Due to the unusual, romantic quality of the ambient light at this time, twilight has long been popular with photographers and painters, who refer to it as the "blue hour", after the French expression l'heure bleue.

The collateral adjective of "twilight" is crepuscular (for daylight it is "diurnal" and for night, "nocturnal"). The term is most frequently encountered when applied to certain species of insects and mammals that are most active during that time.

Definitions

The following guidelines have been established and widely accepted. (For these definitions, an ideal horizon 90° from the zenith is used. The altitudes of the sun below the horizon are "true geometric" altitudes, that is, refraction by the atmosphere and other small factors influencing the observed position of the Sun are not to be accounted for.)

Civil Twilight

This begins in the morning when the center of the Sun is less than 6° below the horizon (the point of civil dawn), and ends at sunrise. Evening civil twilight begins at sunset and ends when the center of the Sun is more than 6° below the horizon (the point of civil dusk). The brightest stars appear during civil twilight, as well as planets, such as Venus which is known as the 'morning star' and/or 'evening star'. During this period there is enough light from the Sun so that artificial sources of light are not needed to carry on outdoor activities. This concept is sometimes enshrined in laws, like when drivers of automobiles must turn on their headlights, or if the crime of burglary is to be treated as night-time burglary, or in the daytime, with the latter determination resulting in a lesser penalty —although a fixed period of time (most commonly 30 minutes after sunset or before sunrise) will form the basis for the application of these statutes, rather than how many degrees the Sun is below the horizon. Civil twilight can also be described as the limit at which twilight illumination is sufficient, under good weather conditions, for terrestrial objects to be clearly distinguished; at the beginning of morning civil twilight, or end of evening civil twilight, the horizon is clearly defined and the brightest stars are visible under good atmospheric conditions in the absence of moonlight or other illumination.

Nautical Twilight

This is defined as the time when the center of the Sun is more than 6° below the horizon but less than 12°.

At this time, sailors can take reliable star sights of well known stars, using a visible horizon for

reference. The end of this period in the evening, or its beginning in the morning, is also the time at which traces of illumination near the sunset or sunrise point of the horizon are very difficult if not impossible to discern (this often being referred to as "first light" before civil dawn and "nightfall" after civil dusk). At the beginning of nautical twilight in the morning (nautical dawn), or at the end of nautical twilight in the evening (nautical dusk), under good atmo-spheric conditions and in the absence of other illumination, general outlines of ground objects may be distinguishable, but detailed outdoor operations are not possible, and the horizon is indistinct. Nautical twilight has military considerations as well. The initialisms BMNT (begin morning nautical twilight) and EENT (end evening nautical twilight) are used and considered when planning military operations. A military unit may treat BMNT and EENT with heightened security (i.e. a process called "stand to" in which everyone pulls security). This is partially due to tactics dating back to the French and Indian War, when warriors on both sides would use BMNT and EENT to launch attacks.

Astronomical Twilight

This is defined as the time when the center of the Sun is more than 12° below the horizon but less than 18°.

Most casual observers would consider the entire sky already fully dark even when astronomical twilight is just beginning in the evening or just ending in the morning, and astronomers can easily make observations of point sources such as stars, but faint diffuse objects such as nebulae and galaxies can only be properly observed beyond the limit of astronomical twilight. Conceptually, the dimmest stars ever visible to the naked eye —those of the sixth magnitude— will appear in the evening once the Sun falls more than 18° below the horizon (i.e. when astronomical dusk occurs) and disappear when the Sun moves to within 18° of the horizon in the morning (when astronomical dawn occurs); however, due to light pollution, some localities —generally those in large cities— may never have the opportunity to view even fourth-magnitude stars, irrespective of the presence of any twilight at all.

Twilight Length

The length of twilight after sunset and before sunrise is heavily influenced by the latitude of the observer; in the Arctic and Antarctic regions, twilight (if at all) can last for several hours (with none at the poles within a month on either side of the winter solstice), while at the equator, it can go from day to night in as little as 20 minutes. This is because at low latitudes the sun's apparent movement is perpendicular to the observer's horizon. Thus a location on the equator will pass through the various twilight zones directly and quickly. As one gets closer to the Arctic and Antarctic circles, the sun's surface moves toward the observer's horizon

Dusk Dawn **Twilight** **Midnight Sun** **Polar Night**

from a lower angle. The observer's earthly location will pass through the various twilight zones less directly, taking more time. At temperate-zone latitudes, twilight is shortest at or near both equinoxes, slightly longer around the time of the winter solstice, and much longer in late spring and early summer.

Within the polar circles, 24-hour daylight is encountered in summer, and twilight literally lasts for weeks (in the polar fall and spring). In high latitudes outside the polar circles, 24-hour daylight is not seen, but twilight can extend from sunset to sunrise, a phenomenon often referred to as 'white nights'. Above roughly 60.5°N or S (e.g. Anchorage, Helsinki, Tallinn, Saint Petersburg and Oslo), civil twilight lasts all night at midsummer, while above about 54.5°N or S

(e.g. Copenhagen, Moscow, Gdańsk, Glasgow, Belfast, Vilnius, Szczecin and Hamburg), nautical twilight lasts all night at midsummer. Astronomical twilight can last all night for several weeks as far from the poles as 48.5°N or S (e.g. London, Vancouver, Kraków, Prague, Frankfurt and Punta Arenas).

On Other Planets

Twilight on Mars is longer than on Earth, lasting for up to two hours before sunrise or after sunset. Dust high in the atmosphere scatters light to the night side of the planet. Similar twilights are seen on Earth following major volcanic eruptions.

See Also

Dusk
Daylight
Blue hour
Green flash
Dawn

The midnight sun is a phenomenon occurring in latitudes north and nearby to the south of the Arctic Circle and south and nearby to the north of the Antarctic Circle where the sun remains visible at the local midnight.

Given fair weather, the sun is visible for a continuous 24 hours, mostly north of the Arctic Circle and south of the Antarctic Circle. The number of days per year with potential midnight sun increases the further poleward one goes.

There are no permanent human settlements south of the Antarctic Circle, so the countries and territories whose populations experience it are limited to the ones crossed by the Arctic Circle, i.e. Alaska, Canada, Greenland, Norway, Sweden, Finland, Russia, and extremities of Iceland. A quarter of Finland's territory lies north of the Arctic Circle and at the country's northernmost point the sun does not set for 73 days during summer. In Svalbard, Norway, the northernmost inhabited region of Europe, there is no sunset from approximately April 19th to August 23rd. The extreme sites are the poles where the sun can be continuously visible for a half year.

The opposite phenomenon, polar night, occurs in winter when the sun stays below the horizon throughout the day.

Since the Earth's axis is tilted with respect to the ecliptic by approximately 23 degrees 27 minutes, the sun does not set at high latitudes in (local) summer. The duration of the midnight sun increases from one day during the summer solstice at the polar circle to approximately six months at the poles. At extreme latitudes, it is usually referred to as polar day. The length of the time the sun is above the horizon varies from 20 hours at the Arctic Circle and Antarctic Circle to 186 days at the poles.

At the poles themselves, the sun only rises once and sets once, each year. During the six months when the sun is above the horizon at the poles, the sun spends the days constantly moving around the horizon, reaching its highest circuit of the sky at the summer solstice.

Due to refraction, the midnight sun may be experienced at latitudes slightly below the polar circle, though not exceeding one degree (depending on local conditions). For example, it is possible to experience the midnight sun in Iceland, even though most of it (Grímsey being a notable exception) is slightly south of the Arctic Circle. Even the northern extremities of the British Isles (and those places on similar latitudes) experience a permanent "dusk" or glare in the northern skies at these times.

White Night

Locations above 60 degrees latitude that are south of the Arctic Circle or north of the Antarctic Circle experience midnight twilight instead. The sun is at the horizon to 6 degrees below the horizon, so that daytime activities, such as reading, are still possible without artificial light, on the condition it is not cloudy.

White nights have become a common symbol of Saint Petersburg, Russia, where they occur from about 11 June to 11 July, and the last 10 days of June are celebrated with cultural events.

Effect on People

Many find it difficult to fall asleep during the night when the sun is shining. In general, visi-

tors and newcomers are most affected. Some natives are also affected, but in general to a lesser degree. The effect of the polar night, that is, not experiencing day for long durations of time is said to cause "Seasonal Affective Disorder" or S.A.D., a type of depression caused by lack of natural light. High-intensity daylight-spectrum lamps and tanning beds are a popular solution for relief from S.A.D.

Popular Culture

- Midnight Sun is the name of a Multi User Dungeon (MUD) game.
- In the PC game Battlefield 2, a map in the Armored Fury booster pack is called Midnight Sun and takes place in Alaska during the night.
- In the PC game Deus Ex, a fictional newspaper containing conspiracy theories which can be read at several points throughout the game is named Midnight Sun.

Literature

- "Integration Under the Midnight Sun" by Adnan Mahmutovic is a short story about Bosnian refugees in Sweden.
- "Midnight Sun" is a novel by Ramsey Campbell and also a novel by RC Duggan.
- "White Nights" is a short story by Fyodor Dostoevsky.
- "Midnight Sun" is the name of a yet-to-be completed book in Stephenie Meyer's Twilight series. It will be a companion to the first novel, "Twilight", only from the point of view of Edward Cullen.
- Midnight Sun appears in the opening lines - "There are strange things done in the midnight sun by the men who toil for gold." - of the famous and striking poem by Robert W. Service (1874-1958) entitled "The Cremation of Sam McGee".
- Midnight Sun is the name of a supervillain in the Marvel Comics universe.
- "Midnight's Sun - A Story of Wolves" is the title of Garry Kilworths 1990 novel.
- Wild Stars Seeking Midnight Suns is the title of the 2006 collection of short stories by J. California Cooper.

Film and television

- The movie "Insomnia" tells the story of a fictional police detective in Norway who suffers from insomnia due to, among other things, the midnight sun. A 2002 remake of the film, starring Al Pacino as the insomniac detective, is set in Alaska.
- "Midnight Sun" is the name of a Japanese film.
- "The Midnight Sun" is the title of an original Twilight Zone episode.
- Most of the plot of the movie "White Nights" takes place during a midnight sun period in Leningrad (Sankt Petersburg now) and Siberia.
- "Midnight Sun" is the theme and title of an episode from TV-series taking place in Alaska, Northern Exposure, season 4.
- The movie "Lovers of the Arctic Circle" (1998) by Julio Medem references the cyclical nature of the midnight sun.
- Byakuyakou; Also known as: Midnight Sun Journey is the title of a Japanese drama.

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Music

- "Midnight Sun" is a jazz standard by Lionel Hampton and Sonny Burke, with lyrics by Johnny Mercer
- "Midnight Sun" is a song by the group The Pines.
- "Midnight Sun" is a Choirboys song and album released in 1991.
- "Midnight Sun" is a Halloween song from their 1998 album Better Than Raw, written by Michael Weikath.
- The lyric "Where the northern lights are runnin' wild in the land of the midnight sun" referenced in a popular country song titled "North to Alaska" by the 1950s country music singer Johnny Horton.
- "Midnight Sun" is the title of a hidden track on the album Black Sails in the Sunset by AF1.
- "Midnight Sun" is the title of a song on the album April Skies by Deine Lakaïen.
- "Midnight Sunrise" is a song by the Finnish band Turisas.
- "White Night Fantasy" is a song by Finnish band Nightwish. There is also reference in Ever Dream by Nightwish in the lyric "Your beauty cascaded on me, in this white night fantasy".
- The midnight sun is mentioned together with northern lights in a song about Finland, titled The Land of Ice and Snow, by the Finnish Power Metal band Stratovarius.
- The Stephen Sondheim musical A Little Night Music takes place during a Swedish white night, and has songs which revolve around this fact.
- "Follow The Midnight Sun" is the title of a song on the album Midnight Sun by Maggie Reilly.
- In Led Zeppelin's 1970 album, Led Zeppelin III, the "Midnight Sun" is referenced in the Immigrant Song "We come from the land of the ice and snow where the midnight sun and the hot springs blow" (in reference to Iceland), even though most of Iceland is below the polar circle.
- On the Comets on Fire album Blue Cathedral there is a song titled "The Antlers of the Mid night Sun".
- In The Outfield's song "Say It Isn't So", the song mentions "walking in the Midnight Sun once again".
- The Electric Light Orchestra hit song Do Ya opens with the singer mentioning "babies dancin' in the midnight sun".
- Warren Zevon's Roland the Headless Thompson Gunner hailed from the "Land of the Midnight Sun".
- Al Di Meola's debut jazz-fusion release on Columbia Records in 1976 was also called "Land of the Midnight Sun".
- Midnight Sun is the name of a Cirque du Soleil performance, that was held in Montreal, Canada in 2004.
- Midnight Sun is the name of a Swedish heavy metal band. The band features Jonas Reingold of The Flower Kings.
- Midnattsol (Midnight Sun) is the name of a German/Norwegian heavy metal band fronted by Carmen Elise Espenæs.
- Midnight Sun is the name of a song on the 1983 Asia (band) album Alpha (album).
- "Land of the Midnight Sun" is a song on Colin Hay's album, Are You Lookin' At Me?
- "Midnight Sun" is a song by Finnish freeform hardcore group Re-form.
- "Midnight Sun" is a song by Japanese metal band Sigh.
- "Summer Night City", a song by ABBA, is about the white nights in Stockholm, and the music video for the song shows several shots of the extended twilight.

The polar night is the night lasting more than 24 hours, usually inside the polar circles.

The opposite phenomenon, when the sun stays above the horizon for a long time is called the polar day, or midnight sun.

A common misconception is that at each point inside the polar circle, or that at each place where midnight sun occurs, the shortest day

See Also

Land of the Midnight Sun
Nuclear weapon
Polar night

is totally dark. Because of twilight, this is not the case. In places very close to the poles this is true, but in areas very close to the Arctic and Antarctic Circle, midnight sun is experienced, but polar night is never experienced. In fact, polar regions typically get more light throughout the year than regions located closer to the equator.

In regions inside the polar circles, the length of the time when the sun is below the horizon varies from 20 hours at the Arctic Circle and Antarctic Circle to 179 days at the Poles. However not all this time is classified as polar night, since there may be plenty of sunlight because of refraction. Also, one might notice that the time when the sun is above the horizon at the poles is said to be 186 days. The asymmetry in numbers is because the time when the sun is partially above the horizon is counted towards the "daytime".

Kinds of Polar Night

Various kinds of polar night exist. This is because polar night is the period during which no twilight occurs; but there are various kinds of twilight. These latitude definitions are based on relative clear skies. If there are thick clouds, it gets darker.

Civil Polar Night

The civil polar night is the period during which no civil twilight occurs. Civil twilight happens when the sun is between zero and six degrees below the horizon. Because of refraction, there is still enough light for normal outdoor activities. Civil polar night is limited to latitudes above 72° 33′, which is exactly six degrees inside the polar circle. In mainland Europe, there are no places fulfilling this definition. On the Norwegian territory of Svalbard, however, civil polar night lasts from about 12 November until the end of January. Dikson, in Russia, experiences civil polar night for around a month.

If there are thick clouds, it gets darker, and places like the coast of Finnmark (about 70°) in Norway will get a rather dark day.

Nautical Polar Night

The nautical polar night is the period during which there is only a faint glow of light visible during midday. It happens when there is no nautical twilight. Nautical twilight happens when the sun is between six and twelve degrees below the horizon. Because of refraction, there is still a place at the horizon with clearly more light than other places. The nautical polar night is limited to latitudes above 78° 33′, which is exactly 12 degrees within the polar circle, or eleven and a half degrees from the pole.

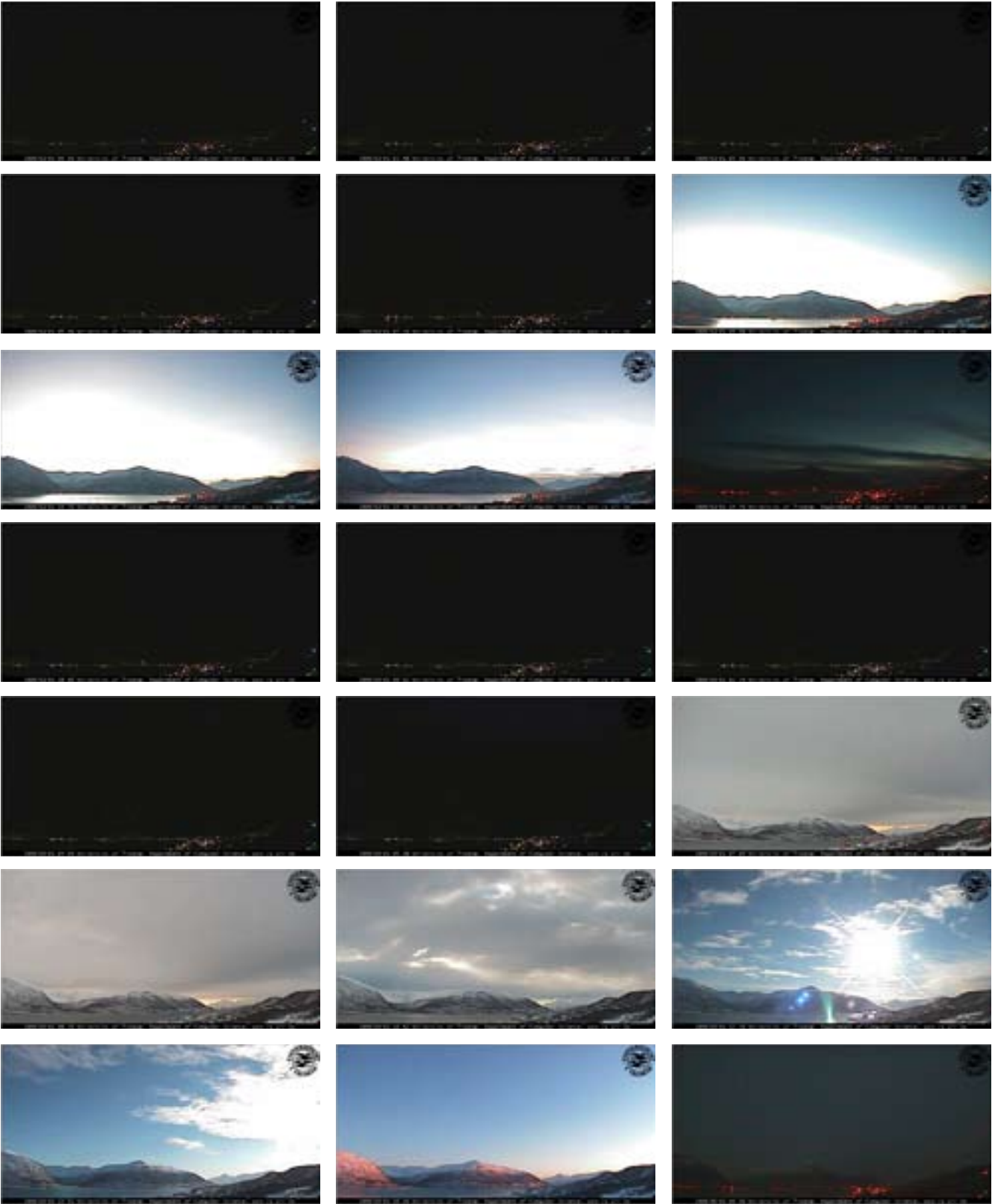
Astronomical Polar Night

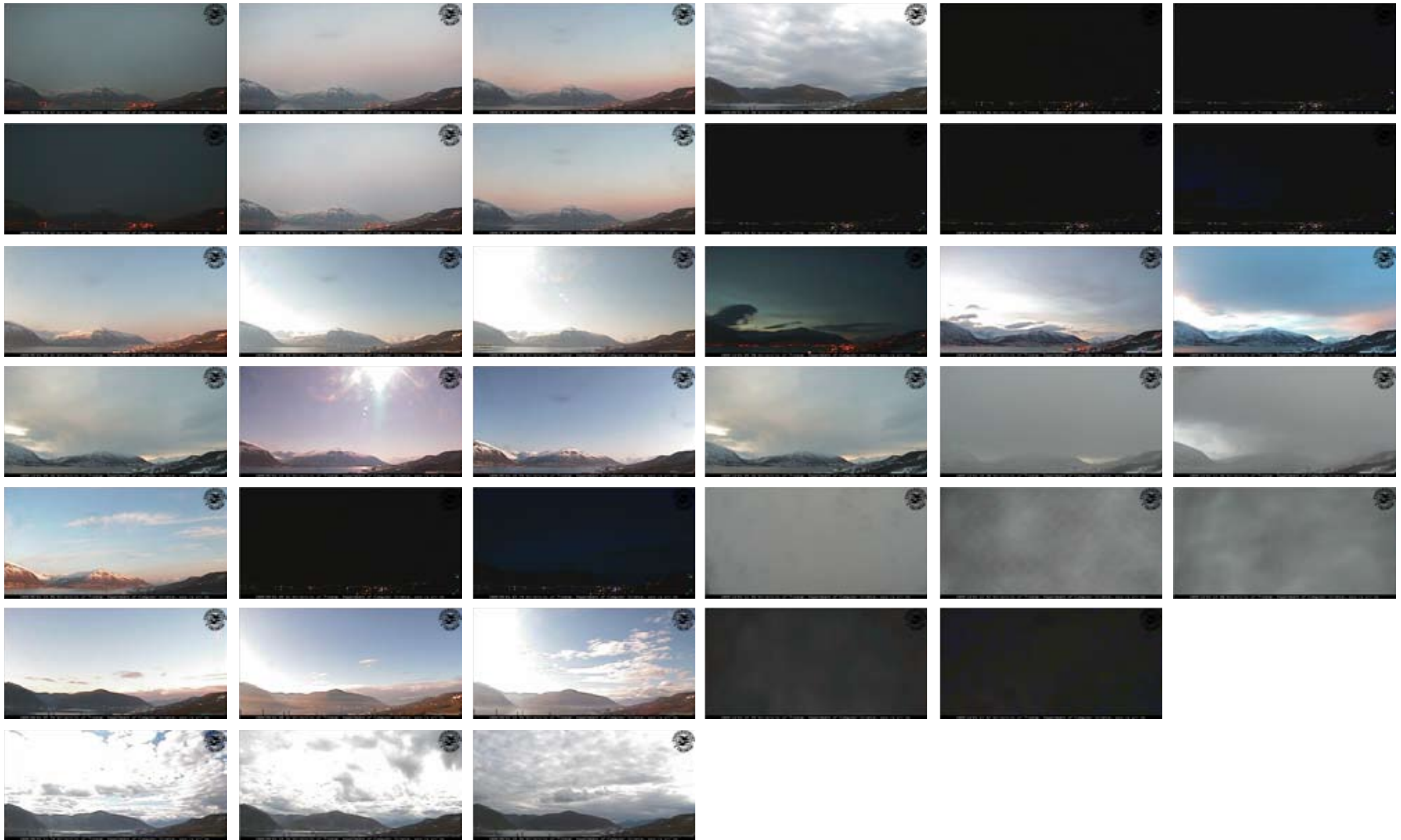
Finally, the astronomical polar night is the period that no trace of light can be seen anywhere and no astronomical twilight occurs. Astronomical twilight happens when the sun is between twelve and eighteen degrees below the horizon. Thus, astronomical polar night happens at latitudes above 84° 33′, which is exactly 18 degrees within the polar circle, or five and a half degrees from the pole.

There are no permanent settlements anywhere in this range of latitude. This portion of the Arctic Ocean is generally permanently ice capped. Some scientific stations in Antarctica, including Amundsen-Scott at the South Pole, experience this.

Effects on humans

The period of polar night can trigger depression in some people. Polar days may affect people as well. People who suffer from seasonal affective disorder are particularly susceptible. Polar night may also be implicated in some instances of solipsism syndrome.





The following images are stills from weather observation time lapse videos shot in Tromsø, Norway for everyday of 2006. This web-page was linked to the Polar Night Wikipedia article.

<http://weather.cs.uit.no/video/index-2006.html>

Searching
Missing Person
Fugue State
Fugue State Press
Bad Faith
Specific Performance
Replevin
Attractive Nuisance
Eggshell Skull

18

Computers and computer science

- Search algorithm
 - Boolean search
 - Tree search
- Search engine
 - Social search
- Web directory

Rescue related

- Air-sea rescue
- Missing people
- Search and rescue dog

Military and police related

- Search and seizure
- Detection dog
- Strip search
- Search warrant

Entertainment

- In Search of..., Television documentary, broadcast from 1976 to 1982.
- The Search (1948 film)
- The Search (DS9 episode)
- Search (TV series)
- Searchin', a Leiber/Stoller song.
- Searchin' (I Gotta Find a Man), a 2007 single by the Young Divas.

Economics

- Job search
- Search theory

Other

- Seeker
- Search for Common Ground
- Novelty search (in patent law)
- Visual search, a type of perceptual task

A missing person is a person who has disappeared for no known reason.

Missing persons' photographs may be posted on bulletin boards, postcards, and websites, along with a phone number to be contacted if a sighting has been made.

There are many reasons why people disappear. Often an individual chooses to disappear on his or her own; most such individuals return within a short period of time. About 10% of missing persons in the United States never return home, however. Reasons for this include:

Many people leave simply to start again in a new place under a new name. They may have had difficulties with individuals in their lives, or they may have lost someone and wish to begin a new life in a new location.

Children or adults may be the victims of a kidnapper. Children may also be abducted by their non-custodial parent, by grandparents, or by other relatives.

In some countries, individuals may be seized by government officials without due process of law.

Some individuals choose to commit suicide in a remote location or under an assumed name to spare their families the shame and mess of a suicide at home (or to allow their deaths to be eventually declared in absentia, which may allow survivors to collect on insurance premiums).

The remains of a murder victim may be disguised, destroyed, damaged, or hidden.

People with mental or neurological illnesses such as Alzheimer's disease, fugue states or schizo-

phrenia may not wish to be found, or may not know how to identify themselves.

Many people die of natural or accidental causes far from home without identification (homeless people, for instance, or solitary hunters).

In some areas, people may disappear in order to take advantage of better employment or living conditions in other countries.

In some countries, individuals may be sold into slavery, serfdom, sexual servitude, or other unfree states, and may be unable to contact their loved ones.

Criminals may disappear in order to avoid either discovery of their crimes or apprehension by law-enforcement authorities. See also: failure to appear.

A very small number of individuals may become involved in cults or religious organizations.

Those fleeing abuse may disappear until the abuser has died or forgotten about the victim.

During a genocide, individuals of the victimized group may disappear to avoid being persecuted.

US Statistics

By the end of 2005, there were 109,531 active missing person records according to the US Department of Justice. Children under the age of 18 account for 58,081 (53.03%) of the records and 11,868 (10.84%) were for young adults between the ages of 18 and 20.

During 2005, 834,536 entries were made into

the National Crime Information Center's missing person file, which was an increase of 0.51% from the 830,325 entered in 2004. Missing Person records that were cleared or canceled during the same period totaled 844,838. The reasons for these removals include: a law enforcement agency located the subject, the individual returned home, or the record had to be removed by the entering agency due to a determination that the record is invalid.

Legal Issues

A common misconception is that a person must be absent for 72 hours before being legally classed as missing, but this is rarely the case; in instances where there is evidence of violence or

of an unusual absence, law enforcement agencies often stress the importance of beginning an investigation promptly.

In most common law jurisdictions a missing person can be declared dead in absentia (or "legally dead") after seven years. This time frame may be reduced in certain cases, such as deaths in major battles or mass disasters such as the September 11, 2001 attacks.

Monument

On May 26, 2002, a monument to missing persons was unveiled in County Kilkenny, Ireland by President Mary McAleese. It was the first monument of its kind in the world.

A Fugue state, is a state of mind characterized by abandonment of personal identity, along with the memories, personality and other identifying characteristics of individuality.

The Fugue state is a condition of Dissociative Fugue (formerly Psychogenic Fugue) (DSM-IV Dissociative Disorders 300.13).

Clinical definition

The etiology of the fugue state is related to Dissociative Amnesia, (DSM-IV Codes 300.12) which has several other subtypes: Selective Amnesia, Generalised Amnesia, Continuous Amnesia, Systematised Amnesia, in addition to the subtype Dissociative Fugue.

Unlike retrograde amnesia (which is popularly referred to simply as "amnesia", the state where someone completely forgets who they are), Dissociative Amnesia is not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication, DSM-IV Codes 291.1 & 292.83) or a neurological or other general medical condition (e.g., Amnestic Disorder due to a head trauma, DSM-IV Codes 294.0). It is a complex neuropsychological process.

As the person experiencing a Dissociative fugue may have recently suffered the reappearance of an event or person representing an earlier life trauma, the emergence of an armoring or defensive personality seems to be for some, a logical apprehension of the situation.

Therefore, the terminology fugue state may carry a slight linguistic distinction from Dissociative Fugue, the former implying a greater degree of motion. For the purposes of this article then, a fugue state would occur while one is acting out a Dissociative Fugue.

The DSM-IV defines as:

sudden, unexpected travel away from home or one's customary place of work, with inability to recall one's past,

onfusion about personal identity, or the assumption of a new identity, or

significant distress or impairment.

The Merck Manual defines Dissociative Fugue as:

One or more episodes of amnesia in which the inability to recall some or all of one's past and either the loss of one's identity or the formation of a new identity occur with sudden, unexpected, purposeful travel away from home.

In support of this definition, the Merck Manual further defines Dissociative Amnesia as:

An inability to recall important personal information, usually of a traumatic or stressful nature, that is too extensive to be explained by normal forgetfulness.

Prevalence and onset

It has been estimated that approximately 0.2 percent of the population experiences Dissociative Fugue, although prevalence increases significantly following a stressful life event, such as wartime experience or some other disaster. Other life stressors may trigger a Dissociative Fugue, such as financial difficulties, personal problems or legal issues. The causes of Dissociative Fugue are similar to those of Dissociative Amnesia and Dissociative Identity Disorder. Dissociative fugue is often mistaken for malingering, because both conditions may occur under circumstances that a person might understandably wish to evade. However, Dissociative Fugue occurs spontaneously and is not faked. Malingering is a state in which a person feigns illness because it removes them from accountability for their actions, gives them an excuse to avoid responsibilities, or reduces

their exposure to a known hazard, such as a dangerous job assignment. Many fugues seem to represent a disguised wish fulfillment (for example, an escape from overwhelming stresses, such as divorce or financial ruin). Other fugues are related to feelings of rejection or separation, or they may protect the person from suicidal or homicidal impulses.

Similar to Dissociative Amnesia, the Dissociative Fugue usually affects personal memories from the past, rather than encyclopedic or abstract knowledge. A Dissociative Fugue therefore does not imply any overt seeming or "crazy" behaviour.

established 1992

Fugue State Press is a small New York City literary publisher, specializing in the experimental novel.

It has published seventeen titles to date, including work by Andre Malraux, W. B. Keckler, Randie Lipkin, Prakash Kona, James Chapman, Noah Cicero, Eckhard Gerdes, Tim Miller, Joshua Cohen and I Rivers. Both American and international authors are represented. The books are distributed in the United States by Small Press Distribution (SPD).

books as unusual examples of the experimental novel, successfully avoiding a focus on the merely technical, reflexive, or irony-imbuéd aspects of postmodern fiction, and instead offering highly emotional and committed expression within a range of innovative frameworks.

The name of the press is a reference both to the psychological term fugue state and to the musical form fugue, perhaps reflecting some of the dissociative and musical tendencies of the prose it publishes.

Notable reviews in Publishers Weekly, Review of Contemporary Fiction, American Book Review and elsewhere have characterized the

Noah Cicero is an American novelist, essayist, playwright, short-story writer, and poet.

He lives in Youngstown, Ohio, and is the author of four books of fiction:

- The Human War [2003, Fugue State Press; foreign publications include Snowbooks, London 2007; editions in Greek and German are forthcoming]
- The Condemned [2006, Six Gallery Press]
- Burning Babies [2006, Parlor Press]
- Treatise [2006]

characters who are painfully aware of the futility of their existence. He notably depicts crumbling urban America, in particular the bars and strip clubs of Youngstown, with a bleak black humor. The work, while highly accessible, is imbued with political critique and an existential examination of reality. He has cited Sartre, Hemingway and Beckett as central influences.

His essays are both political and philosophical in nature, sometimes using the tools of psychology and philosophy to crucify those political leaders or followers he sees as acting in bad faith. Some of these essays have been written in collaboration with Ohio journalist Bernice Mullins.

He is a co-editor of 3:AM Magazine.

His fiction is also anthologized in:

- The Edgier Waters [2006, Snowbooks, London]

His stories, poetry, and essays have also been published extensively, at such magazines as Scarecrow, Brittle Star, Retort, Nth Position, Black Ice, Identity Theory, Prague Literary Review and many others. He has done readings at KGB Bar in New York.

His prose is spare, extreme in its directness and force, and addresses with brutal Absurdist humor the day-to-day lives of urban-wasteland

Bad faith is a legal concept in which a malicious motive on the part of a party in a lawsuit undermines their case.

Latin: mala fides

It has an effect on the ability to maintain causes of action and obtain legal remedies. Generally speaking, courts will not just look at the legal rights of parties in pursuing a transaction or a lawsuit, but will look behind the activity at the motives of the persons attempting to obtain the assistance of the court. If a court feels that the reasons behind the transaction or lawsuit have the effect of abusing the power of the law, or the court, it will generally deny a party the ability to rely on a legal remedy that they will otherwise be entitled to. It is related to the equitable powers of common law courts to look beyond the law.

Relevance

Bad faith is relevant in the following areas of law:

Transactions that affect creditors - If creditors are denied the opportunity to realize on the proceeds of property that was previously owned by the debtor, they will often look at the motives of the parties involved in a purported sale, primarily when the sale is for little or no consideration. For example, if a spouse puts title to the family home in the other spouse's name before embarking on a risky business venture, this will usually be treated as a good faith attempt to lessen the exposure of his or her family to creditors. However, if the same transaction takes place after a spouse has been sued for a debt, the sale will generally be held void against the creditors, allowing them to look at the equity in the house for satisfaction of debt.

Possession of property - The torts of detinue and conversion allow a person who has lost possession of personal property to regain possession of that property, even if it had been transferred to another after its loss or conversion. However, the court will only order such a remedy if the person with possession of the property obtained it in bad faith - for example that they obtained

it for free or for nominal consideration. In other words, a person buying a stereo out of the back of someone's car has no defence to a claim in detinue where a person buying a stereo from a pawnbroker would most likely be able to show that the transaction was made in good faith even if it later turned out the pawnbroker didn't have valid title to the goods.

Punitive damages - If the more powerful party to a transaction refuses to properly deal with its legal obligations and must be sued in order to force it to pay money that is clearly owing, courts will often punish litigants who take the position that the worst thing that can happen after a trial is that they will have to pay the money owed anyway. For example, if a check is sent and cashed in error and it is clear that the person receiving the money had no right to keep it, the court would most likely rule that simply ordering the payment of the money was an insufficient remedy for the plaintiff, who was put through the time and expense of trial for no reason. In Canada, one of the leading cases of this type resulted in a record punitive damages award of \$1 million CAD when an insurance company pressed a claim for arson when its own experts and adjusters had come to the conclusion the fire was accidental and the lawyer advised the client that the desperate insured parties would be willing to settle for much less than what they were owed (*Whiten v. Pilot Insurance Co.*, 2002 SCC 18).

Remedies in equity - When a party is seeking an extraordinary remedy such as an injunction or specific performance, the court must be convinced that the party seeking the remedy has no ulterior motive for doing so. If the defending party can show that the complaining party has abused the process or the power of the court, the court will generally deny the remedy even though the complaining party would otherwise be entitled to the relief claimed.

In the law of remedies, an order of specific performance is an order of the court which requires a party to perform a specific act.

While specific performance can be in the form of any type of forced action, it is usually used to complete a previously established transaction, thus being the most effective remedy in protecting the expectation interest of the innocent party to a contract. It is usually the opposite of a prohibitory injunction but there are mandatory injunctions which have a similar effect to specific performance.

one for the inability to own a particular piece of real property, land being regarded as unique. Specific performance is often guaranteed through the remedy of a writ of possession, giving the plaintiff the right to take possession of the property in dispute. However, in the case of personal performance contracts, it may also be ensured through the threat of proceedings for contempt of court.

Orders of specific performance are granted when damages are not an adequate remedy, and in some specific cases such as land sale. Such orders are discretionary, as with all equitable remedies, so the availability of this remedy will depend on whether it is appropriate in the

Under the common law, specific performance was not a remedy, with the rights of a litigant being limited to the collection of damages. However, the courts of equity developed the remedy of specific performance as damages often could not adequately compensate some-

See also

Good faith
Insurance bad faith
The Wiktionary definition of bad faith.

circumstances of the case.

There are certain circumstances where an order of specific performance would not be granted. Such circumstances include:

1. specific performance would cause severe hardship to the defendant
2. the contract was unconscionable
3. the claimant has misbehaved (no clean hands)
4. specific performance is impossible
5. performance consists of a personal service
6. the contract is too vague

Additionally, in England and Wales, under s. 50 of the Supreme Court Act 1981, the High Court has a discretion to award a claimant damages in lieu of specific performance (or an injunction). Such damages will normally be assessed on the same basis as damages for breach of contract, namely to place the claimant in the position he would have been had the contract been carried out.

Examples

In practice, specific performance is most often used as a remedy in transactions regarding land, such as in the sale of land where the vendor refuses to convey title.

However, the limits of specific performance in other contexts are narrow. Moreover, performance that is based on the personal judgment or abilities of the party on which the demand is made is rarely ordered by the court. The reason behind it is that the forced party will often perform below the party's regular standard when

it is in the party's ability to do so. Monetary damages are usually given instead.

Traditionally, equity would only grant specific performance with respect to contracts involving chattels where the goods were unique in character, such as art, heirlooms, and the like. The rationale behind this was that with goods being fungible, the aggrieved party had an adequate remedy in damages for the other party's non-performance.

In the United States, Article 2 of the Uniform Commercial Code displaces the traditional rule in an attempt to adjust the law of sales of goods to the realities of the modern commercial marketplace. If the goods are identified to the contract for sale and in the possession of the seller, a court may order that the goods be delivered over to the buyer upon payment of the price. This is termed replevin. In addition, the Code allows a court to order specific performance where "the goods are unique or in other proper circumstances", leaving the question of what circumstances are proper to be developed by case law.

In the civil law (the law of continental Europe and much of the non English speaking world) specific performance is considered to be the basic right. Money damages are a kind of "substitute specific performance." Indeed, it has been proposed that substitute specific performance better explains the common law rules of contract as well, see (Steven Smith, Contract Law, Clarendon Law).

Latin: mala fides

Replevin signifies the recovery by a person of goods unlawfully taken out of his or her possession, by means of a special form of legal process.

This falls into two stages:

1. the replevy, the steps that the owner takes to secure the physical possession of the goods, by giving security for prosecuting the action and for the return of the goods if the case goes against him and
2. the action of replevin itself (at common law, the ordinary action for the recovery of goods wrongfully taken would be one of detainue; but no means of immediate recovery liable to be seized).

Replevin is used when the party having the right of property cannot simply invoke self-help and take the property back. Where the party has the ability to do this directly, it is referred to as repossession. For example, in the U.S. States of Wisconsin and Louisiana, if one finances an automobile, becomes a registered owner of that vehicle, and fails to make payments as agreed, the lienholder cannot simply repossess the vehicle. The lienholder must go to court and obtain an order of replevin.

The French law is in force in Mauritius, and has been reproduced in substance in the Civil Codes of Quebec (arts. 2005 et seq.) and St Lucia (arts. 1888 et seq.). There are analogous provisions in the Spanish Civil Code (art. 1922). The subject of privileges and hypothecs is regulated in Belgium by a special law of December 16, 1851; and in Germany by ss. ff13 et seq. of the Civil Code.

Sec, e.g., New South Wales (the consolidating Landlord and Tenant Act 1899); Newfoundland (Act 4 of 1899); Ontario (Act I of 1902, S. 22, giving a tenant five days for tender of rent and expenses after distress); Jamaica (Law 17 of 1900, certification of landlords bailiffs); Queensland (Act 15 of 1904).

Replevin is an action of civil law not criminal law; therefore, because of the differing burden of proof, a defendant found not guilty of criminal theft may be nevertheless required to return the disputed item or items in civil court.

Attractive Nuisance

Replevin does not provide compensation for any monetary loss arising from the loss of use of some income-producing property item. Note also that replevin involves return of an actual specific item or items, not monetary compensation for loss. Thus, it would not normally be used in a case regarding a sum of money, as distinct from the loss of a rare coin, for instance, where the return of the actual coin itself was at issue. In occasional cases of no particular numismatic interest, however, e.g. a bag of money whose contents have not yet been counted, an action may be filed to recover the actual coins and/or bills in question if they are still together.

It is evident that the question of replevin becomes moot should the item in question no lon-

ger exist as an entity, i.e. if it is destroyed, or in the case of a bag of money, for instance, if the money has been spent. For this reason, the item is normally seized by the court when the action is filed and held until the decision is reached, in order to prevent the waste of a legal action over a nonexistent object and, further, to ensure that the item in question is not destroyed, spent, etc. during the duration of the action. This can be used to force a settlement from the defendant, just or unjust, as he or she is deprived of the use of the disputed object for the duration of the action; if this results in a financial loss, the defendant may find it advantageous to merely pay a relatively small settlement and have the item returned quickly.

Under the attractive nuisance doctrine of the law of torts, a landowner may be held liable for injuries to children trespassing on the land if the injury is caused by a hazardous object or condition on the land that is likely to attract children, who are unable to appreciate the risk posed by the object or condition.

The doctrine has been applied to hold landowners liable for injuries caused by abandoned cars, piles of lumber or sand, trampolines, and swimming pools. However, it can be applied to virtually anything on the property of the landowner.

According to the Restatement of Torts second, which is followed in many jurisdictions, there are five conditions that must be met in order for a land owner to be liable for tort damages to a child trespasser. The five conditions are:

1. The place where the condition exists is one upon which the possessor knows or has reason to know that children are likely to trespass, and
2. The condition is one of which the possessor knows or has reason to know and which he realizes or should realize will involve an unreasonable risk of death or serious bodily harm to such children,
3. The children because of their youth do not discover the condition or realize the risk involved in intermeddling with it or in coming within the area made dangerous by it
4. The utility to the possessor of maintaining the condition and the burden of eliminating the danger are slight as compared with the risk to children involved, and
5. The possessor fails to exercise reasonable care to eliminate the danger or otherwise to protect the children

(See Restatement of Torts §339)

While putting up a sign to warn children regarding the danger of the land may exempt the landowner from liability, it will not work in all situations. This is particularly true when the child cannot read the sign. Usually the landowner must take some more affirmative steps to protect children.

Each one of the five conditions must be met in order for the land owner to be liable for tort damages.

States that use the Restatement test include:

- Ohio – see case: Bennett v. Stanley, 92 Ohio St.3d 35
- Pennsylvania
- Utah – see case: Pullan v. Steinmetz, 16 P.3d 1245 (2000)

There is no set cut off point that defines youth. The courts will evaluate each "child" on case by case basis to see if the "child" qualifies as a youth.

Under the old common law, the plaintiff (either the child, or a parent suing on the child's behalf) had to show that it was the hazardous condition itself which lured the child onto the landowner's property. However, most jurisdictions have statutorily altered this condition, and now require only that the injury was foreseeable. All landowners should carry appropriate Public liability insurance.

The eggshell skull rule is a legal doctrine used in both tort law and criminal law that holds an individual liable for all consequences resulting from his or her activities leading to an injury to another person, even if the victim suffers an unusually high level of damage.

Also known as thin-skull rule.

(e.g. due to pre-exisiting vulnerability or medical condition)

The term implies that if a person had a skull as delicate as the shell of an egg, and a tortfeasor or assailant who did not know of that condition were to hit that person on the head, causing the skull unexpectedly to break, the responsible party would be held liable for all damages resulting from the wrongful contact, even though they were not foreseeable. The general maxim is that defendants must "take their victims as they find them", a quotation from the judgment of Lawton LJ in the criminal case of R v. Blaue.

remanded for a new trial on other grounds). In that case, an 11 year old boy kicked a 14 year-old boy in the shin while at school. It turned out that the 14 year-old was recovering from a previous injury. The kick resulted in the boy entirely losing the use of his leg. No one could have predicted the level of injury before the kicking. Nevertheless, the court found that since the kicking was unlawful, and as it occurred during school and not on the playground, the 11 year-old boy was liable for the injury.

Crumbling skull

A defense against the eggshell skull rule is the crumbling skull rule. The rule rebuts the eggshell skull by arguing that whatever harm incurred by the victim was inevitable and the defendant’s acts only had a minimal effect upon the already deteriorating circumstances. For example, a dying patient is treated improperly by a doctor. Though the doctor did more harm than good, he cannot be held liable for the death of the patient because the doctor’s negligence was not the cause of the patient’s loss of life and health, rather, the loss of life and health was inevitable regardless of whether the doctor had acted properly or improperly.

The crumbling skull rule can be seen as denying causation rather than rebutting the eggshell skull rule itself. The crumbling skull generally applies in cases where it cannot be shown that, but for the defendant’s actions, the harm to the victim would not have occurred.

In 1891, the Wisconsin Supreme Court came to a similar result in Vosburg v. Putney, 80 Wis. 523, 50 N.W. 403 (Wis., 1891) (reversed and



Missing Person :

Richard Bingham, 7th Earl of Lucan is currently classified as one of the most famous missing people of all time.

OSCAR
Sputnik 1
Space Race
Gyroscope
Léon Foucault
Eddy Current
Electromagnet
Torus
Surface

OSCAR is an acronym for Orbital Satellite Carrying Amateur Radio.

OSCAR series satellites use amateur radio frequencies to communicate with earth. They are conceived, designed, and built by amateur radio operators under the general direction of national organisations such as AMSAT.

The Beginning

The first amateur satellite simply named OSCAR-1 , was launched on December 12, 1961, barely four years after the launch of Russia's first satellite, Sputnik. OSCAR-1 was the very first satellite to be ejected as a secondary payload and subsequently enter a separate orbit. Despite being in orbit only 22 days OSCAR-1 was an immediate success with over 570 amateur radio operators in 28 countries forwarding observations to Project OSCAR. Throughout the years OSCAR satellites have helped make significant breakthroughs in the science of satellite communications. A few advancements include the launch of the very first satellite voice transponders and the development of highly advanced digital "store-and-forward" messaging transponder techniques. To-date over 70 OSCAR's have been launched with more to be launched in the near future.

OSCAR Satellite Communications

Currently OSCAR satellites support many different types of operation including FM voice, SSB voice, as well as digital communications of AX.25 FSK (Packet radio) and PSK-31.

Mode Designators

Historically OSCAR uplink (transmit to) and downlink (receive from) frequencies were designated using single letter codes.

	Mode A 10 meters/2 meters
	Mode B 2 meters/70 centimeters
	Mode J 70 centimeters/2 meters

New uplink and downlink designations use sets of paired letters following the structure X/Y where X is the uplink band and Y is the downlink band.

Designator	Band
V	2 meters
U	70 centimeters
L	23 centimeters

Designator	Band
S	13 centimeters
C	7.5 centimeters
X	3 centimeters
K	1.5 centimeters
Q	5 centimeters

Doppler shift

Due to the high orbital speed of OSCAR satellites, the uplink and downlink frequencies will vary during the course of a satellite pass. This phenomenon is known as the doppler effect. While the satellite is moving towards the ground station, the downlink frequency will appear to be higher than normal and therefore, the receiver frequency at the ground station must be adjusted higher in order to continue receiving the satellite. The satellite in turn, will be receiving the uplink signal at a higher frequency than normal so the ground station's transmitted uplink frequency must be lower in order to be received by the satellite. After the satellite passes overhead and begins to move away, this process reverses itself. The downlink frequency will appear lower and the uplink frequency will need to be adjusted higher.

Due to the complexity of finding the relative velocity of the satellite and the speed with which these corrections must be made, these calculations are normally accomplished using satellite tracking software. Many modern transceivers include a computer interface that allows for automatic doppler correction. Manual doppler correction is possible, however it is difficult to remain exactly on frequency. FM is more tolerant of doppler shift than SSB and therefore much easier to tune manually.

Satellites Previously Launched

The names of the satellites below are sorted in chronological order by launch date, ascending. The status column denotes the current operational status of the satellite. Green signifies that the satellite is currently operational, orange indicates that the satellite is partially operational or failing. Red indicates that the satellite is non operational and black indicates that the satellite has re-entered the earth's atmosphere.

The country listing denotes the country that constructed the satellite and not the launching country.

Multinational Effort

Currently 21 countries have launched an OSCAR satellite. These countries, in chronological order by date of launch, include: The United Kingdom, The United States of America, Spain, Australia, Japan, Brazil, Argentina, Russia, France, Portugal, Korea, Italy, Mexico, Israel, Thailand, South Africa, Malaysia, Saudi Arabia, Germany, India, & Colombia.

Satellites in development

BLUEsat - A microsatellite built by the students of The University of New South Wales. Unknown launch date.

Prism - A nanosatellite built by the University of Tokyo. Unknown launch date.

ZSAT - A microsatellite initiated and funded by the U.S. Department of Science and Technology. Unknown launch date.

ALMASat - A microsatellite built by the University of Bologna in Forli. Unknown launch date.

AMSAT-Phase 3E - A satellite built by AMSAT. Scheduled to launch on March 12 2007

KiwiSAT - A microsatellite built by AMSAT-ZL. Scheduled to launch on June 15 2008

ESEO - A microsatellite built by SSETI. Scheduled to launch October 30 2008.

AMSAT-Eagle - A satellite built by AMSAT. Scheduled to launch March 1 2009.

Sputnik 1 was the first artificial satellite to be put into outer space.

Launched into geocentric orbit by the Soviet Union on October 4, 1957, it was the first of a series of satellites collectively known as the Sputnik program.

The satellite helped to identify the density of high atmospheric layers through measurement of its orbital change and provided data on radio-signal distribution in the ionosphere. Because the satellite's body was filled with pressurized nitrogen, Sputnik 1 also provided the first opportunity for meteorite detection, as a loss of internal pressure due to meteoroid penetration of the outer surface would have been evident in the temperature data sent back to Earth. The unanticipated announcement of Sputnik 1's success precipitated the Sputnik crisis in the United States and ignited the so-called Space Race within the Cold War.

Sputnik-1 was set in motion during the International Geophysical Year from Site No.1 at the 5th Tyuratam range in Kazakh SSR (now at the Baikonur Cosmodrome). The satellite traveled at 29,000 kilometers (18,000 mi) per hour and emitted radio signals at 20.005 and 40.002 MHz which were monitored by amateur radio operators throughout the world. The signals continued for 22 days until the transmitter batteries ran out on October 26, 1957. Sputnik 1 burned up on January 4, 1958 as it fell from orbit upon reentering Earth's atmosphere, after traveling about 60 million km (37 million miles) and spending 3 months in orbit.

Before the launch

Satellite construction project

The history of the Sputnik 1 project dates back to May 27, 1954, when Sergei Korolev addressed Dmitry Ustinov, then Minister of Defense Industries, proposing the development of an artificial satellite of the Earth and forwarding

him a report by Mikhail Tikhonravov with an overview of similar projects abroad. Tikhonravov emphasized that an artificial satellite is an inevitable stage in the development of rocket equipment, after which interplanetary communication would become possible. On July 29, 1955 the U.S. President Dwight Eisenhower announced through his press secretary that the United States would launch an artificial satellite during the International Geophysical Year (IGY). A week later, on August 8, the Presidium of the Central Committee of the CPSU approved the idea of creating an artificial satellite. On August 30, Vasily Ryabikov, the head of the State Commission on R-7 rocket test launches, held a meeting where Korolev presented calculation data on the spacecraft to be sent to the Moon. They decided to develop a three-stage version of the R-7 rocket for satellite launches.

On January 30, 1956, the Council of Ministers of the USSR approved practical work on an artificial satellite of the Earth. This satellite, named "Object D", was planned to be completed in 1957-58; it would have a mass of 1,000 to 1,400 kg (2,200 to 3,090 lb) and would carry 200 to 300 kg (440 to 660 lb.) of scientific instruments.The first test launch of "Object D" was scheduled for 1957. According to that decision, work on the satellite was to be divided between institutions as follows:

- USSR Academy of Sciences was responsible for the general scientific leadership and research instruments supply
- Ministry of Defense Industry and its main executor OKB-1 were assigned the task of creating the satellite as a special carrier for scientific research instruments
- Ministry of Radiotechnical Industry would develop the control system, radiotechnical instruments and the telemetry system
- Ministry of Ship Building Industry would develop gyroscope devices
- Ministry of Machine Building would develop ground launching, refueling and transportation means
- Ministry of Defense was responsible for conducting launches

Russian:

“Спутник-1”, “Satellite-1”, or literally “Co-pather-1” byname ПС-1 (PS-1, i.e. “Простейший Спутник-1”, or Elementary Satellite-1)

By July 1956 the draft was completed and the scientific tasks to be carried out by a satellite were defined. They should include measuring density of the atmosphere, its ion composition, corpuscular solar radiation, magnetic fields, cosmic rays, etc. Data valuable for creating future oriented satellites was also planned to be collected. A ground observational complex was developed, that would collect information transmitted by the satellite, observe the satellite's orbit, and transmit commands to the satellite. Such a complex should include up to 15 measurement stations. Due to the limited time frame, they should have means designed for rocket R-7 observations. Observations were planned for only 7 to 10 days and orbit calculations were expected to be not quite accurate.

Unfortunately, the complexity of the ambitious design and problems in following exact specifications meant that some parts of 'Object D', when delivered for assembly, simply did not fit with the others, causing costly delays. By the end of 1956 it became clear, that plans for 'Object D' were not to be fulfilled in time due to difficulties creating scientific instruments and the low specific impulse produced by completed R-7 engines (304 sec instead of the planned 309 to 310 sec). Consequently the government re-scheduled the launch for April 1958. Object D would later fly as Sputnik 3.

Fearing the U.S. would launch a satellite before the USSR, OKB-1 suggested the creation and launch of a satellite in April-May 1957, before the IGY began in July 1957. The new satellite would be simple, light (100 kg), and easy to construct, forgoing the complex, heavy scientific equipment in favour of a simple radio transmitter. On February 15, 1957 the Council of Ministers of the USSR approved this, providing for launching the simplest unoriented Earth satellite, designated 'Object PS' for checking the possibility of its observation in orbit and for receiving signals transmitted by the satellite. Launch of two satellites PS-1 and PS-2 with two R-7 rockets (8K71) was allowed, but only after one or two successful R-7 test launches.

Design

The chief constructor of Sputnik 1 at OKB-1 was M.S.Khomyakov. The satellite was a 585 mm (23 in) diameter sphere, assembled from two hemispheres which were hermetically sealed using o-rings and connected using 36 bolts. The hemispheres, covered with a highly polished 1mm-thick heat shield made of aluminium-magnesium-titanium AMG6T ("AMG" is an abbreviation for "aluminium-magnesium" and "T" stands for "titanium", the alloy contains 6% of magnesium and 0.2% of titanium) alloy, were 2mm-thick. The satellite carried two antennas designed by the Antenna Laboratory of OKB-1 led by M.V.Krayushkin. Each antenna was made up of two whip-like parts: 2.4 and 2.9 meters (7.9 and 9.5 ft) in length, and had an almost spherical radiation pattern, so that the satellite beeps were transmitted with equal power in all directions; making reception of the transmitted signal independent of the satellite's rotation. The whip-like pairs of antennas resembled four long "whiskers" point-

ing to one side, at equal 35 degrees angles with the longitudinal axis of the satellite.

The power supply, with a mass of 51 kg, was in the shape of an octahedral nut with the radio transmitter in its hole. It consisted of three silver-zinc batteries, developed at the All-Union Research Institute of Current Sources (VNIIT) under the leadership of N. S. Lidorenko. Two of them powered the radio transmitter and one powered the temperature regulation system. They were expected to fade out in two weeks, but ended up working for 22 days. The power supply was turned on automatically at the moment of the satellite's separation from the second stage of the rocket.

The satellite had a one-watt, 3.5 kg radio transmitting unit inside, developed by V. I. Lappo from NII-885, that worked on two frequencies, 20.005 and 40.002 MHz. Signals on the first frequency were transmitted in 0.3 sec pulses (under normal temperature and pressure conditions onboard), with pauses of the same duration filled by pulses on the second frequency. Analysis of the radio signals was used to gather information about the electron density of the ionosphere. Temperature and pressure were encoded in the duration of radio beeps, which additionally indicated that the satellite had not been punctured by a meteorite. A temperature regulation system contained a fan, a dual thermal switch, and a control thermal switch. If the temperature inside the satellite exceeded 36 °C the fan was turned on and when it fell below 20 °C the fan was turned off by the dual thermal switch. If the temperature exceeded 50 °C or fell below 0 °C, another control thermal switch was activated, changing the duration of the of radio signal pulses. Sputnik 1 was filled with dry nitrogen, pressurized to 1.3 atm. For the pressure control the satellite had a barometric switch, activated when the pressure inside the satellite fell below 0.35 kg/cm² (approx. 0.34 atm), changing the duration of radio signal impulse.

While attached to the rocket, Sputnik 1 was protected by a cone-shaped payload fairing, with a height of 80 cm and an aperture of 48 degrees. The fairing separated from both Sputnik 1 and the rocket at the same time when the satellite was ejected. Tests of the satellite were conducted at OKB-1 under the leadership of O. G. Ivanovsky. Sputnik 1 was launched by an R-7 rocket on October 4, 1957. It burned up upon re-entry on January 4, 1958.

Controversy Surrounding Re-Entry

Long-standing official accounts state that, based on the degradation of Sputnik 1's orbit, the satellite re-entered the atmosphere on or about January 4, 1958, whereupon it is assumed to have burned up completely. The Sputnik 1 rocket booster re-entry was expected to occur somewhere above Alaska, or the West coast of North America, according to Soviet predictions in December 1957.

There are dubious claims however, that certain components did survive: Per recent news

reports, on the morning of December 8, 1957, Earl Thomas of Encino, California, was leaving his home to go to work, when he noticed something glowing beneath a tree in his back yard. The source turned out to be several pieces of plastic tubing, which he claimed matched structural diagrams of the Sputnik 1 satellite. A local Los Angeles radio DJ, Mark Ford of KDAY Radio, was at the same time offering a \$50,000 reward for anyone who had found Sputnik, which reportedly had gone down in the L.A. area. When Thomas tried to claim the reward, he was met by a representative of the United States Air Force, who received the pieces Thomas found, and wrote a receipt on Air Force stationery. Later, after the radio station denied

The Space Race was a competition of space exploration between the United States and Soviet Union, which lasted roughly from 1957 to 1975.

It involved the efforts to explore outer space with artificial satellites, to send humans into space, and to land people on the Moon.

Though its roots lie in early German rocket technology and in the international tensions following World War II, the Space Race effectively began after the Soviet launch of Sputnik 1 on 4 October 1957. The term originated as an analogy to the arms race. The Space Race became an important part of the cultural, technological, and ideological rivalry between the United States and the Soviet Union during the Cold War. Space technology became a particularly important arena in this conflict, because of both its potential military applications and the morale-boosting social benefits.

Cold War roots

After World War II, the United States and the Soviet Union became involved in a Cold War of espionage and propaganda. Space exploration and satellite technology could feed into the Cold War on both fronts. Satellite-borne equipment could spy on other countries, while space-faring accomplishments could serve as propaganda to tout a country's scientific prowess and military potential. The same rockets that might send a human into orbit or hit a specific spot on the Moon could send an atom bomb to a specific enemy city.

Much of the technological development required for space travel applied equally well to wartime rockets such as Intercontinental ballistic missiles (ICBMs). Along with other aspects of the arms race, progress in space appeared as an indicator of technological and economic prowess, demonstrating the superiority of the ideology of that country. Space research had a dual purpose: it could serve peaceful ends but could also contribute to military goals.

having offered a reward, Thomas brought the receipt back to the Air Force, where the sergeant on duty gave the pieces back to Thomas. The family wrote to government officials at all levels in an attempt to collect the reward, but were told that the government had not offered a reward. Of particular interest, however, was a reply from Colonel W.G. Woodbury of the Air Force, which includes the statement "At the time you recovered the Sputnik parts..." Currently, the disputed parts are in the possession of Bob Morgan, Thomas' son. An exhibit about the parts is currently on display at The Beat Museum, in the North Beach neighborhood of San Francisco.

See also

ILLIAC 1 - First computer to calculate the orbit of Sputnik I.

Defense Advanced Research Projects Agency (DARPA, created in 1958)

Living creatures in space

Animals in space

Fruit flies launched by the United States on captured German V-2 rockets in 1946 became the first reported animals sent into space for scientific study.

The first animal sent into orbit, the dog Laika (in English, "Barker"), traveled in the Soviet Union's Sputnik 2 in 1957. She died of stress and overheating soon after reaching space. In 1960 Soviet space dogs Belka and Strelka orbited the earth and successfully returned.

The American space program imported chimpanzees from Africa and sent at least two into space before launching their first human orbiter. The Soviet Union launched turtles in 1968 on Zond 5, which became the first animals to fly around the Moon.

Humans in space

The Soviet cosmonaut Yuri Gagarin became the first human in space when he entered orbit in the Soviet Union's Vostok 1 on 12 April 1961, a day now celebrated as a holiday in Russia and in many other countries. He orbited the Earth for 108 minutes.

Twenty-three days later, on sub-orbital mission Freedom 7, Alan Shepard entered space for the United States, and John Glenn, in Friendship 7, became the first American to successfully orbit Earth, completing three orbits on 20 February 1962.

The first dual-manned flights also originated in the Soviet Union, on 11 August - 15 August 1962. Soviet Valentina Tereshkova became the first woman in space on 16 June 1963 in Vostok 6. Korolev had initially scheduled

further Vostok missions of longer duration, but following the announcement of the Apollo program, Premier Khrushchev demanded more firsts. The first flight with more than two crew members was the Soviet Union's Voskhod 1, a modified version of the Vostok craft, took off on 12 October 1964 carrying Komarov, Feoktistov, and Yegorov. This flight also marked the first occasion on which a crew did not wear spacesuits.

Alexey Leonov, from Voskhod 2, launched by the Soviet Union on 18 March 1965, carried out the first spacewalk. This mission nearly ended in disaster; Leonov almost failed to return to the capsule and, because of a poor retrorocket fire, the ship landed 1,600 kilometers (1,000 mi) off target. By this time Khrushchev had left office, and the new Soviet leadership would not commit to an all-out lunar landing effort.

Missions to other planets

The Soviet Union first sent planetary probes to both Venus and Mars in 1960. The first spacecraft to successfully fly by Venus, the United States' Mariner 2, did so on 14 December 1962. It sent back surprising data on the high surface temperature and air density of Venus. Since it carried no cameras, its findings did not capture public attention as did images from space probes, which far exceeded the capacity of astronomers' Earth-based telescopes.

The Soviet Union's Venera 7, launched in 1971, became the first craft to land on Venus. Venera 9 then transmitted the first pictures from the surface of another planet. These represent only two in the long Venera series; several other previous Venera spacecraft performed flyby operations and attempted landing missions. Seven other Venera landers followed.

The United States launched Mariner 10, which flew by Venus on its way to Mercury, in 1974. It became the only spacecraft to fly by Mercury.

Mariner 4, launched in 1965 by the United States, became the first probe to fly by Mars; it transmitted completely unexpected images. The first spacecraft to land on Mars, Mars 3, launched in 1971 by the USSR, did not return pictures. The U.S. Viking landers of 1976 transmitted the first such pictures.

"End" of the Space Race

While the Sputnik 1 launch can clearly be called the start of the Space Race, its end is

more debatable. Most hotly contested during the 1960s, the Space Race continued apace through the Apollo moon landing of 1969. Although they followed Apollo 11 with five more manned lunar landings, American space scientists turned to new arenas. Skylab was to gather data, and the Space Shuttle was intended to return spaceships intact from space journeys. Russians claimed that by first sending a man into space they had won this unofficial "race," however Americans claimed that by first landing a man on the moon they had won. In any event, as the Cold War subsided, and as other nations began to develop their own space programs, the notion of a continuing "race" between the two superpowers became less real.

Both nations had developed manned military space programs. The United States Air Force had proposed using its Titan missile to launch the Dyna-Soar hypersonic glider to use in intercepting enemy satellites. The plan for the Manned Orbiting Laboratory (using hardware based on the Gemini program to carry out surveillance missions) superseded Dyna-Soar, but this also suffered cancellation. The Soviet Union commissioned the Almaz program for a similar manned military space station, which merged with the Salyut program.

The Space Race slowed after the Apollo landing, which many observers describe as its apex or even as its end. Others, including space historian Carole Scott and Romanian Dr. Florin Pop's Cold War Project, feel its end came most clearly with the joint Apollo-Soyuz mission of 1975. The Soviet craft Soyuz 19 met and docked in space with America's Apollo, allowing astronauts from the "rival" nations to pass into each other's ships and participate in combined experimentation. Although each country's endeavors in space persisted, they went largely in different directions, and the notion of a continuing two-nation "race" became outdated after Apollo-Soyuz.

However, the Soviet leadership was alarmed at the prospect of U.S. Air Force involvement with the Space Shuttle program and began the competing Buran and Energia projects. In the early 1980s the commencement of the U.S. Strategic Defense Initiative further escalated competition that only resolved with the collapse of the Eastern Bloc in 1989.

See also

Space vehicle guidance using the gyroscopic compass
Celestial mechanics, calculating the trajectories for space travel
List of spacecraft manufacturers
US space surveillance network tracks objects in space
Kliper Russian-European cooperation for a new 'space shuttle' type launch craft
Crew Exploration Vehicle American counter part to Kliper
Spaceflight records
Atmospheric reentry
List of Space Exploration Milestones, 1957-1969
Timeline of space exploration

The device is a spinning wheel or disk whose axle is free to take any orientation. This orientation changes much less in response to a given external torque than it would without the large angular momentum associated with the gyroscope's high rate of spin. Since external torque is minimized by mounting the device in gimbals, its orientation remains nearly fixed, regardless of any motion of the platform on which it is mounted.

Description And Diagram

Within mechanical systems or devices, a conventional gyroscope is a mechanism comprising a rotor journaled to spin about one axis, the journals of the rotor being mounted in an inner gimbal or ring, the inner gimbal being journaled for oscillation in an outer gimbal which in turn is journaled for oscillation relative to a support. The outer gimbal or ring is mounted so as to pivot about an axis in its own plane determined by the support. The outer gimbal possesses one degree of rotational freedom and its axis possesses none. The inner gimbal is mounted in the outer gimbal so as to pivot about an axis in its own plane, which axis is always perpendicular to the pivotal axis of the outer gimbal.

The axle of the spinning wheel defines the spin axis. The inner gimbal possesses two degrees of rotational freedom and its axis possesses one. The rotor is journaled to spin about an axis which is always perpendicular to the axis of the inner gimbal. So, the rotor possesses three degrees of rotational freedom and its axis possesses two. The wheel responds to a force applied about the input axis by a reaction force about the output axis. The 3 axes are perpendicular, and this cross-axis response is the simple essence of the gyroscopic effect.

The behaviour of a gyroscope can be most easily appreciated by consideration of the front wheel of a bicycle. If the wheel is leaned away from the vertical so that the top of the wheel moves to the left, the forward rim of the wheel also turns to the left. In other words, rotation on one axis of the turning wheel produces rotation of the third axis.

A gyroscope flywheel will roll or resist about the output axis depending upon whether the output gimbals are of a free- or fixed- configuration. Examples of some free-output-gimbal devices would be the attitude reference gyroscopes used to sense or measure the pitch, roll and yaw attitude angles in a spacecraft or aircraft.

The center of gravity of the rotor can be in a fixed position. The rotor simultaneously spins about one axis and is capable of oscillating about the two other axes, and thus, except for its inherent resistance due to rotor spin, it is free to turn in any direction about the fixed point. Some gyroscopes have mechanical equivalents substituted for one or more of the elements, e.g., the spinning rotor may be suspended in a fluid, instead of being pivotally mounted in gimbals. A control moment gyroscope (CMG) is an example of a fixed-output-gimbal device that is used on spacecraft to hold or maintain a desired

attitude angle or pointing direction using the gyroscopic resistance force.

In some special cases, the outer gimbal (or its equivalent) may be omitted so that the rotor has only two degrees of freedom. In other cases, the center of gravity of the rotor may be offset from the axis of oscillation, and thus the center of gravity of the rotor and the center of suspension of the rotor may not coincide.

History

The earliest known gyroscope was made by Johann Bohnenberger in 1817, although he called it simply the 'Machine'. The French mathematician Pierre-Simon Laplace, working at the École Polytechnique in Paris, recommended the machine for use as a teaching aid, and thus it came to the attention of Léon Foucault.] In 1852, Foucault used it in an experiment involving the rotation of the Earth. It was Foucault who gave the device its modern name, in an experiment to see (Greek skopeein, to see) the Earth's rotation (gyros, circle or rotation), although the experiment was unsuccessful due to friction, which effectively limited each trial to 8 to 10 minutes, too short a time to observe significant movement.

In the 1860s, electric motors made the concept feasible, leading to the first prototype gyrocompasses; the first functional marine gyrocompass was developed between 1905 and 1908 by German inventor Hermann Anschütz-Kaempfe. The American Elmer Sperry followed with his own design in 1910, and other nations soon realized the military importance of the invention— in an age in which naval might was the most significant measure of military power— and created their own gyroscope industries. The Sperry Gyroscope Company quickly expanded to provide aircraft and naval stabilizers as well, and other gyroscope developers followed suit.

In 1917, the Chandler Company of Indianapolis, Indiana created the "Chandler gyroscope", a toy gyroscope with a pull string and pedestal. It has been in continuous production ever since and is considered a classic American toy.

Some gyroscopes use a vibrating element, known as a MEMS (Micro Electro-Mechanical System). The MEMS based gyro was initially made practical and produceable by Systron Donner Inertial (SDI). Today, SDI is a large manufacturer of MEMS gyroscopes.

In the first several decades of the 20th century, other inventors attempted (unsuccessfully) to use gyroscopes as the basis for early black box navigational systems by creating a stable platform from which accurate acceleration measurements could be performed (in order to bypass the need for star sightings to calculate position). Similar principles were later employed in the development of inertial guidance systems for ballistic missiles.

See also

Rate integrating gyroscope
Gyrocompass
Momentum wheel
Fibre optic gyroscope
Ring laser gyroscope
Vibrating structure gyroscope
Gimbal
Gimbal lock
Quantum gyroscope
Gyrocar
Top
Aerotrim
NSDPowerball
Dynabee
Eric Laithwaite
Precession
Gyro Monorail
Control Moment Gyroscope
Segway

Jean Bernard Léon Foucault was a French physicist best known for the invention of the Foucault pendulum, a device demonstrating the effect of the Earth’s rotation.

He also made an early measurement of the speed of light, discovered eddy currents, and, though he didn't invent it, is credited with naming the gyroscope. The Foucault crater on the Moon is named after him.

Early years

Foucault was the son of a publisher at Paris, where he was born on September 18, 1819. After an education received chiefly at home, he studied medicine, which, however, he speedily abandoned for physical science due to a fear of blood. He first directed his attention to the improvement of L. J. M. Daguerre's photographic processes. For three years he was experimental assistant to Alfred Donné (1801–1878) in his course of lectures on microscopic anatomy.

With A. H. L. Fizeau he carried on a series of investigations on the intensity of the light of the sun, as compared with that of carbon in the arc lamp, and of lime in the flame of the oxyhydrogen blowpipe; on the interference of infrared radiation, and of light rays differing greatly in lengths of path; and on the chromatic polarization of light.

Middle years

His demonstration in 1851 of the diurnal motion of the Earth by the rotation of the plane of oscillation of a freely suspended, long and heavy pendulum in the Panthéon in Paris, caused a sensation in both the learned and popular worlds, for it was the first dynamical proof of the Earth's rotation. In the following year he invented (and named) the gyroscope as a conceptually simpler experimental proof. In 1855 he received the Copley Medal of the Royal Society for his 'very remarkable experimental researches'. Earlier in the same year he was made physicien (physicist) at the imperial observatory at Paris.

In September of 1855 he discovered that the force required for the rotation of a copper disc becomes greater when it is made to rotate with

An eddy current is an electrical phenomenon discovered by French physicist Léon Foucault in 1851.

It is caused when a moving (or changing) magnetic field intersects a conductor, or vice-versa. The relative motion causes a circulating flow of electrons, or current, within the conductor. These circulating eddies of current create

its rim between the poles of a magnet, the disc at the same time becoming heated by the eddy current or "Foucault currents" induced in the metal.

Foucault invented in 1857 the polarizer which bears his name, and in the succeeding year devised a method of testing the mirror of a reflecting telescopes to determine its shape. The so-called "Foucault Test" allows the worker to tell if the mirror is perfectly spherical, or if it deviates from a sphere. Prior to Foucault's invention, testing reflecting telescope mirrors was a "hit or miss" proposition. With Charles Wheatstone’s revolving mirror he in 1862 determined the speed of light to be 298,000 km/s (about 185,000 mi./s) — 10,000 km/s less than that obtained by previous experimenters and only 0.6% off the currently accepted value.

Later years

In that year, he was made a member of the Bureau des Longitudes and an officer of the Légion d'Honneur. In 1864 he was made a member of the Royal Society of London, and the next year a member of the mechanical section of the Institute. In 1865 his papers on a modification of Watt's governor appeared, upon which he had for some time been experimenting with a view to making its period of revolution constant, and on a new apparatus for regulating the electric light; and in the following year (Compt. Rend. lxiii.) he showed how, by the deposition of a transparently thin film of silver on the outer side of the object glass of a telescope, the sun could be viewed without injuring the eye. His chief scientific papers are to be found in the Comptes Rendus, 1847—1869.

Death and afterwards

Foucault died of what was probably a rapidly-developing case of multiple sclerosis on February 11, 1868 in Paris and was buried in the Cimetière de Montmartre.

September 18, 1819 - February 11, 1868

motion, the greater the currents developed and the greater the opposing field.

It is important to appreciate that eddy currents are created when a moving conductor experiences changes in the magnetic field generated by a stationary object, as well as when a stationary conductor encounters a varying magnetic field. Both effects are present when a conductor moves through a varying magnetic field, as is the case at the top and bottom edges of the magnetized region shown in the diagram. Eddy currents will be generated wherever a conducting object experiences a change in the intensity or direction of the magnetic field at any point within it, and not just at the boundaries.

The swirling current set up in the conductor is due to electrons experiencing a Lorentz force that is perpendicular to their motion. Hence, they veer to their right, or left, depending on the direction of the applied field and whether the strength of the field is increasing or declining. The resistivity of the conductor acts to damp the amplitude of the eddy currents, as well as straighten their paths. Lenz's law encapsulates the fact that the current swirls in such a way as to create an induced magnetic field that opposes the phenomenon that created it. In the case of a varying applied field, the induced field will always be in the opposite direction to that applied. The same will be true when a varying external field is increasing in strength. However, when a varying field is falling in strength, the induced field will be in the same direction as that originally applied, in order to oppose the decline.

Sometimes an object or part of an object experiences steady fields where there is still relative motion (for example in the center of the field in the diagram), or unsteady fields where the currents cannot circulate due to the geometry of the conductor. In these situations charges collect on or within the object and these charges then produce static electric potentials that oppose any further flow of current. Currents may be initially associated with the creation of static potentials, but these may be transitory and small.

Eddy currents create losses through Joule heating. More accurately, eddy currents transform useful forms of energy, such as kinetic energy, into heat, which is generally much less useful. Hence they reduce the efficiency of many devices that use changing magnetic fields, such as iron-core transformers and electric motors. They are minimized by selecting magnetic core materials that have low electrical conductivity (e.g., ferrites) or by using thin sheets of magnetic material, known as laminations. Electrons cannot cross the insulating gap between the laminations and so are unable to circulate on wide arcs. Charges gather at the lamination boundaries, in a process analogous to the Hall effect, producing electric fields that oppose any further accumulation of charge and hence suppressing the flow of eddy currents. The shorter the distance between adjacent laminations (i.e., the greater the number of laminations per unit area, perpendicular to the applied field), the greater the suppression of eddy currents.

The loss of useful energy is not always undesirable, however, as there are some practical applications. One is in the brakes of some trains known as an eddy current brake. During braking, the metal wheels are exposed to a magnetic field from an electromagnet, generating eddy currents in the wheels. The eddy currents meet resistance as they flow through the metal, thus dissipating energy as heat, and this acts to slow the wheels down. The faster the wheels are spinning, the stronger the effect, meaning that as the train slows the braking force is reduced, producing a smooth stopping motion.

The term eddy current comes from analogous currents seen in water when dragging an oar: localised areas of turbulence known as eddies give rise to persistent vortices.

Applications

Electrical

Eddy currents are used to great effect in movement-to-electricity converters such as electrical generators and dynamic microphones.

Repulsive effects/levitation

Superconductors allow perfect, lossless conduction, which creates perpetually circulating eddy currents that are equal and opposite to the external magnetic field, thus allowing magnetic levitation. For the same reason, the magnetic field inside a superconducting medium will be exactly zero, regardless of the external applied field.

In addition, in a fast varying magnetic field the induced currents, in good conductors, particularly copper and aluminium, exhibit diamagnetic-like repulsion effects on the magnetic field, and hence on the magnet and can create repulsive effects and even stable levitation, albeit with reasonably high power dissipation due to the high currents this entails.

They can thus be used to induce a magnetic field in aluminum cans, which allows them to be separated easily from other recyclables.

Mechanical

Eddy currents are used for braking at the end of some roller coasters. This mechanism has no mechanical wear and produces a very precise braking force. Typically, heavy copper plates extending from the car are moved between pairs of very strong permanent magnets. Electrical resistance within the plates causes a dragging effect analogous to friction, which dissipates the kinetic energy of the car.

Structural Testing

Eddy current techniques are commonly used for the nondestructive examination (NDE) and condition monitoring of a large variety of metallic structures, including heat exchanger tubes, aircraft fuselage, and aircraft structural components.

(also known as Foucault current)

Side Effects

Eddy currents are the root cause of the skin effect in conductors carrying AC current.

An **electromagnet** is a type of magnet in which the magnetic field is produced by the flow of an electric current. The magnetic field disappears when the current ceases.

Invention and history

British electrician William Sturgeon invented the electromagnet in 1825. The first electromagnet was a horseshoe-shaped piece of iron that was wrapped with a loosely wound coil of several turns. When a current was passed through the coil, the electromagnet became magnetized and when the current was stopped, the coil was de-magnetized. Sturgeon displayed its power by lifting nine pounds with a seven-ounce piece of iron wrapped with wires through which the current of a single cell battery was sent.

Sturgeon could regulate his electromagnet; this was the beginning of using electrical energy for making useful and controllable machines and laid the foundations for large-scale electronic communications.

Introduction

The most fundamental type of electromagnet is a simple segment of wire (see figure). The amount of magnetic field generated depends upon the amount of electrical current that flows through the wire. In order to increase the effective current available to generate magnetic field, the wire is commonly configured as a coil, where many segments of wire sit side by side. A coil forming the shape of a straight tube (similar to a corkscrew) is called a solenoid; a solenoid that is bent so that the ends meet is a toroid. Much stronger magnetic fields can be produced if a "core" of paramagnetic or ferromagnetic material (commonly soft iron) is placed inside the coil. The core concentrates the magnetic field that can then be much stronger than that of the coil itself.

Magnetic fields caused by coils of wire follow a form of the right-hand rule (for conventional current or left hand rule for electron current).

In mathematics, a **toroid** is a doughnut-shaped object.

The surface of such an object is known as a torus. Its annular shape is generated by revolving

If the fingers of the left hand are curled in the direction of electron current flow through the coil, the thumb points in the direction of the field inside the coil. The side of the magnet that the field lines emerge from is defined to be the north pole.

Electromagnets and permanent magnets

The main advantage of an electromagnet over a permanent magnet is that the magnetic field can be rapidly manipulated over a wide range by controlling the amount of electric current. However, a continuous supply of electrical energy is required to maintain the field.

As a current is passed through the coil, small magnetic regions within the material, called magnetic domains, align with the applied field, causing the magnetic field strength to increase. As the current is increased, all of the domains eventually become aligned, a condition called saturation. Once the core becomes saturated, a further increase in current will only cause a relatively minor increase in the magnetic field. In some materials, some of the domains may realign themselves. In this case, part of the original magnetic field will persist even after power is removed, causing the core to behave as a permanent magnet. This phenomenon, called remanent magnetism, is due to the hysteresis of the material. Applying a decreasing AC current to the coil, removing the core and hitting it, or heating it above its Curie point will reorient the domains, causing the residual field to weaken or disappear.

In applications where a variable magnetic field is not required, permanent magnets are generally superior. Additionally, permanent magnets can be manufactured to produce stronger fields than electromagnets of similar size.

See also

Dipole magnet
Electromagnetism
Quadrupole magnet
Superconducting magnet

In geometry, a **torus** (pl. tori) is a surface of revolution generated by revolving a circle in three dimensional space about an axis coplanar with the circle, which does not touch the circle.

Examples of tori include the surfaces of doughnuts and inner tubes. A circle rotated about a chord of the circle is called a torus in some contexts, but this is not a common usage in mathematics. The shape produced when a circle is rotated about a chord resembles a round cushion. Torus was the Latin word for a cushion of this shape.

In mathematics, specifically in topology, a **surface** is a two-dimensional manifold.

The most familiar examples are those that arise as the boundaries of solid objects in ordinary three-dimensional Euclidean space, E³. On the other hand, there are also more exotic surfaces, that are so "contorted" that they cannot be embedded in three-dimensional space at all.

To say that a surface is "two-dimensional" means that, about each point, there is a coordinate patch on which a two-dimensional coordinate system is defined. For example, the surface of the Earth is (ideally) a two-dimensional sphere, and latitude and longitude provide coordinates on it — except at the International Date Line and the poles, where longitude is undefined. This example illustrates that in general it is not possible to extend any one coordinate patch to the entire surface; surfaces, like manifolds of all dimensions, are usually constructed by patching together multiple coordinate systems.

Surfaces find application in physics, engineering, computer graphics, and many other disciplines, primarily when they represent the surfaces of physical objects. For example, in analyzing the aerodynamic properties of an airplane, the central consideration is the flow of air along its surface.

Definitions and first examples

A (topological) surface with boundary is a Hausdorff topological space in which every point has an open neighbourhood homeomorphic to some open subset of the closed half space of E² (Euclidean 2-space). The neighborhood, along with the homeomorphism to Euclidean space, is called a (coordinate) chart.

The set of points that have an open neighbourhood homeomorphic to E² is called the interior of the surface; it is always non-empty. The complement of the interior is called the bound-

Colouring a torus

If a torus is divided into regions, then it is always possible to colour the regions with no more than seven colours so that neighbouring regions have different colours. (Contrast with the four colour theorem for the plane.)

See also

Standard torus
Algebraic torus
Villarceau circles
Annulus
Doughnut
Elliptic curve
Loewner's torus inequality
Maximal torus

ary; it is a one-manifold, or union of closed curves. The simplest example of a surface with boundary is the closed disk in E²; its boundary is a circle.

A surface with an empty boundary is called boundaryless. (Sometimes the word surface, used alone, refers only to boundaryless surfaces.) A closed surface is one that is boundaryless and compact. The two-dimensional sphere, the two-dimensional torus, and the real projective plane are examples of closed surfaces.

The Möbius strip is a surface with only one "side". In general, a surface is said to be orientable if it does not contain a homeomorphic copy of the Möbius strip; intuitively, it has two distinct "sides". For example, the sphere and torus are orientable, while the real projective plane is not (because deleting a point or disk from the real projective plane produces the Möbius strip).

More generally, it is common in differential and algebraic geometry to study surfaces with singularities, such as self-intersections, cusps, etc.

Extrinsically defined surfaces and embeddings

Historically, surfaces were originally defined and constructed not using the abstract, intrinsic definition given above, but extrinsically, as subsets of Euclidean spaces such as E³.

Let f be a continuous, injective function from R² to R³. Then the image of f is said to be a parametric surface. A surface of revolution can be viewed as a special kind of parametric surface. On the other hand, suppose that f is a smooth function from R³ to R whose gradient is nowhere zero. Then the locus of zeros of f is said to be an implicit surface. If the condition of

non-vanishing gradient is dropped then the zero locus may develop singularities.

One can also define parametric and implicit surfaces in higher-dimensional Euclidean spaces E_n . It is natural to ask whether all surfaces (defined abstractly, as in the preceding section) arise as subsets of some E_n . The answer is yes; the Whitney embedding theorem, in the case of surfaces, states that any surface can be embedded homeomorphically into E_4 . Therefore the extrinsic and intrinsic approaches turn out to be equivalent.

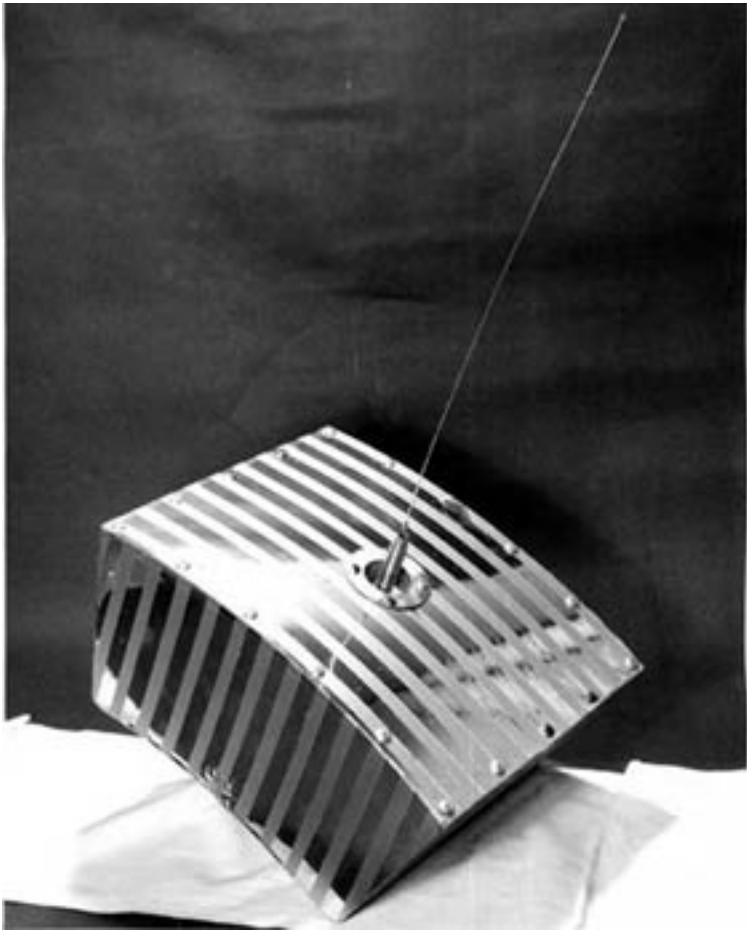
In fact, any compact surface that is either orientable or has a boundary can be embedded in E^3 ; on the other hand, the real projective plane, which is compact, non-orientable and without boundary, cannot be embedded into E^3

(see Gramain). Steiner surfaces, including Boy's surface, the Roman surface and the cross-cap, are immersions of the real projective plane into E^3 . These surfaces are singular where the immersions intersect themselves.

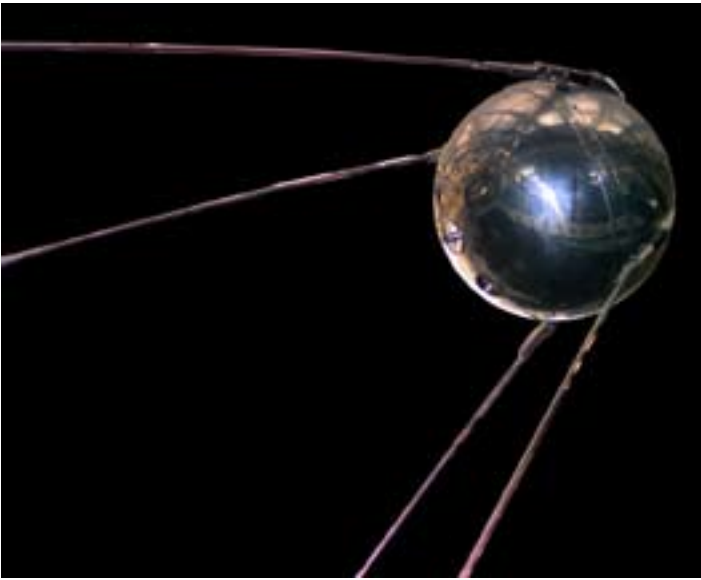
The Alexander horned sphere is a well-known pathological embedding of the two-sphere into the three-sphere.

The chosen embedding (if any) of a surface into another space is regarded as extrinsic information; it is not essential to the surface itself. For example, a torus can be embedded into E^3 in the "standard" manner (that looks like a bagel) or in a knotted manner (see figure). The two embedded tori are homeomorphic but not isotopic; they are topologically equivalent, but their embeddings are not.

See also
Volume form
Poincaré metric
Area element

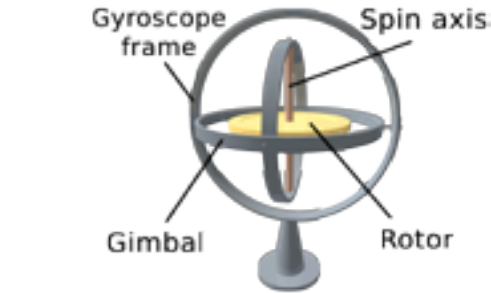


OSCAR :
OSCAR 1 satellite - first ever amateur satellite - at National Air & Space Museum.



Space Race :
(1) Titan II rockets launched 12 U.S. Gemini spacecraft in the 1960s.
(2) Explorer 1 model at NASA news conference.

Sputnik :
Sputnik 1 was the size of a large beach ball, weighed more than 80 kg and orbited the Earth for more than two months.

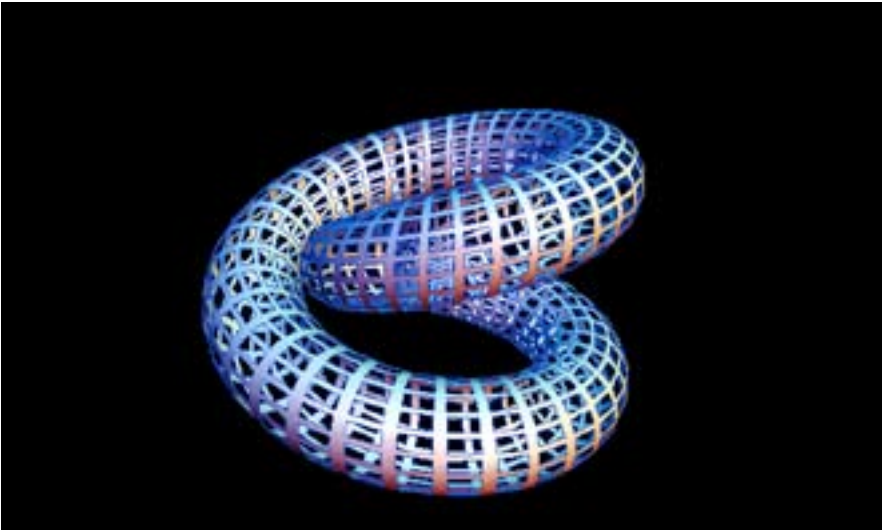
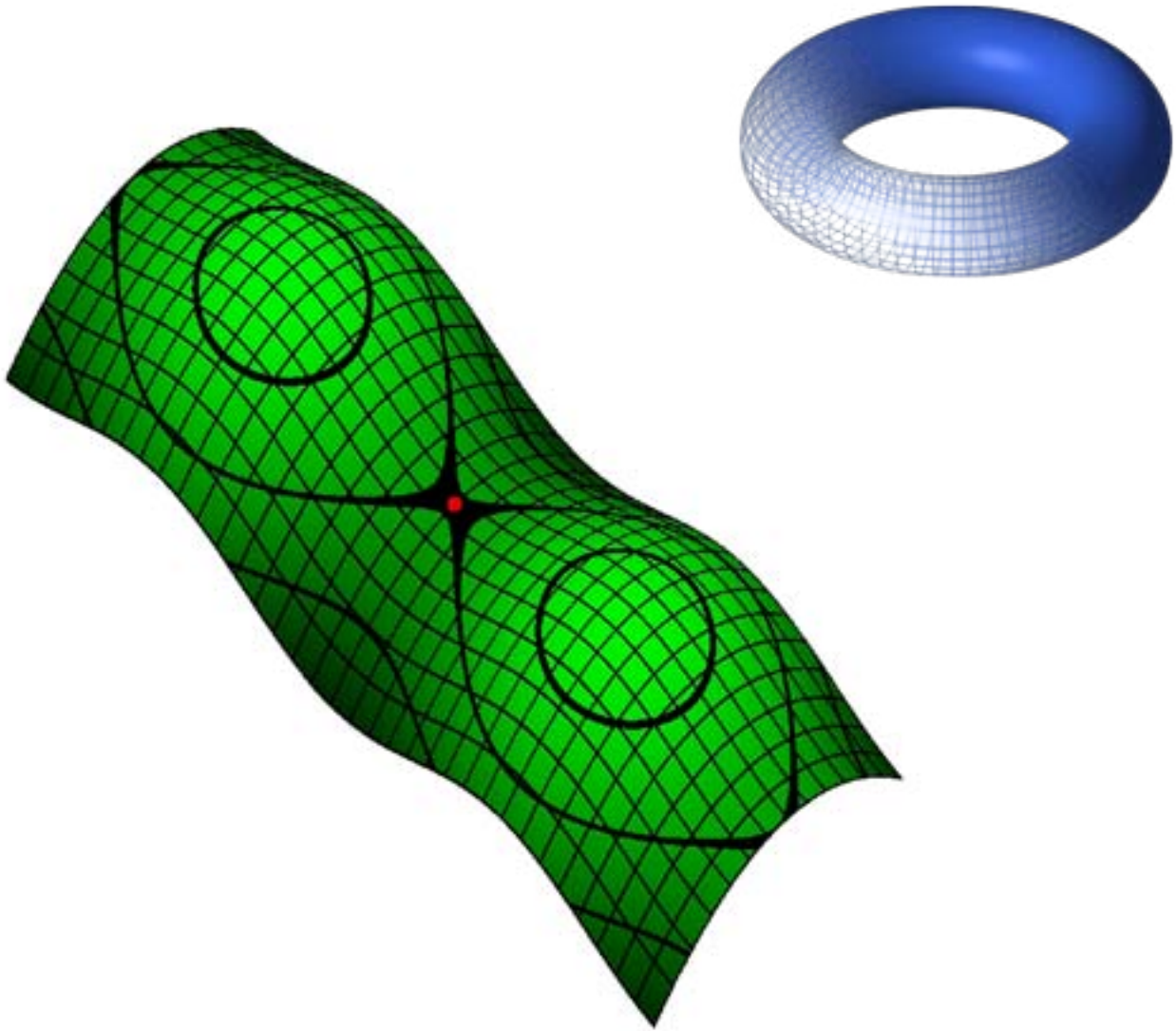
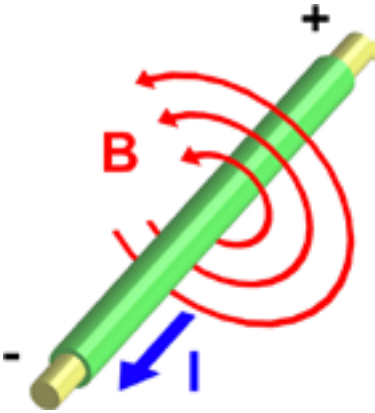


Léon Foucault :
Grave of Jean Bernard Léon Foucault on Cimetière de Montmartre.

Electromagnet :
Illustration of a magnetic field around a wire through which current is flowing.

Gyroscope :
A 3D gyroscope rendered in POV-Ray.

Surface :
An open surface with X-, Y-, and Z-contours shown.



Toroid :
An example of a topological torus--surface shown a torus; the interior solid is topologically a toroid.

Torus :
A simple torus fading out to a wireframe structure. Rendered using POV-Ray.

Eddy Current :
An example of a topological torus--surface shown a torus; the interior solid is topologically a toroid.



Spatial Disorientation
Proprioception
Muscle Memory
Serotonin
Lysergic Acid Diethylamide
Synesthesia
Romanticism
Epistemology
Slippery Slope
Social Change

Spatial disorientation is a condition in which an aircraft pilot’s perception of direction (proprioception) does not agree with reality.

While it can be brought on by disturbances to or disease within the vestibular system, it is more typically a temporary condition resulting from flight into poor weather conditions with low or no visibility. Under these conditions the pilot may be deprived of an external visual horizon, which is critical to maintaining a correct sense of up and down while flying. A pilot who enters such conditions will quickly lose his or her spatial orientation if he or she does not have training in flying with reference to instruments. Approximately 80% of the private pilots in the United States do not have an instrument rating, and therefore are prohibited from flying in conditions where instrument skills are required. Not all pilots abide by this rule, and approximately 40% of the NTSB fatal general aviation accident reports list continuation of flight into conditions for which the pilot was not qualified as either a contributing or proximate cause.

Senses During Flight

During flight, most of the senses are ‘fooled’ by centrifugal force, and indicate to the brain that ‘down’ is at the bottom of the cockpit no matter the actual attitude of the aircraft. Only the inner ear and the visual sense provide data to the contrary. The inner ear contains rotational ‘accelerometers,’ known as the semicircular canals, which provide information to the lower brain on rotational accelerations in the pitch, roll and yaw axes. This system is imperfect, and errors develop in the brain’s estimate of rate and direction of turn in each axis. Normally these errors are corrected using information from the visual sense, in particular an external visual horizon.

Effects of Disorientation

Once an aircraft enters conditions under which the pilot cannot see a distinct visual horizon, the drift in the inner ear continues uncorrected. Errors in the perceived rate of turn about any axis can build up at a rate of 0.2 to 0.3 degrees per second. If the pilot is not trained for or is not proficient in the use of gyroscopic flight instruments, these errors will build up to a point that control of the aircraft is lost, usually in a steep, diving turn known as a graveyard spiral. During the entire time, leading up to and well into the maneuver the pilot remains unaware that he is turning, believing that he is maintaining straight flight.

The graveyard spiral usually terminates when (1) the g-forces on the aircraft build up to and exceed the structural strength of the airframe, resulting in catastrophic failure, or (2) the aircraft contacts the ground. In a 1954 study, the Air Safety Foundation found that out of 20 non-instrument-rated subject pilots, 19 of the 20 entered a graveyard spiral soon after entering simulated instrument conditions. The 20th pilot also lost control of his aircraft, but in another maneuver. The average time between onset of instrument conditions and loss of control was 178 seconds.

Spatial disorientation can also affect instrument-rated pilots in certain conditions. A powerful tumbling sensation (vertigo) can be set up if the pilot moves his head too much during instrument flight. This is called the Coriolis illusion. Pilots are also susceptible to spatial disorientation during night flight over featureless terrain.

Spatial Orientation

Spatial orientation is our natural ability to maintain our body orientation and/or posture in relation to the surrounding environment (physical space) at rest and during motion. Genetically speaking, humans are designed to maintain spatial orientation on the ground. The three-dimensional environment of flight is unfamiliar to the human body, creating sensory conflicts and illusions that make spatial orientation difficult and sometimes impossible to achieve. Statistics show that between 5-10% of all general aviation accidents can be attributed to spatial disorientation, 90% of which are fatal.

Good spatial orientation on the ground relies on the effective perception, integration, and interpretation of visual, vestibular (organs of equilibrium located in the inner ear), and proprioceptive (receptors located in the skin, muscles, tendons, and joints) sensory information. Changes in linear acceleration, angular acceleration, and gravity are detected by the vestibular system and the proprioceptive receptors, and then compared in the brain with visual information.

Spatial orientation in flight is difficult to achieve because numerous sensory stimuli (visual, vestibular, and proprioceptive) vary

in magnitude, direction, and frequency. Any differences or discrepancies between visual, vestibular, and proprioceptive sensory inputs result in a sensory mismatch that can produce illusions and lead to spatial disorientation. Good spatial orientation relies on the effective perception, integration and interpretation of visual, vestibular (organs of equilibrium located in the inner ear) and proprioceptive (receptors located in the skin, muscles, tendons, and joints) sensory information.

Vision and Orientation

Visual references provide the most important sensory information to maintain spatial orientation on the ground and during flight, especially when the body and/or the environment are in motion. Even birds, reputable flyers, are unable to maintain spatial orientation and fly safely when deprived of vision (due to clouds or fog). Only bats have developed the ability to fly without vision but have replaced their vision with auditory echolocation. So it’s no surprise that when humans fly under conditions of limited visibility, they have problems maintaining spatial orientation.

The problem occurs when the outside visual input is obscured, and the seat-of-the-pants input is ambiguous. Then, you’re down to just the output from the inner ear—and that’s when trouble can start.

Fluid in the inner ear reacts only to rate of change, not a sustained change. For example, when you initiate a banking left turn, your inner ear will detect the roll into the turn, but if you hold the turn constant, your inner ear will compensate and rather quickly, although inaccurately, sense that it has returned to level flight.

As a result, when you finally level the wings, that new change will cause your inner ear to produce signals that make you believe you’re banking to the right. This is the crux of the problem you have when flying without instruments in low visibility weather. Even the best pilots will quickly become disoriented if they attempt to fly without instruments when there are no outside visual references. That’s because vision provides the predominant and coordinating sense we rely upon for stability.

Perhaps the most treacherous thing under such conditions is that the signals the inner ear produces—incorrect though they may be—feel right!

The Otolith Organs and Orientation

Two otolith organs, the saccule and utricle, are located in each ear and are set at right angles to each other. The utricle detects changes in linear acceleration in the horizontal plane, while the saccule detects gravity changes in the vertical plane. However, the inertial forces resulting from linear accelerations cannot be distinguished from the force of gravity; therefore, gravity can also produce stimulation of the utricle and saccule. A response of this type will occur during a vertical take-off in a helicopter

or following the sudden opening of a parachute after a free fall.

“Seat Of The Pants” Flying

Anyone sitting in an aircraft that is making a coordinated turn, no matter how steep, will have little or no sensation of being tilted in the air unless the horizon is visible. Similarly, it is possible to gradually climb or descend without a noticeable change in pressure against the seat. In some aircraft, it is possible to execute a loop without pulling negative “G’s,” so that without visual reference, you could be upside down without being aware of it. That’s because a gradual change in any direction of movement may not be strong enough to activate the fluid in the semicircular canals, so you may not realize that the aircraft is accelerating, decelerating, or banking.

In the Media

The Day the Music Died - Feb 3, 1959

This phenomenon was extensively reported in the press in 1999, after John F. Kennedy, Jr.’s plane went down during a night flight over water near Martha’s Vineyard. Subsequent investigation indeed pointed to spatial disorientation as a probable cause of the accident.

Intentionally-induced spatial disorientation (by use of giant mirrors) was a major plot point in the two-part TaleSpin episode “A Bad Reflection on You.”

How to Prevent Spatial Disorientation

The following are basic steps that should help prevent spatial disorientation:

Take the opportunity to experience spatial disorientation illusions in a Barany chair, a Vertigon, a GYRO-LAB or a Virtual Reality Spatial Disorientation Demonstrator.

Before flying with less than 3 miles visibility, obtain training and maintain proficiency in aircraft control by reference to instruments.

When flying at night or in reduced visibility, use the flight instruments.

If intending to fly at night, maintain night-flight currency. Include cross-country and local operations at different airports.

If only Visual Flight Rules-qualified, do not attempt visual flight when there is a possibility of getting trapped in deteriorating weather.

If you experience a vestibular illusion during flight, trust your instruments and disregard your sensory perceptions.

See also

Pilot error
Brownout (aviation)
Sensory illusions in aviation
The Day the Music Died - Feb 3, 1959
Air India Flight 855 - January 1, 1978
John F. Kennedy, Jr. Death - July 16, 1999
Flash Airlines Flight 604
Bárány chair

Proprioception is the sense of the relative position of neighbouring parts of the body.

Unlike the six exteroceptive senses (sight, taste, smell, touch, hearing, and balance) by which we perceive the outside world, and interoceptive senses, by which we perceive the pain and the stretching of internal organs, proprioception is a third distinct sensory modality that provides feedback solely on the status of the body internally. It is the sense that indicates whether the body is moving with required effort, as well as where the various parts of the body are located in relation to each other.

History of Study

The Position-Movement sensation was originally described in 1557 by Julius Caesar Scaliger as a ‘sense of locomotion’. Much later in 1826 Charles Bell expounded the idea of a ‘muscle sense’ and this is credited with being one of the first physiologic feedback mechanisms. Bell’s idea was that commands were being carried from the brain to the muscles, and that reports on the muscle’s condition would be sent in the reverse direction. Later, in 1880, Henry Charlton Bastian suggested ‘kinaesthesia’ instead of ‘muscle sense’ on the basis that some of the afferent information (back to the brain) was coming from other structures including tendon, joints, skin, and muscle. In 1889, Alfred Goldscheider suggested a classification of kinaesthesia into 3 types: muscle, tendon, and articular sensitivity. In 1906, Sherrington published a landmark work which introduced the terms ‘proprioception’, ‘interoception’, and ‘exteroception’. The ‘exteroceptors’ being the organs responsible for information from outside the body such as the eyes, ears, mouth, and skin. The interoceptors then gave information about the internal organs, while ‘proprioception’ was awareness of movement derived from muscular, tendon, and articular sources. Such a system of classification has kept physiologists and anatomists searching for specialised nerve endings which transmit data on joint capsule and muscle tension (such as muscle spindles and Pacini corpuscles).

Proprioception vs. Kinesthesia

Kinesthesia is another term that is often used interchangeably with proprioception. Some differentiate the kinesthetic sense from proprioception by excluding the sense of equilibrium or balance from kinesthesia. An inner ear infection, for example, might degrade the sense of balance. This would degrade the proprioceptive sense, but not the kinesthetic sense. The infected person would be able to walk, but only by using the sense of sight to maintain balance; the person would be unable to walk with eyes closed.

Proprioception and kinaesthesia are seen as interrelated and there is considerable disagreement regarding the definition of these terms. Some of this difficulty stems from Sherrington’s original description of joint position sense (or

the ability to determine where a particular body part exactly is in space) and kinaesthesia (or the sensation that the body part has moved) under a more general heading of proprioception. Clinical aspects of proprioception are measured in tests that measure a subject’s ability to detect an externally imposed passive movement, or the ability to reposition a joint to a predetermined position. Often it is assumed that the ability of one of these aspects will be related to another; unfortunately, experimental evidence suggests there is no strong relation between these two aspects. This suggests that, while these components may well be related in a cognitive manner, they seem to be separate physiologically.

Much of the foregoing work is dependent on the notion that proprioception is essentially a feedback mechanism; that is, the body moves (or is moved) and then the information about this is returned to the brain, whereby subsequent adjustments could be made. More recent work into the mechanism of ankle sprains suggests that the role of reflexes may be more limited due to their long latencies (even at the spinal cord level) as ankle sprain events occur in perhaps 100msec or less. Accordingly, a model has been proposed to include a ‘feedforward’ component of proprioception where the subject will also have central information about the body’s position prior to attaining it.

Kinesthesia is a key component in muscle memory and hand-eye coordination, and training can improve this sense (see blind contour drawing). The ability to swing a golf club or to catch a ball requires a finely-tuned sense of the position of the joints. This sense needs to become automatic through training to enable a person to concentrate on other aspects of performance, such as maintaining motivation or seeing where other people are.

Basis of Proprioceptive Sense

The proprioceptive sense is believed to be composed of information from sensory neurons located in the inner ear (motion and orientation) and in the stretch receptors located in the muscles and the joint-supporting ligaments (stance). There are specific nerve receptors for this form of perception, just as there are specific receptors for pressure, light, temperature, sound, and other sensory experiences, known as adequate stimuli receptors.

Although it was known that finger kinesthesia relies on skin sensation, recent research has found that kinesthesia-based haptic perception strongly relies on the forces experienced during touch. This research allows the creation of “virtual”, illusory haptic shapes with different perceived qualities.

*Pronounced
(PRO-pee-o-SEP-shun)*

*from Latin proprius,
meaning “one’s own” and perception*

Applications

Law Enforcement

Proprioception is tested by American police officers using the field sobriety test where the subject is required to touch his or her nose with eyes closed. People with normal proprioception may make an error of no more than 20 millimetres. People suffering from impaired proprioception (a symptom of moderate to severe alcohol intoxication) fail this test due to difficulty locating their limbs in space relative to their noses.

Learning

Proprioception is what allows someone to learn to walk in complete darkness without losing balance. During the learning of any new skill, sport, or art, it is usually necessary to become familiar with some proprioceptive tasks specific to that activity. Without the appropriate integration of proprioceptive input, an artist would not be able to brush paint onto a canvas without looking at the hand as it moved the brush over the canvas; it would be impossible to drive an automobile because a motorist would not be able to steer or use the foot pedals while looking at the road ahead; a person could not touch type or perform ballet; and people would not even be able to walk without watching where they put their feet.

Oliver Sacks once reported the case of a young woman who lost her proprioception due to a viral infection of her spinal cord. At first she was not able to move properly at all or even control her tone of voice (as voice modulation is primarily proprioceptive). Later she relearned by using her sight (watching her feet) and vestibulum (or inner ear) only for movement while using hearing to judge voice modulation. She eventually acquired a stiff and slow movement and nearly normal speech, which is believed to be the best possible in the absence of this sense. She could not judge effort involved in picking up objects and would grip them painfully to be sure she didn’t drop them.

Training

The proprioceptive sense can be sharpened through study of many disciplines. The Alexander Technique uses the study of movement to enhance kinesthetic judgment of effort and location. Juggling trains reaction time, spatial location, and efficient movement. Standing on a wobble board or balance board is often used to retrain or increase proprioception abilities, particularly as physical therapy for ankle or knee injuries. Standing on one leg (stork standing) and various other body-position challenges are also used in such disciplines as Yoga or Wing Chun. In addition, the slow, focused movements of Tai Chi practice provide an environment whereby the proprioceptive information being fed back to the brain stimulates an intense, dynamic “listening environment” to further enhance mind / body integration. Several studies have shown that the efficacy of these types of training is challenged by closing the eyes, because the eyes give invaluable feedback to establishing the moment-to-moment information of balance.

Impairment

Apparently, temporary loss or impairment of proprioception may happen periodically during growth, mostly during adolescence. Growth that might also influence this would be large increases or drops in bodyweight/size due to fluctuations of fat (liposuction, rapid fat loss, rapid fat gain) and muscle content (bodybuilding, anabolic steroids, catabolism/starvation). It can also occur to those who gain new levels of flexibility, stretching, and contortion. A limb’s being in a new range of motion never experienced (or at least, not for a long time since youth perhaps) can disrupt one’s sense of location of that limb. Possible experiences include these: suddenly feeling that feet or legs are missing from one’s mental self-image; needing to look down at one’s limbs to be sure they are still there; and falling down while walking, especially when attention is focused upon something other than the act of walking.

Proprioception is occasionally impaired spontaneously, especially when one is tired. One’s body may appear too large or too small, or parts of the body may appear distorted in size. Similar effects can sometimes occur during epilepsy or migraine auras. These effects are presumed to arise from abnormal stimulation of the part of the parietal cortex of the brain involved with integrating information from different parts of the body.

Proprioceptive illusions can also be induced, such as the Pinocchio illusion.

The proprioceptive sense is often unnoticed because humans will adapt to a continuously-present stimulus; this is called habituation, desensitization, or adaptation. The effect is that proprioceptive sensory impressions disappear, just as a scent can disappear over time. One practical advantage of this is that unnoticed actions or sensation continue in the background while an individual’s attention can move to another concern. The Alexander Technique addresses these issues.

People who have a limb amputated may still have a confused sense of that limb existence on their body, known as phantom limb syndrome. Phantom sensations can occur as passive proprioceptive sensations of the limb’s presence, or more active sensations such as perceived movement, pressure, pain, itching, or temperature. The etiology of the phantom limb phenomenon was disputed in 2006, but some consensus existed in favour of neurological (e.g. neural signal bleed across a preexisting sensory map, as posited by V.S. Ramachandran) over psychological explanations. Phantom sensations and phantom pain may also occur after the removal of body parts other than the limbs, such as after amputation of the breast, extraction of a tooth (phantom tooth pain), or removal of an eye (phantom eye syndrome).

Temporary impairment of proprioception has also been known to occur from an overdose of vitamin B6 (pyridoxine and pyridoxamine). Most of the impaired function returns to normal shortly after the intake of vitamins returns to

normal. Impairment can also be caused by cytotoxic factors such as chemotherapy.

It has been proposed that even common tin-nitus and the attendant hearing frequency-gaps masked by the perceived sounds may cause erroneous proprioceptive information to the balance and comprehension centers of the brain, precipitating mild confusion.

Proprioception is permanently impaired in patients who suffer from joint hypermobility or Ehlers-Danlos Syndrome (a genetic condition that results in weak connective tissue throughout the body). It can also be permanently impaired from viral infections as reported by Sacks. The catastrophic effect of major proprioceptive loss is reviewed by Robles-De-La-Torre (2006).

See also

*Body Image
Synesthesia*

Muscle memory is a common term for neuromuscular facilitation, which is the process of the neuromuscular system memorizing motor skills.

When an active person repeatedly trains movement, often of the same activity, in an effort to stimulate the mind’s adaptation process, the outcome is to induce physiological changes which attain increased levels of accuracy through repetition. Even though the process is really brain-muscle memory or motor memory, the colloquial expression “muscle memory” is commonly used.

Individuals rely upon the mind’s ability to assimilate a given activity and adapt to the training. As the brain and muscle adapts to training, the subsequent changes are a form or representation of its muscle memory.

There are two types of motor skills involved in muscle memory: fine and gross. Fine motor skills are very minute and small skills we perform with our hands such as brushing teeth, combing hair, using a pencil or pen to write, touch typing or even playing video games. Gross motor skills are those actions that require large body parts and large body movements as in the throwing sports such as bowling, American football, and baseball, sports such as archery, basketball, golfing, judo, swimming, and tennis, and activities such as driving a car (especially one with a manual transmission), playing a musical instrument, and marksmanship.

Muscle memory is fashioned over time through repetition of a given suite of motor skills and the ability through brain activity to inculcate and instill it such it they become automatic. Activities such as brushing the teeth, combing the hair, or even driving a vehicle are not as easy as they look to the beginner. As one reinforces those movements through repetition, the neural system learns those fine and gross motor skills to the degree that one no longer needs to think about them, but merely to react and perform appropriately. In this sense the muscle memory process is an example of automating an OODA Loop insofar as one learns to Observe, Orient, Decide, and Act.

When one picks up a hair brush, one automatically has a certain motion, style, number of strokes, and amount of pressure as the hair is

brushed without requiring conscious thought about each movement. Other forms of rather elaborate motions that have become automatic include speech. As one speaks, one usually does not consciously think about the complex tongue movements, synchronisation with vocal cords and various lip movements that are required to produce phonemes, because of muscle memory. In speaking a language that is not one’s native language, one typically speaks with an accent, because one’s muscle memory is tuned to forming the phonemes of one’s native language, rather than those of the language one is speaking. An accent can be eliminated only by carefully retraining the muscle memory.

Physiology

Muscle memory starts with a visual cue. A classic example are chords while playing instruments such as the piano or guitar. The beginner must think and interpret these chords, but after repetition, the letters and symbols on the page become cues to the muscle movements. As the brain processes the information about the desired activity and motion such as a golf swing, one then commits to that motion thought as correct. Over time, the accuracy and skills in performing the swing or movement improve.

Muscle memory is the control center of the movement. In maximizing muscle memory to learn a new motion, practicing that same motion over a long enough period makes it become automatic. This learning process could take months, even years, to perfect, depending on the individual’s dedication to practice, and their unique biochemical neuromuscular learning system to retain that practice.

In detail, inside the brain are neurons that produce impulses, which carry tiny electrical currents. These currents cross the synapses between neurons with chemical transporters called neurotransmitters to carry the communication. Neurotransmitters are the body’s communicative mechanisms and one of their many functions is to travel through the central nervous system and carry the signal from visual cue to the muscle for the contraction.

Although there are many types of neurotransmitters, the communicative ones primarily used in muscle memory are acetylcholine and serotonin. Acetylcholine is the major neurotransmitter used in memory, focus, concentration, and muscle memory. It is the substance that transports messages from one nerve cell to another. Acetylcholine is critical to the process of creating and remembering the muscle contraction. It achieves this through motor neurons.

Serotonin is imperative in the muscle memory process. Serotonin has multiple physiological actions at neuromuscular junctions where communication crosses over. This includes facilitation of transmitter release from nerve

terminals and an increase in the communication to muscle fibers.

When a motor neuron depolarizes, an electrical current is passed down the nerve fiber and the impulse causes the neurotransmitter acetylcholine to be released to the muscle cell. Acetylcholine then binds with receptors on the muscle membrane to create the contraction. Over time, with acetylcholine the brain-muscle learns the chosen motion and induces its own form of memory. This process is also called neuromuscular facilitation. Once muscle memory is created and retained, there is no longer need to actively think about the movement and this frees up capacity for other activities.

Serotonin is a monoamine neurotransmitter synthesized in serotonergic neurons in the central nervous system (CNS) and enterochromaffin cells in the gastrointestinal tract of animals including humans.

Function

In the central nervous system, serotonin is believed to play an important role as a neurotransmitter, in the regulation of anger, aggression, body temperature, mood, sleep, vomiting, sexuality, and appetite.

In addition, serotonin is also a peripheral signal mediator. For instance, serotonin is found extensively in the human gastrointestinal tract (about 90%), and the major storage place is platelets in the blood stream.

Neurotransmission

As with all neurotransmitters, the effects of 5-HT on the human mood and state of mind, and its role in consciousness, are very difficult to ascertain.

Gross Anatomy

The neurons of the raphe nuclei are the principal source of 5-HT release in the brain. The raphe nuclei are neurons grouped into about nine pairs and distributed along the entire

length of the brainstem, centered around the reticular formation.

Axons from the neurons of the raphe nuclei form a neurotransmitter system, reaching large areas of the brain. Axons of neurons in the caudal dorsal raphe nucleus terminate in e.g.:

deep cerebellar nuclei
cerebellar cortex
spinal cord

On the other hand, axons of neurons in the rostral dorsal raphe nucleus terminate in e.g.:

thalamus
striatum
hypothalamus
nucleus accumbens
neocortex
cingulate gyrus
cingulum
hippocampus
amygdala

Thus, activation of this serotonin system has effects on large areas of the brain, which explains the effects of therapeutic modulation of it.

Microanatomy

5-HT is thought to be released from serotonergic varicosities into the extra neuronal space, in other words from swellings (varicosities) along the axon, rather than from synaptic terminal buttons (in the manner of classical neurotransmission). From here it is free to diffuse over a relatively large region of space (>20µm) and activate 5-HT receptors located on the dendrites, cell bodies and presynaptic terminals of adjacent neurons.

Receptors

5-HT receptors are the receptors for serotonin. They are located on the cell membrane of nerve cells and other cell types in animals and mediate the effects of serotonin as the endogenous ligand and of a broad range of pharmaceutical and hallucinogenic drugs. With the exception of the 5-HT3 receptor, a ligand gated ion channel, all other 5-HT receptors are G protein coupled seven transmembrane (or heptahelical)

receptors that activate an intracellular second messenger cascade.

Termination

Serotonergic action is terminated primarily via uptake of 5-HT from the synapse. This is through the specific monoamine transporter for 5-HT, 5-HT reuptake transporter, on the presynaptic neuron. Various agents can inhibit 5-HT reuptake including MDMA (ecstasy), amphetamine, cocaine, dextromethorphan (an antitussive), tricyclic antidepressants (TCAs) and selective serotonin reuptake inhibitors (SSRIs).

Other Functions

Recent research suggests that serotonin plays an important role in liver regeneration and acts as a mitogen (induces cell division) throughout the body.

Pathology

Low levels of serotonin may be associated with several disorders, namely increase in aggressive and angry behaviors, clinical depression, obsessive-compulsive disorder (OCD), migraine, irritable bowel syndrome, tinnitus, fibromyalgia, bipolar disorder and anxiety disorders. If neurons of the brainstem that make serotonin — serotonergic neurons — are abnormal in infants, there is a risk of sudden infant death syndrome (SIDS). Low levels of serotonin may also be associated with intense religious experiences.

Recent research conducted at Rockefeller University shows that in both patients who suffer from depression and in mice that model that disease, levels of the p11 protein are decreased. This protein is related to serotonin transmission within the brain.

Synthesis

In the body, serotonin is synthesized from the amino acid tryptophan by a short metabolic pathway consisting of two enzymes: tryptophan hydroxylase (TPH) and amino acid decarboxylase (DDC). The TPH-mediated reaction is the rate-limiting step in the pathway. TPH has been shown to exist in two forms: TPH1, found in several tissues, and TPH2, which is a brain-specific isoform. There is evidence that genetic polymorphisms in both these subtypes influence susceptibility to anxiety and depression. There is also evidence that ovarian hormones can affect the expression of TPH in various species, suggesting a possible mechanism for postpartum depression and premenstrual stress syndrome.

Serotonin taken orally does not pass into the serotonergic pathways of the central nervous system because it does not cross the blood-brain barrier. However, tryptophan and its metabolite 5-hydroxytryptophan (5-HTP), from which serotonin is synthesized, can and do cross the blood-brain barrier. These agents are available as dietary supplements and may be effective serotonergic agents.

One product of serotonin breakdown is 5-Hydroxyindoleacetic acid (5 HIAA), which is excreted in the urine. Serotonin and 5 HIAA are sometimes produced in excess amounts by certain tumors or cancers, and levels of these substances may be measured in the urine to test for these tumors.

Psychedelic Modulation

There exist many recreational drugs that innately modulate the 5-HT system in such a way to produce alterations in perception, emotional response, and thought process. These include psilocin/psilocybin, DMT, mescaline, LSD, MDMA (ecstasy), MDA, MDEA and ibogaine.

Therapeutic Modulation

Various drugs are used to modulate the 5-HT system including some antidepressants, anxiolytics, antiemetics, and triptans.

Many are classified as psychiatric medications, including the monoamine oxidase inhibitors (MAOIs), tricyclic antidepressants (TCAs), atypical antipsychotics, the selective serotonin reuptake inhibitors (SSRIs), and amphetamines. Research by GW Pharma in the UK has shown that cannabis modulates serotonin levels through G-proteins, also resulting in an antiemetic effect.

Antidepressants

The MAOIs prevent the breakdown of monoamine neurotransmitters (including serotonin), and therefore increase concentrations of the neurotransmitter in the brain. MAOI therapy is associated with many adverse drug reactions, and patients are at risk of hypertensive emergency triggered by foods with high tyramine-content and certain drugs.

Some drugs inhibit this re-uptake of serotonin, again making it stay in the synapse longer. The tricyclic antidepressants (TCAs) inhibit the re-uptake of both serotonin and norepinephrine. The newer Selective Serotonin Re-uptake Inhibitors (SSRIs) have fewer (though still numerous) side-effects and fewer interactions with other drugs.

Like many centrally active drugs, prolonged use of SSRIs may not be effective for increasing levels of serotonin as homeostasis may reverse the effects of SSRIs via negative feedback, tolerance or downregulation.

Antiemetics

5-HT3 antagonists such as ondansetron, granisetron, and tropisetron are important antiemetic agents. They are particularly important in treating the nausea and vomiting that occur during anticancer chemotherapy using cytotoxic drugs. Another application is in treatment of post-operative nausea and vomiting. Applications to the treatment of depression and other mental and psychological conditions have also been investigated with some positive results.

Serotonin Syndrome

Extremely high levels of serotonin can have toxic and potentially fatal effects, causing a condition known as serotonin syndrome. In practice, such toxic levels are essentially impossible to reach through an overdose of a single anti-depressant drug, but require a combination of serotonergic agents, such as an SSRI with an MAOI. The intensity of the symptoms of serotonin syndrome vary over a wide spectrum, and the milder forms are seen even at non-toxic levels. For example, recreational doses of MDMA (ecstasy) will generally cause such symptoms but only rarely lead to true toxicity.

Chronic Diseases Resulting From Serotonin 5-Ht2b Overstimulation

In blood, serotonin stored in platelets is active wherever platelets bind, as a vasoconstrictor to stop bleeding, and also as a fibrocyte mitotic, to aid healing. Because of these effects, overdoses of serotonin, or serotonin agonist drugs, may cause acute or chronic pulmonary hypertension from pulmonary vasoconstriction, or else syndromes of retroperitoneal fibrosis or cardiac valve fibrosis (endocardial fibrosis) from overstimulation of serotonic growth receptors on fibrocytes.

Serotonin itself may cause a syndrome of cardiac fibrosis when it is eaten in large quantities in the diet (the Matoki banana of East Africa) or when it is over-secreted by certain mid-gut carcinoid tumors. The valvular fibrosis in such cases is typically on the right side of the heart, since excess serotonin in the serum outside platelets is metabolized in the lungs and does not reach the left circulation. Serotonergic agonist drugs may cause not only pulmonary hypertension but also fibrosis anywhere in the body, particularly the syndrome of retroperitoneal fibrosis, as well as cardiac valve fibrosis. In the past, three groups of serotonergic drugs have caused these syndromes. They are the serotonergic vasoconstrictive anti-migraine drugs (ergotamine and methysergide), the serotonergic appetite suppressant drugs (fenfluramine, chlorphentermine, and aminorex), and certain anti-parkinsonian dopaminergic agonists, which also stimulate serotonergic 5-HT2B receptors (pergolide and cabergoline, but not the more specific lisuride). A number of these drugs have recently been withdrawn from the market.

Because neither the amino acid L-tryptophan nor the SSRI-class antidepressants raise blood serotonin levels, they are not under suspicion to cause the syndromes described. However, since 5-hydroxytryptophan (5-HTP) does raise blood serotonin levels, it is under some of the same scrutiny as actively serotonergic drugs.

In Unicellular Organisms

Serotonin is used by a variety of single-cell organisms for various purposes. Selective serotonin re-uptake inhibitors (SSRIs) have been found to be toxic to algae. The gastrointestinal parasite *Entamoeba histolytica* secretes serotonin, causing a sustained secretory diarrhea in

some patients. Patients infected with *Entamoeba histolytica* have been found to have highly elevated serum serotonin levels which returned to normal following resolution of the infection. *Entamoeba histolytica* also responds to the presence of serotonin by becoming more virulent.

In Plants

Serotonin is found in mushrooms and plants, including fruits and vegetables. The highest values of 25 - 400 mg/kg have been found in nuts of the walnut (*Juglans*) and hickory (*Carya*) genus. Serotonin concentrations of 3–30 mg/kg have been found in plantain, pineapple, banana, kiwifruit, plums, and tomatoes. Moderate levels from 0.1 - 3 mg/kg have been found in a wide range of tested vegetables. Serotonin is one compound of the poison contained in the stinging hairs of the stinging nettle (*Urtica dioica*). It should be noted that serotonin, unlike its precursors 5-HTP and tryptophan, does not cross the blood-brain barrier. Several plants contain serotonin together with a family of related tryptamines that are methylated at the amino (NH2) and hydroxy (OH) groups, are N-oxides, or miss the OH group. Example are plants from the *Anadenanthera* genus that are used in the hallucinogenic yopo snuff.

In Animals

Serotonin as a neurotransmitter is found in all animals, including insects. Several toad venoms, as well as that of the stingray, contain serotonin and related tryptamines.

History

Isolated and named in 1948 by Maurice M. Rapport, Arda Green, and Irvine Page of the Cleveland Clinic, the name “serotonin” is something of a misnomer and reflects the circumstances of the compound’s discovery. It was initially identified as a vasoconstrictor substance in blood serum – hence serotonin, a serum agent affecting vascular tone. This agent was later chemically identified as 5-hydroxytryptamine (5-HT) by Rapport, and, as the broad range of physiological roles were elucidated, 5-HT became the preferred name in the pharmacological field.

Lysergic acid diethylamide, LSD, LSD-25, or acid, is a semisynthetic psychedelic drug of the tryptamine family. LSD can be described by its users as a pilgrimage to one’s own mind.

Probably the best known psychedelic, it has been used mainly as a recreational drug, an en- theogen, and a tool to supplement various prac- tices for transcendence, including in meditation, psychonautics, art projects, and illicit (though at one time legal) psychedelic psychotherapy, whether self-administered or not. It is synthe- sized from lysergic acid derived from ergot, a grain fungus that typically grows on rye and was first synthesized by Swiss chemist Albert Hofmann. The short form LSD comes from its early codename LSD-25, which is an abbrevia- tion for the German “Lysergsäure-diethylamid” followed by a sequential number.

LSD is sensitive to oxygen, ultraviolet light, and chlorine, especially in solution, though its potency may last years if it is stored away from light and moisture at low temperature. In pure form it is colorless, odorless and mildly bitter. LSD is typically delivered orally, usually on a substrate such as absorbent blotter paper, a sug- ar cube, or gelatin. In its liquid form, it can be administered by intramuscular or intravenous injection. The threshold dosage level needed to cause a psychoactive effect on humans is of the order of 20 to 30 µg (micrograms).

Introduced by Sandoz Laboratories as a drug with various psychiatric uses, LSD quickly became a therapeutic agent that appeared to show great promise. However, the extra-med- icinal use of the drug in Western society during the mid-twentieth century led to a political firestorm that resulted in the banning of the substance for medicinal as well as recreational and spiritual uses. Despite this, the drug is still considered in some intellectual circles to show a great deal of promise as a medicinal substance. A number of organizations—including the Beckley Foundation, MAPS, Heffler Research Institute and the Albert Hofmann Foundation—exist to fund, encourage and coor- dinate research into its medicinal uses.

Synthesis

LSD was first synthesized on November 16, 1938 by Swiss chemist Dr. Albert Hofmann at the Sandoz Laboratories in Basel, Switzerland, as part of a large research program searching for medically useful ergot alkaloid derivatives. Ergot is a fungus that, by infecting cereal grains used for making rye breads, causes ergotism. After Dr. Hofmann succeeded in synthesiz- ing ergobasine (which became the preeminent uterotonic), he began working on other amide derivatives of lysergic acid. LSD (lysergic acid diethylamide) is one of the major drugs making up the hallucinogen class of drugs; Lysergic acid diethylamide, the 25th lysergic acid deriva- tive he synthesised (hence the name LSD-25)

was developed initially as a probable analeptic, a circulatory and respiratory stimulant, based on its structural similarity to another known ana- leptic, nikethamide (nicotinic acid diethylam- ide). However, no extraordinary benefits of the compound were identified during animal tests (though laboratory notes briefly mention that the animals became “restless” under its effects), and its study was discontinued. Its psychedelic properties were unknown until 5 years later, when Hofmann, acting on what he has called a “peculiar presentiment,” returned to work on the chemical. While re-synthesizing LSD-25 for further study, Hofmann became dizzy and was forced to stop work. In his journal, Hofmann wrote that after becoming dizzy he proceeded home and was affected by a “remarkable restlessness, combined with a slight dizziness”. Hofmann stated that as he lay in his bed he sank into a not unpleasant “intoxicated like condi- tion” which was characterized by an extremely stimulated imagination. He stated that he was in a dreamlike state, and with his eyes closed he could see uninterrupted streams of “fantastic pictures, extraordinary shapes with intense, kaleidoscopic play of colors.” The condition lasted about two hours after which it faded away. Hofmann had attributed the psychoactive effects he experienced to accidentally absorbing a tiny amount of LSD-25 into his skin. Three days later he would take a much larger dose in order to test its effects further; this day would later be referred to as the “Bicycle Day”.

Bicycle Day

On April 19, 1943 Dr. Hofmann intentionally ingested 250 µg of LSD, which he hypoth- esized would be at most a threshold level dose, based on his research on other ergot alkaloids. Surprisingly, the substance showed a potency orders of magnitude above almost any other substance known at the time, amounting to a much heavier dose than typically given in modern therapeutic use. After ingesting the substance Hofmann found himself struggling to speak intelligibly and asked his laboratory as- sistant, who knew of the self-experiment, to es- cort him home on his bicycle, since no vehicles were available due to wartime restrictions. On the bicycle ride home, Hofmann’s condition became more severe and in his journal he stated that everything in his field of vision wavered and was distorted, as if seen in a curved mirror. Hofmann also stated that while riding on the bicycle, he had the sensation of being station- ary, unable to move from where he was, despite the fact that he was moving very rapidly. Once Hofmann arrived home, he summoned a doctor and asked his neighbor for milk, believing it might help relieve the symptoms. Hofmann wrote that despite his delirious and bewildered

condition, he was able to choose milk as a nonspecific antidote for poisoning. Upon arriv- ing the attending doctor could find no abnormal physical symptoms other than extremely dilated pupils. After spending several hours terrified that his body had been possessed by a demon, that his next door neighbor was a witch, and that his furniture was threatening him, Dr. Hof- mann feared he had become completely insane. In his journal Hofmann said that the doctor saw no reason to prescribe medication and instead sent him to his bed. At this time Hofmann said that the feelings of fear had started to give way to feelings of good fortune and gratitude, and that he was now enjoying the colors and plays of shapes that persisted behind his closed eyes. Hofmann mentions seeing “fantastic images” surging past him, alternating and opening and closing themselves into circles and spirals and finally exploding into colored fountains and then rearranging themselves in a constant flux. Hofmann mentions that during the condition every acoustic perception, such as the sound of a passing automobile, was transformed into optical perceptions. Eventually Hofmann slept and upon awakening the next morning felt refreshed and clearheaded, though somewhat physically tired. He also stated that he had a sensation of well being and renewed life and that his breakfast tasted unusually delicious. Upon walking in his garden he remarked that all of his senses were “vibrating in a condition of highest sensitivity, which then persisted for the entire day”.

Early Research

Early research on LSD saw its potency and noticed that even in extremely small quantities it could significantly alter the mental function- ing of healthy volunteers. Due to the fact that LSD could produce changes in perceptions and emotions, early researchers hypothesized that the cause of some mental illnesses, particularly schizophrenia, were due to the human body releasing small quantities of substances identi- cal to LSD. Much of the research during the late 1940’s dealt with this hypothesis and many LSD sessions conducted for scientific study were often termed “experimental psychoses”, and this is where the terms “psychoactive” , “psychotomimetic” and “hallucinogenic” were coined to refer to such drugs. Generally these studies revolved around the attempt to block the effects of LSD with premedication, which was thought to be able to lead to medical treatments for schizophrenia. The studies showed that there was no such connection (the effects of LSD and those of schizophrenia are drastically different and have different causes and functions). Some early researchers also started to suggest that LSD could have positive effects and could be used as a treatment for patients with psychiatric illnesses. Some reports suggested that even small doses of LSD could have dramatic effects on the personalities and attitudes and even life- styles of test subjects. Early LSD research also found evidence of the drug’s ability to facilitate relief of various emotional episodes related to traumatic memories from childhood of patients.

Government Research

During the Cold War intelligence agencies were keenly interested in the possibilities of using LSD for interrogation and mind control, as well as for large-scale social engineering. The CIA research on LSD, most of which was done under Project MKULTRA, the code name for a CIA mind-control research program, began in the 1950s and continued until the late 1960s.

Tests were also conducted by the U.S. Army Biomedical Laboratory (now known as the U.S. Army Medical Research Institute of Chemical Defense) located in the Edgewood Arsenal at Aberdeen Proving Grounds. Subjects would take LSD (without consent) and then perform a battery of tests to investigate the effects of the drug on soldiers. Based on remaining publicly available records, the projects seem to have concluded that LSD was of little practical use as a mind control drug and moved on to other drugs.

Both the CIA and the Army experiments became highly controversial when they became public knowledge in the 1970s, as the test sub- jects were not normally informed of the nature of the experiments, or even that they were sub- jects in experiments at all. At least one person, an Army scientist named Frank Olson is thought by some to have committed suicide by leaping from a tall building as a result of his being un- knowingly given LSD. Frank Olson’s son, Eric Olson, believes that his father was murdered by government officials and a 1994 exhuma- tion and examination by forensic pathologists at George Washington University of the body suggested that Olson had suffered blunt trauma to the back of his head prior to falling from the building. Most of the MKULTRA records were deliberately destroyed in 1973. The controversy contributed to President Ford’s creation of the Rockefeller Commission and new regulations on informed consent. The British government also engaged in LSD testing; in 1953 and 1954, scientists working for MI6 dosed servicemen in an effort to find a “truth drug”. The test subjects were not informed that they were being given LSD, and had in fact been told that they were participating in a medical project to find a cure for the common cold. One subject, aged 19 at the time, reported seeing “walls melting, cracks appearing in people’s faces ... eyes would run down cheeks, Salvador Dalí-type faces ... a flower would turn into a slug”. After keeping the trials secret for many years, MI6 agreed in 2006 to pay the former test subjects financial compensation. Like the CIA, MI6 decided that LSD was not a practical drug for mind control purposes.

Recreational USE

Several mental health professionals involved in LSD research, most notably Harvard psychol- ogy professors Dr. Timothy Leary and Dr. Richard Alpert, became convinced of LSD’s potential as a tool for spiritual growth. By the spring of 1961 Dr. Timothy Leary claimed to have given psychedelic drugs to over 200 subjects, saying that eighty-five percent of his subjects reported that the experience was the

most educational of their lives.

Their research became more esoteric and controversial, as Leary and Alpert alleged links between the LSD experience and the state of enlightenment sought after in many mystical traditions. They were dismissed from the traditional academic psychology community, and as such cut off from legal scientific acquisition of the drug. Drs. Leary and Alpert acquired a quantity of LSD and relocated to a private mansion, where they continued their research. The experiments lost their scientific character as the pair evolved into countercultural spiritual gurus associated with the hippie movement, encouraging people to question authority and challenge the status quo, a concept summarized in Leary’s catchphrase, “Turn on, tune in, drop out”.

The drug was banned in the United States in 1966, with scientific therapeutic research as well as individual research also becoming prohibitively difficult. Many other countries, under pressure from the U.S., quickly followed suit. Since 1967, underground recreational and therapeutic LSD use has continued in many countries, supported by a black market and popular demand for the drug. Legal, academic research experiments on the effects and mechanisms of LSD are also conducted on occasion, but rarely involve human subjects. Despite its proscription, the hippie counterculture continued to promote the regular use of LSD, led by figures such as Leary and psychedelic rock bands such as The Doors and The Grateful Dead. “Acidhead” has been used as a (sometimes derogatory) name for people who frequently use LSD. According to Leigh Henderson and William Glass, two researchers associated with the NIDA who performed a 1994 review of the literature, LSD use is relatively uncommon when compared to the abuse of alcohol, cocaine, and prescription drugs. Over the previous fifteen years, long-term usage trends stayed fairly stable, with roughly 5% of the population using the drug and most users being in the 16 to 23 age range. Henderson and Glass found that LSD users typically partook of the substance on an infrequent, episodic basis, then “maturing out” after two to four years. Overall, LSD appeared to have comparatively few adverse health consequences, of which “bad trips” were the most commonly reported (and, the researchers found, one of the chief reasons youths stop using the drug).

Effects

Pharmacokinetics

LSD’s effects normally last from 8-12 hours - Sandoz’s prospectus for “Delysid” warned: “intermittent disturbances of effect may occasionally persist for several days.” Contrary to early reports and common belief, LSD effects do not last longer than significant levels of the drug in the blood. Aghajanian and Bing found LSD had an elimination half-life of 175 minutes, while, more recently, Papac and Foltz reported that 1 µg/kg oral LSD given to a single male volunteer had an apparent plasma half-life of 5.1 hours, with a peak plasma concentration of 1.9 ng/mL at 3 hours post-dose. Notably, Aghajan-

ian and Bing found that blood concentrations of LSD matched the time course of volunteers’ difficulties with simple arithmetic problems.

Pharmacodynamics

LSD affects a large number of the G protein coupled receptors, including all dopamine receptor subtypes, all adrenoreceptor subtypes as well as many others. LSD binds to most serotonin receptor subtypes except for 5-HT3 and 5-HT4. However, most of these receptors are affected at too low affinity to be activated by the brain concentration of approximate 10–20 nM. Recreational doses of LSD can affect 5-HT1A, 5-HT2A, 5-HT2C, 5-HT5A, 5-HT5B, and 5-HT6 receptors. The psychotropic effects of LSD are attributed to its strong partial agonist effects at 5-HT2A receptors as specific 5-HT2A agonist drugs are psychotropics and largely 5-HT2A specific antagonists block the psychotropic activity of LSD. Exactly how this produces the drug’s effects is unknown, but it is thought that it works by increasing glutamate release and hence excitation in the cortex, specifically in layers IV and V. In the later stages, LSD might act through DARPP-32 - related pathways that are likely the same for multiple drugs including cocaine, methamphetamine, nicotine, caffeine, PCP, ethanol and morphine.

A particularly compelling look at the actions of LSD was performed by Barry Jacobs recording from electrodes implanted into cat Raphe nuclei. Behaviorally relevant doses of LSD result in a complete blockade of action potential activity in the dorsal raphe, effectively shutting off the principal endogenous source of serotonin to the telencephalon.

Some reports indicate that although administration of chlorpromazine (Thorazine) or similar typical antipsychotic tranquilizers will not end an LSD trip, it will either lessen the intensity or immobilize and numb the patient, a side effect of the medication. While it also may not end an LSD trip, the best chemical treatment for a “bad trip” is an anxiolytic agent such as diazepam (Valium) or another benzodiazepine. Some have suggested that administration of niacin (nicotinic acid, vitamin B3) could be useful to end the LSD user’s experience of a “bad trip”. The nicotinic acid in niacin as opposed to nicotinamide, will produce a full body heat rash, due to widening of peripheral blood vessels. The effect is somewhat akin to a poison ivy rash. Although it is not clear to what extent the effects of LSD are reduced by this intervention, the physical effect of an itchy skin rash may itself tend to distract the user from feelings of anxiety. Indeed, nicotinic acid was experienced as a stressor by all tested persons. The rash itself is temporary and disappears within a few hours. It is questionable if this method could be effective for people having serious adverse psychological reactions.

Physical

Physical reactions to LSD are highly variable and may include the following: uterine contractions, hypothermia, fever, elevated levels of blood sugar, goose bumps, increase of

heart rate, jaw clenching, perspiration, pupil-dilation, saliva production, mucus production, sleeplessness, paresthesia, euphoria, hyper-reflexia, tremors and synesthesia. LSD users report numbness, weakness, trembling, and nausea. LSD was studied in the 1960s by Eric Kast as an analgesic for serious and chronic pain caused by cancer or other major trauma. Even at low (sub-psychedelic) dosages, it was found to be at least as effective as traditional opiates while being much longer lasting (pain reduction lasting as long as a week after peak effects had subsided). Kast attributed this effect to a decrease in anxiety. This reported effect is being tested (though not using LSD) in an ongoing (as of 2006) study of the effects of the psychedelic tryptamine psilocybin on anxiety in terminal cancer patients.

Furthermore, LSD has been illicitly used as a treatment for cluster headaches, an uncommon but extremely painful disorder. Researcher Peter Goadsby describes the headaches as “worse than natural childbirth or even amputation without anesthetic.” Although the phenomenon has not been formally investigated, case reports indicate that LSD and psilocybin can reduce cluster pain and also interrupt the cluster-headache cycle, preventing future headaches from occurring. Currently existing treatments include various ergolines, among other chemicals, so LSD’s efficacy may not be surprising. A dose-response study, testing the effectiveness of both LSD and psilocybin is currently, as of 2007, being planned at McLean Hospital. A 2006 study by McLean researchers interviewed 53 cluster-headache sufferers who treated themselves with either LSD or psilocybin, finding that a majority of the users of either drug reported beneficial effects. Unlike attempts to use LSD or MDMA in psychotherapy, this research involves non-psychological effects and often sub-psychedelic dosages; therefore, it is plausible that a respected medical use of LSD will arise.

Psychological

LSD’s psychological effects (colloquially called a “trip”) vary greatly from person to person, depending on factors such as previous experiences, state of mind and environment, as well as dose strength. They also vary from one trip to another, and even as time passes during a single trip. An LSD trip can have long term psychoemotional effects; some users cite the LSD experience as causing significant changes in their personality and life perspective. Widely different effects emerge based on what has been called set and setting; the “set” being the general mindset of the user, and the “setting” being the physical and social environment in which the drug’s effects are experienced.

Timothy Leary and Richard Alpert considered the chemical to be of potentially beneficial application in psychotherapy. If the user is in a hostile or otherwise unsettling environment, or is not mentally prepared for the powerful distortions in perception and thought that the drug causes, effects are more likely to be unpleasant than if he or she is in a comfortable environment and has a relaxed, balanced and

open mindset.

Some psychological effects may include an experience of radiant colors, objects and surfaces appearing to ripple or “breathe,” colored patterns behind the eyes, a sense of time distortion, crawling geometric patterns overlaying walls and other objects, morphing objects, loss of a sense of identity or the ego [known as “ego death”], and powerful, and sometimes brutal, psycho-physical reactions described by users as reliving their own birth.

Many users experience a dissolution between themselves and the “outside world”. This unitive quality may play a role in the spiritual and religious aspects of LSD. The drug sometimes leads to disintegration or restructuring of the user’s historical personality and creates a mental state that some users report allows them to have more choice regarding the nature of their own personality.

Some experts hypothesize that drugs such as LSD may be useful in psychotherapy, especially when the patient is unable to “unblock” repressed subconscious material through other psychotherapeutic methods, and also for treating alcoholism. One study concluded, “The root of the therapeutic value of the LSD experience is its potential for producing self-acceptance and self-surrender,” presumably by forcing the user to face issues and problems in that individual’s psyche. Many believe that, in contrast, other drugs (such as alcohol, heroin, and cocaine) are used to escape from reality. Studies in the 1950s that used LSD to treat alcoholism professed a 50% success rate, five times higher than estimates near 10% for Alcoholics Anonymous. Some LSD studies were criticized for methodological flaws, and different groups had inconsistent results. Mangini’s 1998 paper reviews this history and concludes that the efficacy of LSD in treating alcoholism remains an open question.

Many notable individuals have commented publicly on their experiences with LSD. Some of these comments date from the era when it was legally available in the US and Europe for non-medical uses, and others pertain to psychiatric treatment in the 1950s and 60s. Still others describe experiences with illegal LSD, obtained for philosophic, artistic, therapeutic, spiritual, or recreational purposes.

Sensory / perception

LSD causes expansion and altered experience of senses, emotions, memories, time, and awareness for 6 to 14 hours, depending on dosage and tolerance. Generally beginning within thirty to ninety minutes after ingestion, the user may experience anything from subtle changes in perception to overwhelming cognitive shifts. LSD does not produce hallucinations as the deliriants do, but instead illusions and vivid daydream-like fantasies, in which ordinary objects and experiences can take on entirely different appearances or meanings.

Changes in auditory and visual perception are typical. Visual effects include the illusion of

movement of static surfaces (“walls breathing”), after image-like trails of moving objects (“tracers”), the appearance of moving colored geometric patterns (especially with closed eyes), an intensification of colors and brightness (“sparkling”), new textures on objects, blurred vision, and shape suggestibility. Users commonly report that the inanimate world appears to animate in an unexplained way; for instance, objects that are static in three dimensions can seem to be moving relative to one or more additional spatial dimensions. Many of the basic visual effects resemble the phosphenes seen after applying pressure to the eye and have also been studied under the name “form constants”. Auditory effects are not that pronounced and include echo-like distortions of sounds, a mixing of all sounds which makes it harder to discern distinct sounds, the feeling that what you’re hearing is your thought, a general intensification of the experience of music, and an increased discrimination of instruments and sounds.

Higher doses often cause intense and fundamental distortions of sensory perception such as synaesthesia, the experience of additional spatial or temporal dimensions, and temporary dissociation.

Spiritual

LSD is considered an entheogen because it can catalyze intense spiritual experiences where users feel they have come into contact with a greater spiritual or cosmic order. Some users report insights into the way the mind works, and some experience long-lasting changes in their life perspective. Some users consider LSD a religious sacrament, or a powerful tool for access to the divine. Dr. Stanislav Grof has written that religious and mystical experiences

observed during LSD sessions appear to be phenomenologically indistinguishable from similar descriptions in the sacred scriptures of the great religions of the world and the secret mystical texts of ancient civilisations.

Such experiences under the influence of LSD have been observed and documented by researchers such as Alan Watts, Timothy Leary and Stanislav Grof. For example, Walter Pahnke conducted the Good Friday Marsh Chapel Experiment under Leary’s supervision, performing a double blind experiment on the administration of psilocybin to volunteers who were students in religious graduate programs, e.g., divinity or theology. That study provided evidence that psychotropics may induce mystical religious states.

Psychosis

There are some cases of LSD inducing a psychosis in people who appeared to be healthy prior to taking LSD. This issue was reviewed extensively in a 1984 publication by Rick Strassman. In most cases, the psychosis-like reaction is of short duration, but in other cases it may be chronic. It is difficult to determine if LSD itself induces these reactions or if it triggers latent conditions that would have manifested themselves otherwise. The similarities of time course and outcomes between putatively LSD-precipitated and other psychoses suggests that the two types of syndromes are not different and that LSD may have been a nonspecific trigger. Several studies have tried to estimate the prevalence of LSD-induced prolonged psychosis arriving at numbers of around 0 in 1,000 individuals (0 in 1,000 volunteers and 0 in 1,000 psychotherapy patients in Cohen 1960; 9 per 1,000 psychotherapy patients in Melleeson 1971).

See also

Mind at Large
ALD-52
Bogle-Chandler case, deaths mistakenly attributed to LSD overdoses
Drug urban legends
Entheogen
Psychedelic psychotherapy
United States v. Stanley, Supreme Court case
Related chemical compounds: ergolines, LSA, psilocybin, DMT, serotonin

Synesthesia is a neurologically-based phenomenon in which stimulation of one sensory or cognitive pathway leads to automatic, involuntary experiences in a second sensory or cognitive pathway.

In one common form of synesthesia, known as grapheme color synesthesia, letters or numbers are perceived as inherently colored, while in ordinal linguistic personification, numbers, days of the week and months of the year evoke personalities. In spatial-sequence, or number form synesthesia, numbers, months of the year, and/or days of the week elicit precise locations in space (for example, 1980 may be “farther away” than 1990), or may have a three-dimensional view of a year as a map (clockwise or counterclockwise).

While cross-sensory metaphors (e.g., “loud

shirt”, “bitter wind” or “prickly laugh”) are sometimes described as “synesthetic”, true neurological synesthesia is involuntary. It is estimated that synesthesia could possibly be as prevalent as 1 in 23 persons across its range of variants (Simner et al. 2006) (see below for more details). Synesthesia runs strongly in families, but the precise mode of inheritance has yet to be ascertained. Synesthesia is also sometimes reported by individuals under the influence of psychedelic drugs, after a stroke, or as a consequence of blindness or deafness. Synesthesia that arises from such non-genetic events is referred to as adventitious synesthe-

sia to distinguish it from the more common congenital forms of synesthesia. Adventitious synesthesia involving drugs or stroke (but not blindness or deafness) apparently only involves sensory linkings such as sound → vision or touch → hearing; there are few if any reported cases involving culture-based, learned sets such as graphemes, lexemes, days of the week, or months of the year.

Although synesthesia was the topic of intensive scientific investigation in the late 1800s and early 1900s, it was largely abandoned in the mid-20th century, and has only recently been rediscovered by modern researchers. Psychological research has demonstrated that synesthetic experiences can have measurable behavioral consequences, while functional neuroimaging studies have identified differences in patterns of brain activation (for a review see Hubbard & Ramachandran 2005).

Many people with synesthesia use their experiences to aid in their creative process, and many non-synesthetes have attempted to create works of art that may capture what it is like to experience synesthesia. Psychologists and neuroscientists study synesthesia not only for its inherent interest, but also for the insights it may give into cognitive and perceptual processes that occur in synesthetes and non-synesthetes alike.

It is also a very well-known fact that most synesthetes do not even know that they have synesthesia until they are normally in their teen-age years, due to the fact that they think that their experiences are normal. They often find out just by talking about their experiences as though it is normal.

Experiences

Synesthetes often report that they were unaware their experiences were unusual until they realized other people did not have them, while others report feeling as if they had been keeping a secret their entire lives. The automatic and ineffable nature of a synesthetic experience means that the pairing may not seem out of the ordinary. This involuntary and consistent nature helps define synesthesia as a real experience. Most synesthetes report that their experiences are pleasant or neutral although, in rare cases synesthetes report that their experiences can lead to a degree of sensory overload (Day 2005).

Despite the commonalities which permit definition of the broad phenomenon of synesthesia, individual experiences vary in numerous ways. This variability was first noticed early on in synesthesia research (Flournoy 1893) but has only recently come to be re-appreciated by modern researchers. Some grapheme → color synesthetes report that the colors seem to be “projected” out into the world, while most report that the colors are experienced in their “mind’s eye” (Dixon, Smilek & Merikle 2004). Additionally, some grapheme → color synesthetes report that they experience their colors strongly, and show perceptual enhancement on the perceptual tasks described below, while

others (perhaps the majority) do not (Hubbard et al. 2005a), perhaps due to differences in the stage at which colors are evoked. Some synesthetes report that vowels are more strongly colored, while for others consonants are more strongly colored (Day 2005). The descriptions below give some examples of synesthetes’ experiences, but do not exhaust their rich variety.

Various forms

Synesthesia can occur between nearly any two senses or perceptual modes. Given the large number of forms of synesthesia, researchers have adopted a convention of indicating the type of synesthesia by using the following notation x → y, where x is the “inducer” or trigger experience, and y is the “concurrent” or additional experience. For example, perceiving letters and numbers (collectively called graphemes) as colored would be indicated as grapheme → color synesthesia. Similarly, when synesthetes see colors and movement as a result of hearing musical tones, it would be indicated as tone → (color, movement) synesthesia.

While nearly every logically possible combination of experiences can occur, several types are more common than others.

Grapheme Color Synesthesia

Main article: Grapheme-color synesthesia

In one of the most common forms of synesthesia, grapheme → color synesthesia, individual letters of the alphabet and numbers (collectively referred to as graphemes), are “shaded” or “tinged” with a color. While synesthetes do not, in general, report the same colors for all letters and numbers, studies of large numbers of synesthetes find that there are some commonalities across letters (e.g., A is likely to be red) (Day 2005; Simner et al. 2005).

A grapheme → color synesthete reports, “I often associate letters and numbers with colors. Every digit and every letter has a color associated with it in my head. Sometimes, when letters are written boldly on a piece of paper, they will briefly appear to be that color if I’m not focusing on it. Some examples: ‘S’ is red, ‘H’ is orange, ‘C’ is yellow, ‘J’ is yellow-green, ‘G’ is green, ‘E’ is blue, ‘X’ is purple, ‘I’ is pale yellow, ‘2’ is tan, ‘1’ is white. If I write SHCJGEX it registers as a rainbow when I read over it, as does ABCPDEF.”

“‘Until one day,’ I said to my father, ‘I realized that to make an R all I had to do was first write a P and draw a line down from its loop. And I was so surprised that I could turn a yellow letter into an orange letter just by adding a line’”

— Patricia Lynne Duffy, recalling an earlier experience, from her book Blue Cats and Chaireuse Kittens

Another reports a similar experience. “When people ask me about the sensation, they might ask, ‘so when you look at a page of text, it’s

a rainbow of color?’ It isn’t exactly like that for me. When I read words, about five words around the exact one I’m reading are in color. It’s also the only way I can spell. I remember in elementary school remembering how to spell the word ‘priority’ because the color scheme, in general, was darker than many other words. I would know that an ‘e’ was out of place in that word because e’s were yellow and didn’t fit.”

Another reports a slightly different experience. “When I actually look at words on a page, The letters themselves are not colored, but instead in my mind they all have a color that goes along with them, and it has always been this way. I remember back in kindergarten thinking that each homeroom had a different color associated with it. I would sometimes say things referring to that class and calling it by its color. It is also like this with days of the week, months, and so on. I thought this was caused by me over-think-ing things. But I finally have come to realize that Synesthesia is real.”

Sound → Color Synesthesia

In sound → color synesthesia, individuals experience colors in response to tones or other aspects of sounds. Simon Baron-Cohen and his colleagues break this type of synesthesia into two categories, which they call “narrow band” and “broad band” sound → color synesthesia. In narrow band sound → color synesthesia (often called music → color synesthesia), musical stimuli (e.g., timbre or key) will elicit specific color experiences, such that a particular note will always elicit red, or harps will always elicit the experience of seeing a golden color. In broadband sound → color synesthesia, on the other hand, a variety of environmental sounds, like an alarm clock or a door closing, may also elicit visual experiences.

Color changes in response to different aspects of sound stimuli may involve more than just the hue of the color. Any dimension of color experience (see HSL color space) can vary. Brightness (the amount of white in a color; as brightness is removed from red, for example, it fades into a brown and finally to black), saturation (the intensity of the color; fire engine red and medium blue are highly saturated, while grays, white, and black are all unsaturated), and hue may all be affected to varying degrees (Campen & Froger 2003). Additionally, music → color synesthetes, unlike grapheme → color synesthetes, often report that the colors move, or stream into and out of their field of view.

Like grapheme → color synesthesia, there is rarely agreement amongst music → color synes-thetes that a given tone will be a certain color. However, when larger samples are studied, consistent trends can be found, such that higher pitched notes are experienced as being more brightly colored (Ward, Huckstep & Tsakanikos 2006). The presence of similar patterns of pitch-brightness matching in non-synesthetic subjects suggests that this form of synesthesia shares mechanisms with non-synesthetes (Ward, Huckstep & Tsakanikos 2006).

Number form synesthesia

A number form is a mental map of numbers, which automatically and involuntarily appears whenever someone who experiences number-forms thinks of numbers. Number forms were first documented and named by Francis Galton in The Visions of Sane Persons (Galton 1881a). Later research has identified them as a type of synesthesia (Seron, Pesenti & Noël 1992; Sagiv et al. 2006b). In particular, it has been suggest-ed that number-forms are a result of “cross-acti-vation” between regions of the parietal lobe that are involved in numerical cognition and spatial cognition (Ramachandran & Hubbard 2001; Hubbard et al. 2005b). In addition to its interest as a form of synesthesia, researchers in numeri-cal cognition have begun to explore this form of synesthesia for the insights that it may provide into the neural mechanisms of numerical-spatial associations present unconsciously in everyone.

Personification

Ordinal-linguistic personification (OLP, or per-sonification for short) is a form of synesthesia in which ordered sequences, such as ordinal numbers, days, months and letters are associ-ated with personalities (Simner & Holenstein 2007; Simner & Hubbard 2006). Although this form of synesthesia was documented as early as the 1890s (Flourmoy 1893; Calkins 1893) modern research has, until recently, paid little attention to this form.

“T’s are generally crabbed, ungenerous crea-tures. U is a soulless sort of thing. 4 is honest, but... 3 I cannot trust... 9 is dark, a gentleman, tall and graceful, but politic under his suavity”

– Synesthetic subject report in Calkins 1893, p. 454

“I [is] a bit of a worrier at times, although easy-going; J [is] male; appearing jocular, but with strength of character; K [is] female; quiet, responsible...”

– Synesthetic subject MT report in Cytowic 2002, p. 298

For some people in addition to numbers and other ordinal sequences, objects are sometimes imbued with a sense of personality, sometimes referred to as a type of animism. This type of synesthesia is harder to distinguish from non-synesthetic associations. However, recent research has begun to show that this form of synesthesia co-varies with other forms of synesthesia, and is consistent and automatic, as required to be counted as a form of synesthesia (Simner & Holenstein 2007).

Lexical Gustatory Synesthesia

In a rare form of synesthesia, lexical → gusta-tory synesthesia, individual words and pho-nemes of spoken language evoke the sensations of taste in the mouth.

Whenever I hear, read, or articulate (inner speech) words or word sounds, I experience an immediate and involuntary taste sensation on

my tongue. These very specific taste associa-tions never change and have remained the same for as long as I can remember.

– James Wannerton

Jamie Ward and Julia Simner have extensively studied this form of synesthesia, and have found that the synesthetic associations are constrained by early food experiences (Ward & Simner 2003; Ward, Simner & Auyeung 2005). For example, James Wannerton has no synesthetic experiences of coffee or curry, even though he consumes them regularly as an adult. Conversely, he tastes certain breakfast cereals and candies that are no longer sold.

Additionally, these early food experiences are often paired with tastes based on the phonemes

Romanticism is an artistic, literary, and intellectual movement that originated around the middle of the 18th century in Western Europe, and gained strength during the Industrial Revolution.

It was partly a revolt against aristocratic, social, and political norms of the Enlightenment period and a reaction against the scientific rational-ization of nature in art and literature. The movement stressed strong emotion as a source of aesthetic experience, placing new emphasis on such emotions as trepidation, horror, and the awe experienced in confronting the sublimity of untamed nature. It elevated folk art, nature and custom, as well as arguing for an epistemol-ogy based on nature, which included human activity conditioned by nature in the form of language, custom and usage. It was influenced by ideas of the Enlightenment and elevated medievalism and elements of art and narrative perceived to be from the medieval period. The name “romantic” itself comes from the term “romance” which is a prose or poetic heroic narrative originating in medieval literature and romantic literature. The ideologies and events of the French Revolution and Industrial Revolu-tion are thought to have influenced the move-ment. Romanticism elevated the achievements of what it perceived as misunderstood heroic individuals and artists that altered society. It also legitimized the individual imagination as a critical authority which permitted freedom from classical notions of form in art. There was a strong recourse to historical and natural inevita-bility in the representation of its ideas.

Characteristics

In a general sense, the term “Romanticism” has been used to refer to certain artists, poets, writ-ers, musicians, as well as political, philosophi-cal and social thinkers of the late eighteenth and early nineteenth centuries. It has equally been used to refer to various artistic, intellectual, and

in the name of the word (e.g., /I/, /n/ and /s/ trigger James Wannerton’s taste of mince) although others have less obvious roots (e.g., /f/ triggers sherbet). To show that phonemes, rather than graphemes are the critical triggers of tastes, Ward and Simner showed that, for James Wannerton, the taste of egg is associated to the phoneme /k/, whether spelled with a c (e.g., accept), k (e.g., York), ck (e.g., chuck) or x (e.g., fax). Another source of tastes comes from semantic influences, so that food names tend to taste of the food they match, and the word blue tastes “inky”.

See also

Mind at Large ALD-52 Bogle-Chandler case, deaths mistakenly at-tributed to LSD overdoses Drug urban legends Entheogen Psychedelic psychotherapy United States v. Stanley, Supreme Court case Related chemical compounds: ergolines, LSA, psilocybin, DMT, serotonin

social trends of that era. Despite this general usage of the term, a precise characterization and specific definition of Romanticism have been the subject of debate in the fields of intellec-tual history and literary history throughout the twentieth century, without any great measure of consensus emerging. Arthur Lovejoy attempted to demonstrate the difficulty of this problem in his seminal article “On The Discrimination of Romanticisms” in his Essays in the History of Ideas (1948); some scholars see romanticism as completely continuous with the present, some see it as the inaugural moment of modernity, some see it as the beginning of a tradition of resistance to the Enlightenment, and still oth-ers date it firmly in the direct aftermath of the French Revolution. Another definition comes from Charles Baudelaire: “Romanticism is precisely situated neither in choice of subject nor exact truth, but in a way of feeling.”

Many intellectual historians have seen Ro-manticism as a key movement in the Counter-Enlightenment, a reaction against the Age of Enlightenment. Whereas the thinkers of the Enlightenment emphasized the primacy of deductive reason, Romanticism emphasized intuition, imagination, and feeling, to a point that has led to some Romantic thinkers being accused of irrationalism.

See also

Romantic hero Romantic realism Romanticism in science Neo-romanticism Post-romanticism List of romantics Folklore Middle Ages in history Donald Ault Harold Bloom James Chandler NASSR Ralph Waldo Emerson Rene Wellek William Wordsworth Goethe

Epistemology or theory of knowledge is the branch of philosophy which is concerned with the nature and scope of knowledge.

Much of the debate in this field has focused on analyzing the nature of knowledge and how it relates to similar notions such as truth, belief, and justification. It also deals with the means of production of knowledge, as well as skepticism about different knowledge claims. In other words, epistemology primarily addresses the following questions: “What is knowledge?”, “How is knowledge acquired?”, and “What do people know?”

Knowledge

The primary question that epistemology addresses is “What is knowledge?”. This question is several millennia old.

Distinguishing Knowing That From Knowing How

In this article, and in epistemology in general, the kind of knowledge usually discussed is propositional knowledge, also known as “knowledge-that” as opposed to “knowledge-how”. For example: in mathematics, it is known that 2 + 2 = 4, but there is also knowing how to add two numbers. Or, one knows how to ride a bicycle and one knows that a bicycle has two wheels.

Many (but not all) philosophers thus think there is an important distinction between “knowing that” and “knowing how”, with epistemology primarily interested in the former. This distinction is recognised linguistically in many languages but not in English.

In French (as well as in Portuguese and Spanish), for example, to know a person is ‘connaître’ (‘conhecer’ / ‘conocer’), whereas to know how to do something is ‘savoir’ (‘saber’ in both Portuguese and Spanish). In Greek language the verbs are γνῶριζω (gnorízo) and ξέρω (kséro), respectively. In Italian the verbs are ‘conoscere’ and ‘sapere’ and the nouns for ‘knowledge’ are ‘conoscenza’ and ‘sapienza’, respectively. In the German language, it is exemplified with the verbs “kennen” and “wissen.” “Wissen” implies knowing as a fact, “kennen” implies knowing in the sense of being acquainted with and having a working knowledge of. But neither of those verbs do truly extend to the full meaning of the subject of epistemology.

In German, there is also a verb derived from “kennen”, namely “erkennen”, which roughly

implies knowledge in the form of recognition or acknowledgment, strictly metaphorically. The verb itself implies a process: you have to go from one state to another: from a state of “not-erkennen” to a state of true erkennen. This verb seems to be the most appropriate in terms of describing the “episteme” in one of the modern European languages, hence the German name “Erkenntnistheorie.”

Belief

Often, statements of “belief” mean that the speaker predicts something will prove to be useful or successful in some sense — perhaps the speaker might “believe in” his or her favorite football team. This is not the kind of belief usually addressed within epistemology. The kind that is dealt with is when “to believe something” simply means any cognitive content held as true. For example, to believe that the sky is blue is to think that the proposition, “The sky is blue,” is true.

Knowledge implies belief. The statement “I know P, but I don’t believe that P is true” is contradictory. To know P is, among other things, to believe that P is true, or to believe in P. (See the article on Moore’s paradox.) Knowing That and Knowing How are just two aspects of knowledge proper

Truth

If someone believes something, he or she thinks that it is true but may be mistaken. This is not the case with knowledge. For example, a man thinks that a particular bridge is safe enough to support him, and he attempts to cross it; unfortunately, the bridge collapses under his weight. It could be said that the man believed that the bridge was safe, but that his belief was mistaken. It would not be accurate to say that he knew that the bridge was safe, because plainly it was not. For something to count as knowledge, it must actually be true.

The Aristotelian definition of truth states:

“To say of something which is that it is not, or to say of something which is not that it is, is false. However, to say of something which is that it is, or of something which is not that it is not, is true.”

See also

Adaptive representation
Agnotology
Analytic tradition
Bayesian probability
Cybernetic epistemology
Constructivist epistemology
Eastern epistemology
Evidentialism
Evidentiality
Knowledge by acquaintance
Knowledge by description
Methodology
Methods of obtaining knowledge
Monopolies of knowledge
Mysticism
Objectivist epistemology
Platonic epistemology
Reason
Revelation
Self-evidence
Social epistemology
Transcendence (philosophy)
Virtue epistemology
Conveyed concept

In debate or rhetoric, the slippery slope is an argument for the likelihood of one event or trend given another. It suggests that an action will initiate a chain of events culmi-

nating in an undesirable event later.

The argument is sometimes referred to as the thin end of the wedge or the camel's nose. The slippery slope can be valid or fallacious. The term "slippery slope" is often used synonymically with continuum fallacy, in that it assumes there is no gray area and there must be a definite transition at a certain point from category A to category B.

The Slippery Slope As Argument

The argument takes on one of various semantical forms:

- * In one form, the proposer suggests that by making a move in a particular direction, we start down a "slippery slope". Having started down the metaphorical slope, it appears likely that we will continue in the same direction (the arguer usually sees the direction as a negative direction; hence the "sliding downwards" metaphor).
- * Another form appears more static, arguing that admitting or permitting A creates a precedent that leads to admitting or permitting B, by following a long chain of logical relationships.

Examples

For example, many civil libertarians argue that even minor increases in government authority, by making them seem less noteworthy, make future increases in that authority more likely: what would once have seemed a huge power grab, the argument goes, now becomes seen as just another incremental increase, and thus appears more palatable (this is also an example of the "boiling frog" allegory). In this way, it is very similar to the foot in the door technique of persuasion.

Eugene Volokh's Mechanisms of the Slippery Slope (PDF version) analyzes various types of such slippage. Volokh uses the example "gun registration may lead to gun confiscation" to describe six types of slippage:

- Cost-lowering: Once all gun-owners have registered their firearms, the government will know exactly from whom to confiscate them.
- Legal rule combination: Previously the government might need to search every house to confiscate guns, and such a search would violate the Fourth Amendment of the Constitution of the United States. Registration would eliminate that problem.
- Attitude altering: People may begin to think of gun ownership as a privilege rather than a right, and thus regard gun confiscation less seriously.
- Small change tolerance: People may ignore gun registration because it constitutes just a small change, but when combined with other small changes, it could lead to the equivalent of confiscation.
- Political power: The hassle of registration may reduce the number of gun owners, and thus the political power of the gun-ownership bloc.
- Political momentum: Once the govern-

ment has passed this gun law it becomes easier to pass other gun laws, including laws like confiscation.

Slippery slope can also be used as a retort to the establishment of arbitrary boundaries or limitations. For example, one might argue that rent prices must be kept to \$1,000 or less a month to be affordable to tenants in an area of a city. A retort invoking the slippery slope could go in two different directions:

- * Once such price ceilings become accepted, they could be slowly lowered, eventually driving out the landlords and worsening the problem.
- * If a \$1,000 monthly rent is affordable, why isn't \$1,025 or \$1,050? By lumping the tenants into one abstract entity, the argument renders itself vulnerable to a slippery slope argument. A more careful argument in favor of price ceilings would statistically characterize the number of tenants who can afford housing at various levels based on income and choose a ceiling that achieves a specific goal, such as housing 80% of the working families in the area.

A very common political "slippery slope" is negotiating with terrorists. The argument is that if governments negotiate with terrorists, then the government acknowledges that terrorist groups have power, terrorism will be seen as a method that produces results and therefore terrorism will become more prevalent as a means to gain power and force governments to concede to demands. This argument is reasonable, but to be valid it must be backed up with supporting evidence relating to the premises made. Similarly, judiciary decisions must be considered in terms of the consequences of the legal precedents they set, and foreign policy decisions in terms of their effect on credibility.

The Slippery Slope As Fallacy

The slippery slope argument may or may not involve a fallacy (see the discussion on the two interpretative paradigms below: the momentum paradigm and the inductive paradigm). However, the slippery slope claim requires independent justification to connect the inevitability of B to an occurrence of A. Otherwise the slippery slope scheme merely serves as a device of sophistry.

Often proponents of a "slippery slope" contention propose a long series of intermediate events as the mechanism of connection leading from A to B. The "camel's nose" provides one example of this: once a camel has managed to place its nose within a tent, the rest of the camel will inevitably follow. In this sense the slippery slope resembles the genetic fallacy, but in reverse.

As an example of how an appealing slippery slope argument can be unsound, suppose that whenever a tree falls down, it has a 95% chance of knocking over another tree. We might conclude that soon a great many trees would fall, but this is not the case. There is a 5% chance

that no more trees will fall, a 4.75% chance that exactly one more tree will fall, and so on. There is a 92.3% chance that 50 or fewer additional trees will fall. The expected value of trees that will fall is 20. In the absence of some momentum factor that makes later trees more likely to fall than earlier ones, this "domino effect" approaches zero probability.

Arguers also often link the slippery slope fallacy to the straw man fallacy in order to attack the initial position:

- 62
1. A has occurred (or will or might occur); therefore

2. B will inevitably happen. (slippery slope)

3. B is wrong; therefore

4. A is wrong. (straw man)

This form of argument often provides evaluative judgments on social change: once an exception is made to some rule, nothing will hold back further, more egregious exceptions to that rule.

Note that these arguments may indeed have validity, but they require some independent justification of the connection between their terms: otherwise the argument (as a logical tool) remains fallacious.

The "slippery slope" approach may also relate to the conjunction fallacy: with a long string of steps leading to an undesirable conclusion, the chance of all the steps actually occurring is actually less than the chance of any one of the individual steps occurring alone.

See also

Foot-in-the-door technique
Reductio ad absurdum
The camel's nose
Domino theory

Social development is a general term which refers to: [1] Change in the nature, the social institutions, the social behaviour or the social relations of a society, community of people, or other social structures. [2] Any event or action that affects a group of individuals that have shared values or characteristics. [3] Acts of advocacy for the cause of changing society in a normative way.

The term is used in the study of history, economies, and politics, and includes topics such as the success or failure of different political systems, globalization, democratization, development and economic growth. The term can encompass concepts as broad as revolution and paradigm shift, to narrow changes such as a particular cause within small town government. The concept of social change imply measurement of some characteristics of this group of individuals. While the term is usually applied to changes that are beneficial to society, it may result in negative side-effects or consequences that undermine or eliminate existing ways of life that are considered positive.

Social change is a topic in sociology and social work , but also involves political science, economics, history, anthropology, and many other social sciences.

Among many forms of creating social change are theater for social change, direct action, protesting, advocacy, community organizing, community practice, revolution, and political activism.

Theories of social change

Some social change is almost always occurring, but many different theories have attempted to explain significant social changes in history. These theories include (but are not limited to):

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1. the idea of decline or degeneration, or, in religious terms, the fall from an original state of grace, connected with theology;

2. the idea of cyclical change, a pattern of subsequent and recurring phases of growth and decline, and the social cycles;

3. the idea of continuous social progress;

4. Marx’s historical materialism;

5. Evolutionary theories (how one social form evolves into another), including social Darwinism;

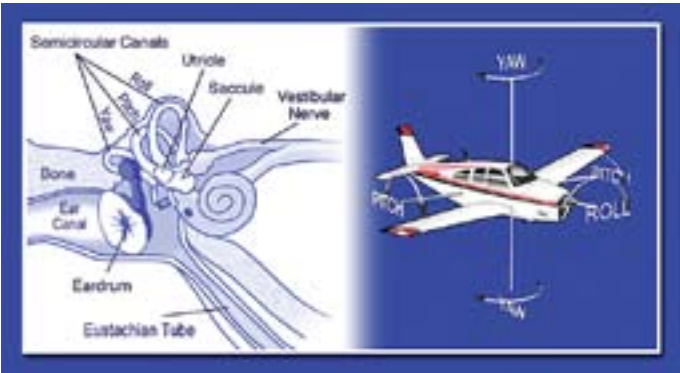
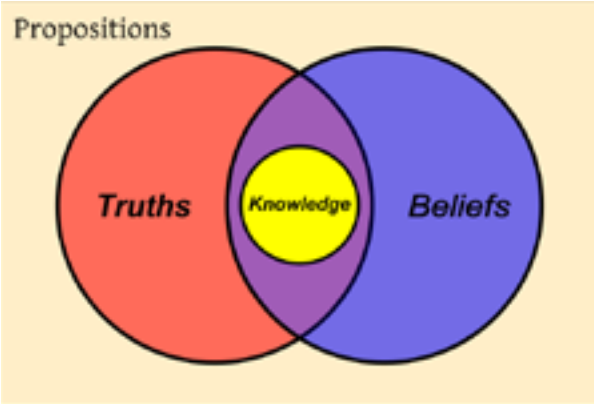
6. Theories of sociobiology

It is claimed that a primary agent of social change is technological advancement, such that the wide adoption of a new technology leads to imbalance in the economic relationship between economic agents. This in turn leads to changes in the social balance of power, therefore leading to social change.

Historical precedent shows that major social changes have taken place during “cusp” periods, defined by changing relations among human formations, nature, and technology.

See also

Important publications in social change
Historical institutionalism
Community development
Community practice
Social
Social decline
Social development theory
Social disintegration
Social innovation
Social movement
Social relations
Social work
Sociocultural evolution
Societal collapse
Union Organizer



Epistemology :

According to Plato, knowledge is a subset of that which is both true and believed.

Synesthesia :

In a psychological experiment first designed by Wolfgang Köhler, people are asked to choose which of these shapes is named Booba and which is named Kiki. 95% to 98% of people choose Kiki for the angular shape and Booba for the rounded shape.

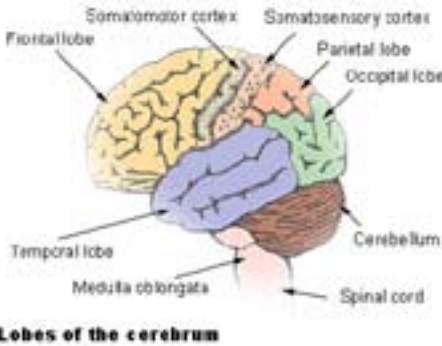
It is thought that this has implications for language development, in that the naming of objects is not completely arbitrary. The rounded shape may most commonly be named Booba because the mouth makes a more rounded shape to produce that sound. Similarly a more taut, angular mouth shape is needed to make the sound Kiki. The sounds of a K are harder and more forceful than those of a B, as well.

Spatial Disorientation :

Inner ear with semicircular canals shown likening them to the roll, pitch and yaw axis of an aircraft.

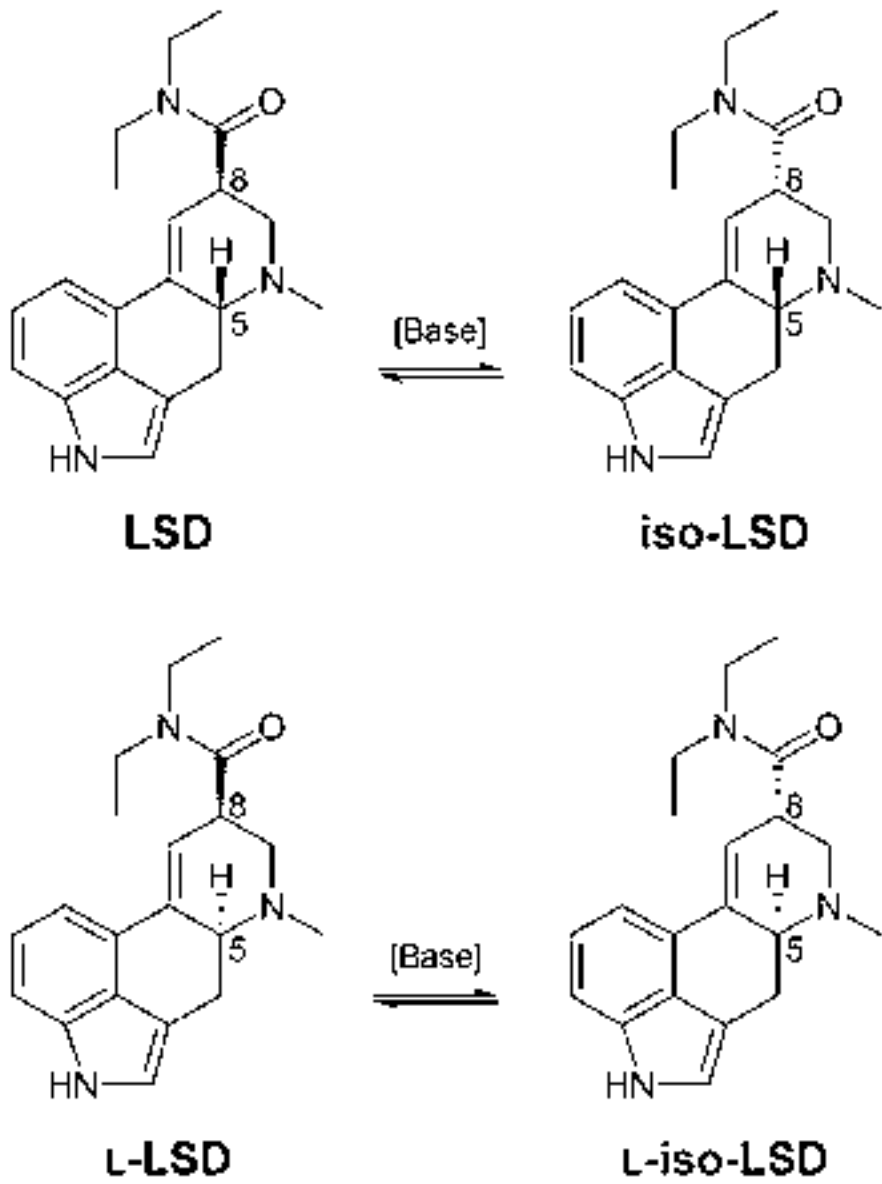
Proprioception :

The cerebellum is largely responsible for coordinating the unconscious aspects of proprioception.





Romanticism :
Wanderer above the Sea of Fog by Caspar David Friedrich.



Lysergic Acid Diethylamide :
The four possible isomers of LSD. Only LSD is psychoactive.

Diamond
Crystal Twinning
Crystal System
Symmetry
Reciprocity
Prisoner’s Dilemma
Utopia
Golden Age
Great Year
Symbols

68

Diamond is an allotrope of carbon. It is the hardest known natural material and the third-hardest known material after aggregated diamond nanorods and ultra-hard fullerite.

Its hardness and high dispersion of light make it useful for industrial applications and jewelry.

Diamonds are specifically renowned as a material with superlative physical qualities; they make excellent abrasives because they can be scratched only by other diamonds, Borazon, ultrahard fullerite, or aggregated diamond nanorods, which also means they hold a polish extremely well and retain their lustre. Approximately 130 million carats (26,000 kg) are mined annually, with a total value of nearly USD \$9 billion, and about 100,000 kg (220,000 lb) are synthesized annually.

The name diamond derives from the ancient Greek ἀδάμας; “invincible”). They have been treasured as gemstones since their use as religious icons in ancient India and usage in engraving tools also dates to early human history. Popularity of diamonds has risen since the 19th century because of increased supply, improved cutting and polishing techniques, growth in the world economy, and innovative and successful advertising campaigns. They are commonly judged by the “four Cs”: carat, clarity, color, and cut.

Roughly 49% of diamonds originate from central and southern Africa, although significant sources of the mineral have been discovered in Canada, India, Russia, Brazil, and Australia. They are mined from kimberlite and lamproite volcanic pipes, which brought to the surface the diamond crystals from deep in the Earth where the high pressure and temperature enables the formation of the crystals. The mining and distribution of natural diamonds are subjects of frequent controversy such as with concerns over the sale of conflict diamonds (aka blood diamonds) by African paramilitary groups.

Material Properties

A diamond is a transparent crystal of tetrahedrally bonded carbon atoms and crystallizes into the face centered cubic diamond lattice structure. Diamonds have been adapted for many uses because of the material's exceptional physical characteristics. Most notable are its extreme hardness, its high dispersion index,

and extremely high thermal conductivity (900 – 2320 W/m K), with a melting point of 3820 K (3547 °C / 6420 °F) and a boiling point of 5100 K (4827 °C / 8720 °F). Naturally occurring diamonds have a density ranging from 3.15 to 3.53 g/cm³, with very pure diamond typically extremely close to 3.52 g/cm³.

Hardness

Diamond is the hardest natural material known to man; hardness is defined as resistance to scratching. Diamond has a hardness of 10 (hardest) on Mohs scale of mineral hardness. Diamond's hardness has been known since antiquity, and is the source of its name.

The hardest diamonds in the world are from the New England area in New South Wales, Australia. These diamonds are generally small, perfect to semiperfect octahedra, and are used to polish other diamonds. Their hardness is considered to be a product of the crystal growth form, which is single stage growth crystal. Most other diamonds show more evidence of multiple growth stages, which produce inclusions, flaws, and defect planes in the crystal lattice, all of which affect their hardness.

The hardness of diamonds contributes to its suitability as a gemstone. Because it can only be scratched by other diamonds, it maintains its polish extremely well. Unlike many other gems, it is well-suited to daily wear because of its resistance to scratching—perhaps contributing to its popularity as the preferred gem in an engagement ring or wedding ring, which are often worn every day.

Industrial use of diamonds has historically been associated with their hardness; this property makes diamond the ideal material for cutting and grinding tools. As the hardest known naturally-occurring material, diamond can be used to polish, cut, or wear away any material, including other diamonds. However, diamond is a poor choice for machining ferrous alloys at high speeds. At the high temperatures created by high speed machining, carbon is soluble in iron, leading to greatly increased wear on diamond tools as compared to other alterna-

General	
Category	<i>Native Minerals</i>
Chemical formula	<i>C</i>
Identification	
Molecular Weight	<i>12.01 u</i>
Color	<i>Typically yellow, brown or gray to colorless. Less often in blue, green, black, translucent white, pink, violet, orange, purple and red.</i>
Crystal habit	<i>Octahedral</i>
Crystal system	<i>Isometric-Hexoctahedral (Cubic)</i>
Cleavage	<i>111 (perfect in four directions)</i>
Fracture	<i>Conchoidal - step like</i>
Mohs Scale hardness	<i>10</i>
Luster	<i>Adamantine</i>
Polish luster	<i>Adamantine</i>
Refractive index	<i>2.4175–2.4178</i>
Optical Properties	<i>Singly Refractive</i>
Birefringence	<i>none</i>
Dispersion	<i>.044</i>
Pleochroism	<i>none</i>
Ultraviolet fluorescence	<i>colorless to yellowish stones - inert to strong in long wave, and typically blue, Weaker in short wave.</i>
Absorption spectra	<i>In pale yellow stones a 415.5 nm line is typical. Irradiated and annealed diamonds often show a line around 594 nm when cooled to low temperatures.</i>
Streak	<i>White</i>
Specific gravity	<i>3.52 (+/- .01)</i>
Density	<i>3.5-3.53</i>
Diaphaneity	<i>Transparent to subtransparent to translucent</i>

tives. Common industrial adaptations of this ability include diamond-tipped drill bits and saws, or use of diamond powder as an abrasive. Industrial-grade diamonds are either unsuitable for use as gems or synthetically produced, which lowers their value and makes their use economically feasible.

Electrical conductivity

Other specialized applications also exist or are being developed, including use as semiconductors: some blue diamonds are natural semiconductors, in contrast to most other diamonds, which are excellent electrical insulators.

Toughness

Toughness relates to a material's ability to resist breakage from forceful impact. The toughness of natural diamond has been measured as 3.4 MN m-3/2, which is good compared to other gemstones, but poor compared to most engineering materials. As with any material, the macroscopic geometry of a diamond contributes to its resistance to breakage. Diamond is therefore more fragile in some orientations than others.

Color

Diamonds can occur in nearly any color, though yellow and brown are by far the most common. "Black" diamonds are not truly black, but rather contain numerous dark inclusions that give the gems their dark appearance. Colored diamonds contain impurities or structural defects that cause the coloration, while pure or nearly pure diamonds are transparent and colorless. Most diamond impurities replace a carbon atom in the crystal lattice, known as a carbon flaw. The most common impurity, nitrogen, causes a slight to intense yellow coloration depending upon the type and concentration of nitrogen present. The Gemological Institute of America (GIA) classifies low saturation yellow and brown diamonds as diamonds in the normal color range, and applies a grading scale from 'D' (colorless) to 'Z' (light yellow).

A blue diamond recently fetched nearly \$8 million. The blue hue was a result of trace amounts of boron in the stone's crystal structure.

Identification

Diamonds can be identified via their high thermal conductivity. Their high refractive index is also indicative, but other materials have similar refractivity. Diamonds do cut glass, but other materials above glass on Mohs scale such as quartz do also. Diamonds easily scratch other diamonds, but this damages both diamonds.

Natural history

Formation

The formation of natural diamond requires very specific conditions. Diamond formation requires exposure of carbon-bearing materials to high pressure, ranging approximately between 45 and 60 kilobars, but at a comparatively low

temperature range between approximately 1652–2372 °F (900–1300 °C). These conditions are known to be met in two places on Earth; in the lithospheric mantle below relatively stable continental plates, and at the site of a meteorite strike.

Diamonds formed in cratons

The conditions for diamond formation to happen in the lithospheric mantle occur at considerable depth corresponding to the aforementioned requirements of temperature and pressure. These depths are estimated to be in between 140–190 kilometers (90–120 miles) though occasionally diamonds have crystallized at depths of 300-400 km (180-250 miles) as well. The rate at which temperature changes with increasing depth into the Earth varies greatly in different parts of the Earth. In particular, under oceanic plates the temperature rises more quickly with depth, beyond the range required for diamond formation at the depth required. The correct combination of temperature and pressure is only found in the thick, ancient, and stable parts of continental plates where regions of lithosphere known as cratons exist. Long residence in the cratonic lithosphere allows diamond crystals to grow larger. The slightly misshapen octahedral shape of this rough diamond crystal in matrix is typical of the mineral. Its lustrous faces also indicate that this crystal is from a primary deposit.

Through studies of carbon isotope ratios (similar to the methodology used in carbon dating, except with the stable isotopes C-12 and C-13), it has been shown that the carbon found in diamonds comes from both inorganic and organic sources. Some diamonds, known as harzburgitic, are formed from inorganic carbon originally found deep in the Earth's mantle. In contrast, eclogitic diamonds contain organic carbon from organic detritus that has been pushed down from the surface of the Earth's crust through subduction (see plate tectonics) before transforming into diamond. These two different source carbons have measurably different 13C:12C ratios. Diamonds that have come to the Earth's surface are generally very old, ranging from under 1 billion to 3.3 billion years old.

Diamonds occur most often as euhedral or rounded octahedra and twinned octahedra known as macles or maccles. As diamond's crystal structure has a cubic arrangement of the atoms, they have many facets that belong to a cube, octahedron, rhombicosidodecahedron, tetrakis hexahedron or disdyakis dodecahedron. The crystals can have rounded off and unexpressive edges and can be elongated. Sometimes they are found grown together or form double "twinned" crystals grown together at the surfaces of the octahedron. These different shapes and habits of the diamonds result from differing external circumstances. Diamonds (especially those with rounded crystal faces) are commonly found coated in nyf, an opaque gum-like skin.

Diamonds and meteorite impact craters

Diamonds can also form in other natural high-pressure events. Very small diamonds, known as microdiamonds or nanodiamonds, have been found in meteorite impact craters. Such impact events create shock zones of high pressure and temperature suitable for diamond formation. Impact-type microdiamonds can be used as one indicator of ancient impact craters.

Extraterrestrial diamonds

Not all diamonds found on earth originated here. A type of diamond called carbonado dia-

mond that is found in South America and Africa was deposited there via an asteroid impact (not formed from the impact) about 3 billion years ago. These diamonds formed in the intrastellar environment.

Presolar grains in many meteorites found on earth contain nanodiamonds of extraterrestrial origin, probably formed in supernovas.

White dwarf stars have been described as having a carbon core and were hyped in a 2004 news headline as diamond.

See also

List of famous diamonds
Diamond cubic
Diamond drilling

Crystal twinning occurs when two separate crystals share some of the same crystal lattice points in a symmetrical manner.

The result is an intergrowth of two separate crystals in a variety of specific configurations. A twin boundary or composition surface separates the two crystals. Crystallographers classify twinned crystals by a number of twin laws. These twin laws are specific to the crystal system. The type of twinning can be a diagnostic tool in mineral identification.

Simple twinned crystals may be contact twins or penetration twins. Contact twins share a single composition surface often appearing as mirror images across the boundary. Plagioclase, Quartz, gypsum, and spinel often exhibit contact twinning. In penetration twins the individual crystals have the appearance of passing through each other in a symmetrical manner. Orthoclase, staurolite, pyrite, and fluorite often show penetration twinning.

If several twin crystal parts are aligned by the same twin law they are referred to as multiple or repeated twins. If these multiple twins are aligned in parallel they are called polysynthetic twins. When the multiple twins are not parallel they are cyclic twins. Albite, calcite, and pyrite often show polysynthetic twinning. Closely spaced polysynthetic twinning is often observed as striations or fine parallel lines on the crystal face. Rutile, aragonite, cerussite, and chrysoberyl often exhibit cyclic twinning, typically in a radiating pattern.

There are three modes of formation of twinned crystals. Growth twins are the result of an interruption or change in the lattice during formation or growth due to a possible deformation from a larger substituting ion. Annealing or

Transformation twins are the result of a change in crystal system during cooling as one form becomes unstable and the crystal structure must re-organize or transform into another more stable form. Deformation or gliding twins are the result of stress on the crystal after the crystal has formed. Deformation twinning is a common result of regional metamorphism.

Of the three common crystal structures: BCC, FCC, and HCP, the HCP structure is the most likely to twin.

Crystals that grow adjacent to each other may be aligned to resemble twinning. This parallel growth simply reduces system energy and is not twinning.

Twin Boundaries

Twin boundaries occur when two crystals of the same type intergrow, so that only a slight mis-orientation exists between them. It is a highly symmetrical interface, often with one crystal the mirror image of the other; also, atoms are shared by the two crystals at regular intervals. This is also a much lower-energy interface than the grain boundaries that form when crystals of arbitrary orientation grow together.

Twin boundaries are partly responsible for shock hardening and for many of the changes that occur in cold work of metals with limited slip systems or at very low temperatures. They also occur due to martensitic transformations: the motion of twin boundaries is responsible for the pseudoelastic and shape-memory behavior of nitinol, and their presence is partly responsible for the hardness due to quenching of steel.

A crystal system is a category of space groups, which characterize symmetry of structures in three dimensions with trans-

lational symmetry in three directions, having a discrete class of point groups.

A major application is in crystallography, to categorize crystals, but by itself the topic is one of 3D Euclidean geometry

Overview

There are 7 crystal systems:

- Triclinic, all cases not satisfying the requirements of any other system. There is no necessary symmetry other than translational symmetry, although inversion is possible.
- Monoclinic, requires either 1 twofold axis of rotation or 1 mirror plane.
- Orthorhombic, requires either 3 twofold axes of rotation or 1 twofold axis of rotation and two mirror planes.
- Tetragonal, requires 1 fourfold axis of rotation.
- Rhombohedral, also called trigonal, requires 1 threefold axis of rotation.
- Hexagonal, requires 1 sixfold axis of rotation.
- Isometric or cubic, requires 4 threefold axes of rotation.

Within a crystal system there are two ways of categorizing space groups:

- by the linear parts of symmetries, i.e. by crystal class, also called crystallographic point group; each of the 32 crystal classes applies for one of the 7 crystal systems
 - by the symmetries in the translation lattice, i.e. by Bravais lattice; each of the 14 Bravais lattices applies for one of the 7 crystal systems.
- The 73 symmorphic space groups (see space

group) are largely combinations, within each crystal system, of each applicable point group with each applicable Bravais lattice: there are 2, 6, 12, 14, 5, 7, and 15 combinations, respectively, together 6

Crystallographic point groups

A symmetry group consists of isometric affine transformations; each is given by an orthogonal matrix and a translation vector (which may be the zero vector). Space groups can be grouped by the matrices involved, i.e. ignoring the translation vectors (see also Euclidean group). This corresponds to discrete symmetry groups with a fixed point. There are infinitely many of these point groups in three dimensions. However, only part of these are compatible with translational symmetry: the crystallographic point groups. This is expressed in the crystallographic restriction theorem. (In spite of these names, this is a geometric limitation, not just a physical one.)

The point group of a crystal, among other things, determines the symmetry of the crystal's optical properties. For instance, one knows whether it is birefringent, or whether it shows the Pockels effect, by simply knowing its point group.

See also

[Crystal structure](#)
[Point group](#)
[Overview of all space groups \(in French\)](#)
[Overview of all space groups English table](#)

Although the meanings are distinguishable, in some contexts, both meanings of "symmetry" are related and discussed in parallel.

- as an aspect of abstract objects, theoretic models, language, music and even knowledge itself.

The "precise" notions of symmetry have various measures and operational definitions. For example, symmetry may be observed:

- with respect to the passage of time;
- as a spatial relationship;
- through geometric transformations such as scaling, reflection, and rotation;
- through other kinds of functional transforma-

This article describes these notions of symmetry from three perspectives. The first is that of mathematics, in which symmetries are defined and categorized precisely. The second perspective describes symmetry as it relates to science and technology. In this context, symmetries underlie some of the most profound results of modern physics, including aspects of space

and time. Finally, a third perspective discusses symmetry in the humanities, covering its rich and varied use in history, architecture, art, and religion.

The opposite of symmetry is asymmetry

Symmetry in Mathematics

In formal terms, we say that an object is symmetric with respect to a given mathematical operation, if, when applied to the object, this operation does not change the object or its appearance. Two objects are symmetric to each other with respect to a given group of operations if one is obtained from the other by some of the operations (and vice versa).

Symmetries may also be found in living organisms including humans and other animals (see symmetry in biology below). In 2D geometry the main kinds of symmetry of interest are with respect to the basic Euclidean plane isometries: translations, rotations, reflections, and glide reflections.

Symmetry in History, Religion, and Culture

In any human endeavor for which an impressive visual result is part of the desired objective, symmetries play a profound role. The innate appeal of symmetry can be found in our reactions to happening across highly symmetrical natural objects, such as precisely formed crystals or beautifully spiraled seashells. Our first reaction in finding such an object often is to wonder whether we have found an object created by a fellow human, followed quickly by surprise that the symmetries that caught out attention are derived from nature itself. In both reactions we give away our inclination to view symmetries both as beautiful and, in some fashion, informative of the world around us.

Symmetry in Religious Symbols

The tendency of people to see purpose in symmetry suggests at least one reason why symmetries are often an integral part of the symbols of world religions. Just a few of many examples

include the sixfold rotational symmetry of Judaism's Star of David, the twofold point symmetry of Taoism's Taijitu or Yin-Yang, the bilateral symmetry of Christianity's cross and Sikhism's Khanda, or the fourfold point symmetry of Jain's ancient (and peacefully intended) version of the swastika. With its strong prohibitions against the use of representational images, Islam, and in particular the Sunni branch of Islam, has developed some of the most intricate and visually impressive use of symmetries for decorative uses of any major religion.

The ancient Taijitu image of Taoism is a particularly fascinating use of symmetry around a central point, combined with black-and-white inversion of color at opposite distances from that central point. The image, which is often misunderstood in the Western world as representing good (white) versus evil (black), is actually intended as a graphical representative of the complementary need for two abstract concepts of "maleness" (white) and "femaleness" (black). The symmetry of the symbol in this case is used not just to create a symbol that catches the attention of the eye, but to make a significant statement about the philosophical beliefs of the people and groups that use it. Also an important symmetrical religious symbol is the Shintoist "Torii" "The gate of the birds", usually the gate of the Shintoist temples called "Jinjas".

Symmetry in Social Interactions

People observe the symmetrical nature, often including asymmetrical balance, of social interactions in a variety of contexts. These include assessments of reciprocity, empathy, apology, dialog, respect, justice, and revenge. Symmetrical interactions send the message "we are all the same" while asymmetrical interactions send the message "I am special; better than you". Peer relationships are based on symmetry, power relationships are based on asymmetry.

See also

Symmetry group
Chirality
Fixed points of isometry groups in Euclidean space - center of symmetry
Spontaneous symmetry breaking
Gödel, Escher, Bach
M. C. Escher
Wallpaper group
Asymmetry
Asymmetric rhythm
Even and odd functions
Dynamic symmetry
Symmetries of polyominoes
Symmetries of polyiamonds
Burnside's lemma
Symmetry (biology)
Spacetime symmetries
Semimetric

In public good experiments, behavioral economists have demonstrated that the potential for reciprocal actions by players increases the rate of contribution to the public good, providing evidence for the importance of reciprocity in social situations (Fehr and Gächter, 2003).

In mathematics, game theory describes reciprocity as a highly effective Tit for Tat strategy for the iterated prisoner's dilemma.

In game theory, the prisoner’s dilemma is a type of non-zero-sum game in which two players may each “cooperate” with or “defect” (i.e., betray) the other player.

In this game, as in all game theory, the only concern of each individual player ("prisoner") is maximizing his/her own payoff, without any concern for the other player's payoff. The unique equilibrium for this game is a Pareto-suboptimal solution—that is, rational choice leads the two players to both play defect even though each player's individual reward would be greater if they both played cooperate. In equilibrium, each prisoner chooses to defect even though both would be better off by cooperating, hence the dilemma.

In the classic form of this game, cooperating is strictly dominated by defecting, so that the only possible equilibrium for the game is for all players to defect. In simpler terms, no matter what the other player does, one player will always gain a greater payoff by playing defect. Since in any situation playing defect is more beneficial than cooperating, all rational players will play defect, all things being equal.

In the iterated prisoner's dilemma the game is played repeatedly. Thus each player has an opportunity to "punish" the other player for previous non-cooperative play. Cooperation may then arise as an equilibrium outcome. The incentive to defect is overcome by the threat of punishment, leading to the possibility of a cooperative outcome. So if the game is infinitely repeated, cooperation may be a subgame perfect Nash equilibrium although both players defecting always remains an equilibrium and there are many other equilibrium outcomes.

The Classical Prisoner's Dilemma

The Prisoner's Dilemma was originally framed by Merrill Flood and Melvin Dresher working at RAND in 1950. Albert W. Tucker formalized the game with prison sentence payoffs and gave it the "Prisoner's Dilemma" name (Poundstone, 1992).

The classical prisoner's dilemma (PD) is as follows:

Two suspects, A and B, are arrested by the police. The police have insufficient evidence for

In the animal world reciprocity exists in the social behaviour of Baboons. Male Baboons will form alliances with one another in order that one baboon will distract the Alpha-male, who has monopolized reproductive females, and the other will copulate with a female. The roles will be reversed later for "payback."

See also

Reciprocity (cultural anthropology)

Sometimes abbreviated PD

a conviction, and, having separated both prisoners, visit each of them to offer the same deal: if one testifies for the prosecution against the other and the other remains silent, the betrayer goes free and the silent accomplice receives the full 10-year sentence. If both remain silent, both prisoners are sentenced to only six months in jail for a minor charge. If each betrays the other, each receives a five-year sentence. Each prisoner must make the choice of whether to betray the other or to remain silent. However, neither prisoner knows for sure what choice the other prisoner will make. So this dilemma poses the question: How should the prisoners act?

The dilemma can be summarized thus: (Prisoner A = **A; Prisoner B = **B**)**

	B Stays Silent	B Betrays
A Stays Silent	Each serves six months	A serves ten years B goes free
A Betrays	A goes free B serves ten years	Each serves five years

The dilemma arises when one assumes that both prisoners only care about minimizing their own jail terms. Each prisoner has two and only two options: either to co-operate with his accomplice and stay quiet, or to defect from their implied pact and betray his accomplice in return for a lighter sentence. The outcome of each choice depends on the choice of the accomplice, but each prisoner must choose without knowing what his accomplice has chosen.

In deciding what to do in strategic situations, it is normally important to predict what others will do. This is not the case here. If you knew the other prisoner would stay silent, your best move is to betray as you then walk free instead of receiving the minor sentence. If you knew the other prisoner would betray, your best move is still to betray, as you receive a lesser sentence than by silence. Betraying is a dominant strategy. The other prisoner reasons similarly, and therefore also chooses to betray. Yet by both defecting they get a lower payoff than they would get by staying silent. So rational, self-interested play results in each prisoner being worse off

than if they had stayed silent. In more technical language, this demonstrates very elegantly that in a non-zero sum game a Nash Equilibrium need not be a Pareto optimum.

Note that the paradox of the situation lies in that the prisoners are not defecting in hope that the other will not. Even when they both know the other to be rational and selfish, they will both play defect. Defect is what they will play no matter what, even though they know fully well that the other player is playing defect as well and that they will both be better off with a different result.

Utopia is a fictional island near the coast of the Atlantic Ocean written about by Sir Thomas More as the fictional character Raphael Hythloday recounts his experiences in his travels to the deliciously fictional island with a perfect social, legal, and po-litical system.

The name has come to mean, in popular parlance, an ideal society. As such, it has been used to describe both intentional communities that attempted to create an ideal society, and fictional societies portrayed in literature. The term is sometimes used pejoratively, in refer-ence to an unrealistic ideal that is impossible to realize, and has spawned other concepts, most prominently "dystopia".

Related terms

- Dystopia is a negative utopia: a totalitarian and repressive world. Examples: George Orwell's 1984, Aldous Huxley's Brave New World, Anthony Burgess's A Clockwork Orange, Alan Moore's V for Vendetta, The Reality Bug, Margaret Atwood's The Handmaid's Tale, Evgenii Zamiatin's We, Ayn Rand's Anthem, Lois Lowry's The Giver, Samuel Butler's "Erewhon" or Chuck Palahniuk's Rant .
- Eutopia is a positive utopia, different in that it means "perfect" but not "fictional".

- Outopia derived from the Greek 'ou' for "no" and '-topos' for "place," a fictional, this means unre-alistic or directly translated "Nothing, Nowhere" This is the other half from Eutopia, and the two together combine to Utopia.
- Heterotopia, the "other place", with its real and imagined possibilities (a mix of "utopian" escapism and turning virtual possibilities into reality) — ex-ample: cyberspace. Samuel R. Delany's novel Trouble on Triton is subtitled An Ambiguous Heterotopia to highlight that it is not strictly utopian (though not dystopian). The novel offers several conflicting per-spectives on the concept of utopia.

Some questions have arisen about the fact that writers and people in history have used "Utopia" to define a perfect place, as utopia is a perfect but unreal place. A proper definition of a perfect and real place is "Eutopia".

More's Utopia is largely based on Plato's Republic. It is a perfect version of Republic

The "Stay Silent" and "Betray" strategies are also known as "don't confess" and "confess", or the more standard "cooperate" and "defect."

One experiment based on the simple dilemma found that approximately 40% of participants cooperated (i.e., stayed silent).

See also

Cellular automata
Centipede game
Conflict resolution research
Diner's dilemma
Evolutionarily stable strategy
Folk theorem (game theory)
Nash equilibrium
Neuroeconomics
Price equation
Reciprocal altruism
Rendezvous problem
Superrationality
Tit for tat
Tragedy of the commons
Tragedy of the anticommons
Traveler's dilemma
Trust (sociology)
Social trap
War of attrition (game)
Zero-sum

A map of the island of Utopia, as described by Thomas More in his 1486 book Utopia. The island is a square, with a bay on the west side, and a river flowing into the bay from the south. The island is divided into 54 parishes, each with a church and a school. The parishes are arranged in a grid, with 6 parishes in each row and 9 parishes in each column. The bay is 10 miles wide, and the river is 10 miles long. The island is 100 miles long and 100 miles wide.

From Greek: οὐ, "not", and τόπος, "place" [hence, "no place" or "place that does not exist"], as well as εὖ, "good" or "well", and τόπος ["good place"]—the double meaning was probably intended.

The title page of Thomas More's Utopia, 1516 edition. The text is in Latin, and the title is in Greek: "Utopia, sive de optimo statu reipublice liber primus."

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den in the Tibetan mountains and described by James Hilton in his Utopian novel Lost Horizon (1933). Such paradise on earth must be somewhere if only man were able to find it. Christopher Columbus followed directly in this tradition in his belief that he had found the Garden of Eden when, towards the end of the 15th century, he first encountered the New World and its peoples.

Another way of regaining the lost paradise (or Paradise Lost, as 17th century English poet John Milton calls it) would be to wait for the fu-ture, for the return of the Golden Age. Accord-ing to Christian theology, man's Fall from Para-dise, caused by man alone when he disobeyed God ("but of the tree of the knowledge of good and evil, thou shalt not eat of it"), has resulted in the wickedness of character that all human beings have been born with since ("Original Sin") such as Orwell's Nineteen Eighty-Four became the primary method of Utopian expres-sion and rejection. (Kumar 1987)

Still, post-war era also found some Utopia-nist fiction for some future harmonic state of humanity (e.g. Demolition Man (film)).

In a scientific approach to finding utopia, The Global scenario group, an international group of scientists founded by Paul Raskin, used scenario analysis and backcasting to map out a path to an environmentally sustainable and socially equitable future. Its findings suggest that a global citizens movement is necessary to steer political, economic, and corporate entities toward this new sustainability paradigm.

Examples of utopia

See also utopian and dystopian fiction

- Observe & Control's Debut Album "Utopia" is a musical project that serves as a homage for the rise and fall of Utopian Projects.
- New Australia
- Plato's Republic (400 BC) was, at least on one level, a description of a political utopia ruled by an elite of philosopher kings, conceived by Plato. (Compare to his Laws, discussing laws for a real city.) a Gutenberg text of the book
- The City of God (written 413–426) by Augustine of Hippo, describes an ideal city, the "eternal" Jerusalem, the archetype of all Christian utopias.
- Utopia (1516) by Thomas More a Gutenberg text of the book
- Reipublicae Christianopolitanae descriptio (Beschreibung des Staates Christenstadt) (1619) by Johann Valentin Andreæ, describes a Christian utopia inhabited by a community of scholar-artisans and run as a democracy.
- The Anatomy of Melancholy (1621) by Robert Burton, a utopian society is described in the preface.
- The City of the Sun (1623) by Tommaso Campanella depicts a theocratic and communist society.
- The New Atlantis (1627) by Francis Bacon
- Zwaanendael Colony (1631) by Pieter Corneliszoon Plockhoy in Delaware
- Aldous Huxley's Brave New World (1932), a pseudo-utopian satire (see also dystopia).
- Shangri-La described in the novel Lost Horizon by James Hilton (1933)
- Islandia (1942), by Austin Tappan Wright, an imaginary island in the Southern Hemisphere, a utopian containing many Arcadian elements, including a rejection of technology.
- B. F. Skinner's Walden Two (1948)
- The Cloud of Magellan (1955) by Stanisław Lem
- Andromeda Nebula (1957) is a classic commu-nist utopia by Ivan Efremov
- Island (novel) (1962) by Aldous Huxley follows the story of Will Farnaby, a cynical journalist, who shipwrecks on the ficitonal island of Pala and experi-ences their unique culture and traditions which create

- a utopian society. Often considered his antithesis to Brave New World.
 - The Great Explosion, Eric Frank Russell 1963
- In the last section setting out a workable utopian economic system leading to a different social and political reality.
- The Corridors of Time by Poul Anderson (1965) features a protagonist recruited by a woman from a future society to go back in time to help her fight her dystopian, time-traveling foes, who dominate half the world in her time. The utopian claims of her society are undermined, especially by time-travelers from a more distant, actually utopian future who plunge him into aspects of it hidden from him, and hint that their future must be brought about by his actions.
 - Imagine (song) (1971) by John Lennon, prays for "brotherhood of man", which would exist in a utopia without hell or heaven.
 - The Ones Who Walk Away From Omelas (1969), by Ursula K. Le Guin, about the costs of utopia
 - Always Coming Home (1985), by Ursula K. Le Guin, a combination of fiction and fictional anthropol-ogy about a society in California in the distant future
 - The Kingdom of Zeal in Chrono Trigger (1995)
 - The Hedonistic Imperative (1996), an online manifesto by David Pearce, outlines how genetic engi-neering and nanotechnology will abolish suffering in all sentient life.
 - The Kin of Ata Are Waiting for You (1997) by Dorothy Bryant
 - The Matrix (1999), a film by the Wachowski brothers, describes a virtual reality controlled by artificial intelligence such as Agent Smith. Smith says that the first Matrix was a utopia, but humans rejected it because they "define their reality through misery and suffering." Therefore, the Matrix was redesigned to simulate human civilization with all its suffering.
 - K-PAX(2001), a film based on the book of the same name, is about a man who calls himself prot, an alien from a "utopian planet" K-PAX.
 - Equilibrium(2002), a film about an utopia where all emotion is forbidden, which is considered the only way to peace and balance.
 - Xen: Ancient English Edition, (2004) presents a utopia with a bias toward matriarchy, in the distant future of Earth, "translated" by D.J. Solomon
 - Ourtopia,(2004) is Garrett Jones's projection of an ideal planet towards which to work.
 - Ensaio sobre a Lucidez ("Treatise on Lucidity") by José Saramago (2004), describes a city where there is 83% of blank votes at an election.
 - Globus Cassus, (2004), is a project for the trans-formation of the Earth into a large, hollow structure inhabited on the inside, which would be organised by new types of societies and political systems.
 - Celebration, Florida, a city developed by The Walt Disney Company.
 - The first story arc in the seventh season (2004-2005) of the supernatural dramedy series Charmed involves the transformation of the world into an utopia through the fear of a common enemy.
 - Hermann Hesse's The Glass Bead Game (1943) shows Castalia, a utopian society for the intellectual elite.
 - News from Nowhere by William Morris (1892), ... Pardon me Who strive to build a shadowy isle of bliss Midmost the beating of the steely sea. Shows "Nowhere", a place without politics, a future society based on common ownership and democratic control of the means of production.
 - Lois Lowry's The Giver
 - Doris Lessing's Shikasta, Memoirs of a Survivor
 - Elisabeth Vonarburg's Reluctant Voyagers (Les Voyageurs malgré eux, 1994)
 - Octavia Butler's Xenogenesis Trilogy
 - Muriel Jaeger's 1920s novels The Question Mark, The Man with Six Senses
 - Sheri S. Tepper's Beauty, Grass
 - Joanna Russ's The Female Man
 - Suzette Haden Elgin's Native Tongue
 - Charlotte Perkins Gilman's Herland
 - Scott Westerfeld's Uglies shows a futuristic society where one transforms greatly aesthetically at the age of 16, through intense plastic surgery, to live in a society where all is peaceful and beautiful.
 - Skinny Utopia, a fantasy of a barbed enclosure containing only subjects with underweight BMIs. Popular among the Melbourne fashion scene.
 - Rapture, a failed attempt to create an underwa-ter utopia from the video game BioShock.
 - German power metal band Domain's concept album Last Days of Utopia tells the story of a man who, after finding his life ruined due to an incident we are not told about, goes across the sea to seek a perfect life, and finds an island called Utopia, where all his dreams are answered. Unfortunately, after tell-ing the people of Utopia his tragic past, they begin to question and even rebel against their gods, ultimately

resulting in the destruction of the perfect land.

- Doctor Who has had an episode titled Utopia, involving the concept of escaping to Utopia, during the Doctor's final showdown with the Master.

Related Concepts and Terms

- Abolitionism (bioethics)*
- Bioregionalism*
- Christian anarchism*
- Dystopia*
- EcoCommunalism*
- Ecotopia*
- El Dorado*
- Garden of Eden*
- Heaven*
- Intentional Community*
- Kibbutz*
- Marxism*
- Millennialism*
- Paradise*
- Peace*
- Phalanstère*
- Regional planning*
- Simple living*
- Speculative fiction and science fiction*
- Techno-utopianism*
- Urban planning*
- Utopia Planitia*
- Utopian and dystopian fiction*

The term Golden age stems from Greek mythology and legend.

It refers to the highest age in the Greek spectrum of Iron, Bronze, Silver and Golden ages, or to a time in the beginnings of Humanity which was perceived as an ideal state, or utopia, when mankind was pure and immortal. A "Golden Age" is known as a period of peace, harmony, stability and prosperity. In literary works, the Golden Age usually ends with a devastating event, which brings about the Fall of Man (see Ages of Man). An analogous idea can be found in the religious and philosophical traditions of the Far East. For example, the Vedic or ancient Hindu culture saw history as cyclical composed of yugas with alternating Dark and Golden ages. The Kali yuga (Iron Age), Dwapara yuga (Bronze Age), Treta yuga (Silver age) and Satya yuga (Golden age) correspond to the four Greek ages. Similar beliefs can be found in the ancient Middle East and throughout the ancient world.

According to Giorgio de Santillana, the former professor of history at MIT, and co-author of the book Hamlet's Mill, there are over 200 myth and folkstories from over 30 ancient cultures that spoke of a cycle of the ages tied to the movement of the heavens. Some Utopianist beliefs, both political and religious, hold that the Golden Age will return after a period of blessedness and gradual decadence is completed. Other proponents, including many modern day Hindus, believe a Golden age will gradually return as a natural consequence of the changing yugas.

Some pastoral works of fiction depict life in an imaginary Arcadia as being a continuation of life in the Golden Age; the shepherds of such a land have not allowed themselves to be corrupted into civilization.

History

It happens both in Europe as well as in the Middle East, the idea of a Golden Age is part of a mythical interpretation of history, which divides history into several consequent ages, or (predominantly in the Middle East) into

empires or historical epochs. The Golden Age (in India the Satya Yuga) is perceived to have been the first and best age, followed by the Silver Age and so on. The lowest and worst age was the Kali yuga of the Dark Ages when the decay of civilisation reached its nadir, prior to the renaissance period and the present Dwapara yuga. This perception of history is different from the current linear paradigm which does not recognize any cyclicity. The theory of historical ages is often thought to be the mythical expression of a philosophy of history marked by cultural pessimism, or simply the belief of primitive cultures. A few modern theorists such as Walter Cruttenden, author of Lost Star of Myth and Time, believe the cycle of the ages has a basis in fact indirectly due to the motion of the solar system around another form.

Fantasy

In modern fantasy worlds whose background and setting sometime draw heavily on real-world myths, similar or compatible concepts of Golden Age exist in the said world's prehistory; when Deities or Elf-like creatures existed, before the coming of humans.

For example, a Golden Age exists in Middle-earth legendarium. Arda (the period of our world where The Lord of the Rings is set), was designed to be symmetrical and perfect. After the wars of the Gods, Arda lost its perfect shape (known as Arda Unmarred) and was called Arda Marred. Another kind of 'Golden Age' follows later, after the Elves awoke; the Eldar stay on Valinor, live with the Valar and advance in arts and knowledge, until the rebellion and the fall of the Noldor, reminiscent of the Fall of Man. Eventually, after the end of the world, the Silmarilli will be recovered and the light of the Two Trees of Valinor rekindled. Arda will be remade again as Arda Healed.

In The Wheel of Time universe, the Age of Legends is the name given to the previous Age: In this society, channelers were common and Aes Sedai - trained channelers - were extremely

powerful, able to make angreal, sa'angreal, and ter'angreal, and holding important civic positions. The Age of Legends is seen as a utopian society without war or crime, and devoted to culture and learning. Aes Sedai were frequently devoted to academic endeavours, one of which inadvertently resulted in a hole - 'The Bore' - being drilled in the Dark One's prison. The immediate effects were not realised, but the Dark One gradually asserted power over humanity,

swaying many to become his followers. This resulted in the War of Power and eventually the Breaking of the World. Another example is in the background of the Lands of Lore classic computer game, the history of the Lands is divided in Ages. One of them is also called Golden Age, where the Lands were ruled by the 'Ancients', no wars existed yet, until that age was over with the 'War of the Heretics'.

See Also

Ages of Man
Arcadia (utopia)
Garden of Eden
Great year
Utopia
Merrie England
Millennialism
Satya Yuga/Krita Yuga

Also known as a Platonic year or Equinoctial cycle

A Great year is the time required for one complete cycle of the precession of the equinoxes, about 25800 years, at the current rate.

Although astrologers consider it very important, modern day astronomers care little about it. The impact of the precession is raised in discussions of the origins of myths by scholars such as Robert Graves, in his comprehensive work The Greek Myths, who sought those origins from fragments of earlier myths, contained in those from the earliest historical records and prehistoric symbols discovered through archaeology.

Usually in literature one finds the duration of the precession given as 26000 years, being a rounding of the supposedly more accurate value of 25800 years. In reality the exact duration cannot be given, as the speed of the general precession is a value changing over time. This speed is currently 50.3 arcseconds per year which would mean 25765 years for one cycle to complete, but speeds of 50.25 arcseconds and 50.34 arcseconds, which would lead to the same rounded value of 50.3 arcseconds would result in 25791 and 25744 years, respectively.

The precessional speed is increasing currently, and as such, the period is decreasing. Numerical simulations of the solar system over a period of millions of years give a figure of 257 centuries.

Astrologers do not agree; most use a precession rate rounded to 50" per year to derive a Great Year period of 25920 years. Some, such as Boris Cristoff, the Uruguayan astrologer and author of the book in Spanish "El destino de la Humanidad", prefers to round the age of one sign of the zodiac to 2100 years which equates to a Great Year duration of 25200 years. The Sanskrit scholar Swami Sri Yukteswar puts the length of a Great Year at a period of 24,000

years, comprised of one ascending age of 12,000 years and one descending age of 12,000 years. Some scholars believe this measurement serves as the original basis for our current system of daily time; one 24 hour day with one 12 hour period of increasing light (AM) and one 12 hour period of increasing darkness (PM).

In the history of astronomy, a great year may refer to any real or imagined cycle with astronomical or astrological significance. The Greeks sometimes called the period of time required for the naked eye planets to realign, a great year. It was an important concept in ancient Stoicism.

According to Giorgio de Santillana, the former professor of history at MIT, there are over 200 myths or folk stories from over thirty ancient cultures that refer to a Great Year tied to the motion of the heavens. Most of these ancient cultures believed that during the course of one Great Year civilization will rise for about 12,000 years, culminating in a Golden Age, then fall for 12,000 years, culminating in a Dark Age, before rising again. Thus a Great Year is thought to be a cyclical measurement of time with periods of waxing and waning light and darkness similar to the earth's daily and yearly periods of time.

The book, The Great Year, written by Nicholas Campion describes some of the ancient and modern mythology of the Great Year concept. The documentary film, The Great Year, written by Walter Cruttenden and narrated by James Earl Jones describes some of the archaeological and astronomical evidence for the Great Year.

Symbols are objects, characters, or other concrete representations of ideas, concepts, or other abstractions.

For example, in the United States, Canada, Australia and Great Britain, a red octagon is a

symbol for the traffic sign meaning "STOP". Common examples of symbols are the symbols

used on maps to denote places of interest, such as crossed sabers to indicate a battlefield, and the numerals used to represent numbers. Common psychological symbols are the use of a gun to represent a penis or a tunnel to represent a vagina. See: phallic symbol and yonic symbol.

All languages are made up of symbols. The word "cat", whether spoken or written, is not a cat, but is a symbol for a cat.

Etymology

The word "symbol" came to the English language by way of Middle English, from Old French, from Latin, from the Greek σύμβολον (sýmbolon) from the root words συν- (syn-) meaning "together" and βολή (bolē) "a throw", having the approximate meaning of "to throw together", literally a "co-incidence" (zu-fall), also "sign, ticket, or contract". The earliest attestation of the term is in the Homeric Hymn to Hermes where Hermes on seeing the tortoise exclaims σύμβολον ἤδη μοι "symbolon [symbol/sign/portent/encounter/chance find?] of joy to me!" before turning it into a lyre.

The symbolate

A technical term for an object that serves as a symbol is a symbolate. For example, a scepteris a symbol of royal power. In addition to being a symbol, a scepter is also an object which can be picked up and wielded, and which only fulfills its symbolic purpose when it is wielded by a monarch.

Objects have physical properties; a scepter is essentially a rod with ornamentation. A rod only becomes a scepter when the people viewing the

rod accept it as a scepter. An alien from outer space might describe a royal audience as follows: A human homo sapiens wrapped in fibers reflecting light at the high end of the visible frequency range moved an ornamented rod against gravity, at which time other individuals ceased emitting complex sound waves. A human would say that the monarch dressed in a purple robe waved the scepter to silence the crowd.

What is the difference between these two meanings? Leslie White approached the question in an effort to define cultural objects, such as a law, a constitution, a marriage ceremony. All the nouns in the paragraph above are cultural objects: the monarch, the robe, the scepter, the language, and the subjects.

The essence of a cultural object is that it is a token in the process of symbolization. White defined the symbolate as the object created by the act of symbolization, just as an isolate is created by the act of isolation. The scepter stands for royal power, but before this act of symbolization it did not exist as a symbolate, but only as a rod. The scepter was created by its use as a symbol. We are conscious of the symbol, but not of the symbolate.

Symbolates are real objects. The act of symbolization endows the rod with a power it did not possess previously. Ordinary rods have no effect on audiences, but scepters do. However, the power does not reside only in the scepter. Its location is diffuse, some in the people, some in the king, some in the audience. Humanity lives in a world of diffuse powers and possibilities and creates symbolates to communicate with or to manipulate other people.

See Also

Alchemy
Applied Drama
Asemic writing
Check (mark)
Computer icons
Dramatic symbol
Emblem
Font
Glyph
Grapheme
Icon (religious) and secular icon
Letter frequencies
List of common symbols
List of symbols
Logo
Logotype
Map-territory relation
National symbol
Religious symbolism
Punctuation
Representation
Second-order simulacra
Semiotics
Sign (linguistics)
Siglas poveiras
Symbol rate
Symbol Grounding Problem
Table of mathematical symbols
Typography
Unicode symbols



Diamond :

(TOP) A diamond ring.

(BOTTOM) This bubble map shows the global distribution of diamond output in 2005 as a percentage of the top producer (Russia - 38,000,000 carats).

This map is consistent with incomplete set of data too as long as the top producer is known. It resolves the accessibility issues faced by colour-coded maps that may not be properly rendered in old computer screens.

Data was extracted on 29th May 2007.



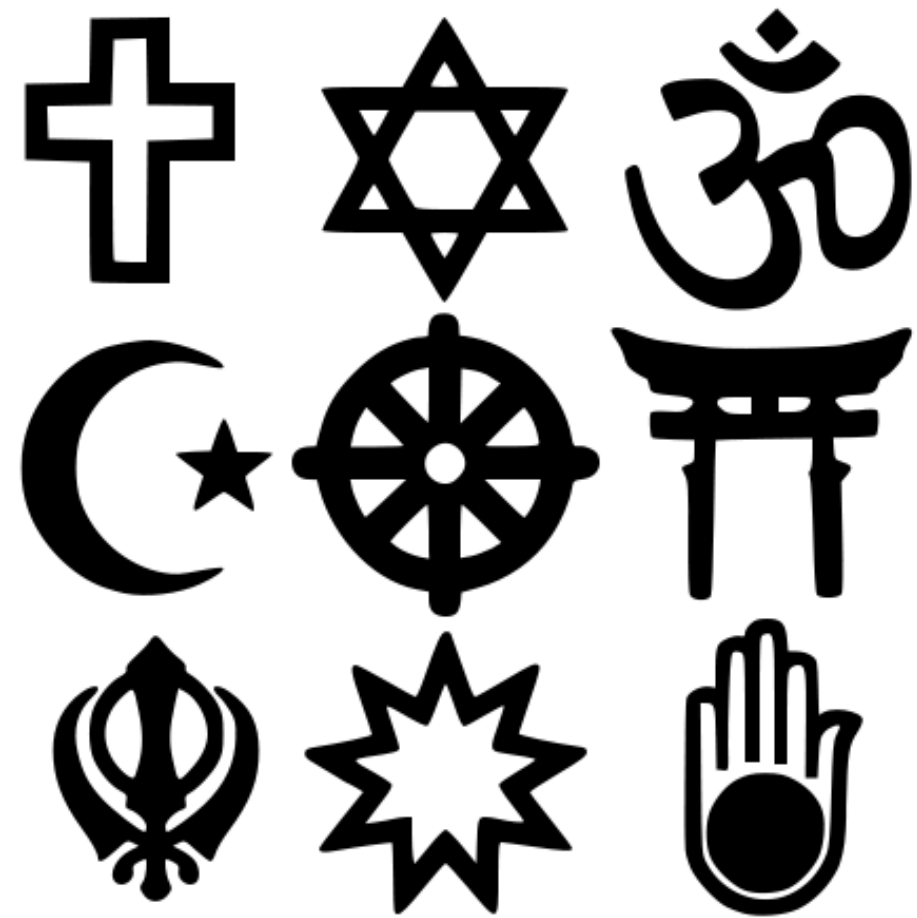
Symmetry :
Highlighting the symmetry in the faces of the Olsen twins.



Prisoner's Dilemma :
Will the two prisoners cooperate to minimize total loss of liberty, or will one of them, trusting the other to cooperate, betray him so as to go free?



The Golden Age :
The Golden Age by Lucas Cranach the Elder.



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Start, Louisiana
Tim McGraw
Friday Night Lights
NBC
Survivor
Reality Television
MTV
Jackass
Tony Hawk
Birdhouse Skateboards
The End



Start is a town in Richland Parish, Louisiana, in the United States.

 <p>Start is the hometown of country superstar Tim McGraw.</p>	 <p>(32.48639, -91.85917)GR1. It is a small community and mainly consists of farmland.The town itself has several churches, two gas stations, homes, and two Start Fire Departments.</p>
Geography	

 Location of Start, Louisiana
 Start is located at 32°29′11″N, 91°51′33″W﻿ / ﻿

Samuel Timothy “Tim” McGraw is an American country singer who has achieved many number one hits on the country singles and album charts, with total sales in excess of 40 million units.

McGraw performing at the 2006 American Music Awards

He is married to country singer Faith Hill and is the son of former baseball player Tug McGraw. His trademark hit songs include "Indian Outlaw", "Don't Take the Girl", "I Like It, I Love It", "Something Like That", "It's Your Love" (featuring his wife, Faith Hill), and "Live Like You Were Dying".

 <p>As of his 2006, McGraw has had nine consecutive albums debut at Number One on the Billboard with twenty-six of his singles reaching number 1 on the Billboard Hot Country 100 chart, with three of them being named the #1 country song of the year ("It's Your Love", "Just To See You Smile", and "Live Like You Were Dying"). He has won 3 Grammys, 11 Academy of Country Music awards, 10 Country Music Association (CMA) awards, 9 American Music Awards and 3 People's Choice Awards. His Soul2Soul II tour with Faith Hill in 2006 became the highest-grossing tour in country music history, and ranked as one of the top five in all genres of music.</p>	
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McGraw has ventured into acting, with a supporting role in the Billy Bob Thornton film Friday Night Lights and a lead role in 2006's Flicka. He is also a minority owner of the Arena Football League's Nashville Kats.

Early life

McGraw was born Samuel Timothy McGraw in Delhi, LA, a town in Richland Parish, the son of waitress Elizabeth D'Agostino Trimble and

Tug McGraw, a relief pitcher for the New York Mets and the Philadelphia Phillies. McGraw is 25% Italian and 25% Irish on his mother's side and Scots-Irish descent on his father's side.

Raised by his mother, in Start, LA east of Monroe, LA, McGraw grew up believing his stepfather, Horace Smith, was his birth father. While searching his mother's closet when he was eleven to find pictures for a school project McGraw discovered his birth certificate. After his discovery his mother revealed that his birth father was Tug McGraw, and brought him to meet his father for the first time. Tug denied being Tim's father until Tim was 18 years old, when Tug first noticed how similar Tim looked to him when he was that young, and the two remained close until Tug's death in 2004.

As a child, McGraw loved to play competitive sports, including baseball, even though he did not know Tug McGraw was his father. He studied sports medicine at Northeast Louisiana University on a baseball scholarship, and roomed with former NFL quarterback Doug Pederson where he became a member of the Pi Kappa Alpha Fraternity.While in college he sang in a band that was known as the Electones. During this period, he learned to play guitar and would frequently perform and sing for tips, although he claims that his roommates often hid the guitar because he was so bad. In 1989, on the day his hero Keith Whitley died, McGraw dropped out of college to head to Nashville and pursue a musical career.

McGraw performing at the 2006 American Music Awards

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Chris Comer was also the backup fullback in the book, not a third-string tailback. One of the athletic directors in the stadium booth also mentions "I think he's a Sophomore.", when Comer was really a Junior in real life. Comer also wore #45 in the real season, but in the movie he wears #42. Also, Alan Wyles is depicted as a wide receiver when he was actually the placekicker.

Don Billingsley's father Charlie is depicted in the movie as having won a state championship. In reality, his Permian team lost in the state finals.

The Regular Season

In the movie the team is depicted as practicing in full pads and with full contact on the first day of practice. Under rules of the University Interscholastic League (UIL), the governing body for Texas public-school sports, teams cannot use pads or hit until the 4th day of practice.

A Permian booster is heard toasting Coach Gaines' second season as Permian's head coach. It was actually his third.

Boobie Miles, in the book, injured his leg by getting his foot caught on the astroturf during a pre-season scrimmage against Amarillo Palo Duro at Jones Stadium in Lubbock. In the movie he is tackled by two players at the knee during a blowout non-district game at Ratliff Stadium.

In the movie, the top-ranked Permian Panthers defeated the hapless Marshall Bulldogs in a non-district game. In real life, the third-ranked Marshall Mavericks (whose colors are red and white, not purple and gold) defeated fourth-ranked Permian 13-12. In the movie, the game is the season opener, and played on a Friday night in Odessa. In real life, it was Permian's second game of the season, and played at Maverick Stadium in Marshall on a Saturday afternoon. Permian's football team chartered a jet for the 500+ mile trip from Odessa to Marshall, spawning controversy on the cost of the trip. Played before a crowd of more than 12,000 fans at Maverick Stadium, the game was on a searing September afternoon where the temperature topped 100 degrees Fahrenheit (38 °C). The footage shown in the movie is from a game against the Midland High Bulldogs, who weren't mentioned in the movie. Permian defeated the Dawgs 42-0 in district play, but the two teams ended up in a three-way tie along with Midland Lee for the district title.

In the movie, district play began in week 2. In the real regular season, district play would have begun in week 4.

In the movie, Permian defeats "North Shore Galena" in a mid-season (presumably district) game. In reality, North Shore High School is located in Galena Park, a suburb of Houston, over 500 miles (800 km) southeast of Odessa. Although North Shore and Permian have both been 5A football powerhouses, they have never played.

In reality, the three teams tied for best district record were Permian, Midland Lee, and Midland High, all with 5-1 district records. In the movie, Permian and Lee are joined not by Midland but by Abilene Cooper, and each team has two district losses. The tie breaking coin flip was held at a truck stop outside of Midland, and Midland High lost (Cooper in the movie), so Permian and Lee went on. Midland High's missing the playoffs was particularly poignant as it had not been to the playoffs since 1951 and would not get to go on to post-season play until 2002.

In a few scenes, players are shown wearing Under Armour apparel and facemask shields when in 1988, Under Armour and visors hadn't been invented yet. (Ironically, Under Armour founder Kevin Plank was in high school in 1988.) The book actually says they wore green visors.

The Playoffs

Permian's first opponent in the playoffs was Amarillo Tascosa and not Dallas Jesuit as in the movie. In fact, in 1988 Texas public schools (such as Permian, Carter, and Tascosa) and private schools (such as Jesuit) competed in separate leagues with separate playoffs. Jesuit was not allowed to join the previously all-public school UIL until 2003, starting football competition in 2004. Dallas Jesuit and Strake Jesuit of Houston are currently the only private schools who play in the UIL, the rest competing in leagues such as TAPPS and the SPC. Also, given the district setup at that time, it would have been impossible for Permian to play a team from the Dallas/Fort Worth Metroplex until the third round for the playoffs. Now, however, Permian would play Fort Worth-area teams in the first round of the playoffs, but still could not play Jesuit until round 3. Permian did play Dallas Jesuit in Odessa during the regular season in 1988, winning 48-2. Jesuit's only points came on a missed-PAT return, which was a new rule instituted that year. Also, Jesuit's helmet is shown as white and orange with a sort of wildcat's head logo on it: in actuality, the Jesuit Rangers' football helmets are solid gold, with no logo on them.

In the movie, it is said that Carter was the state's top-ranked team, when Carter was never ranked higher than No. 3 in the Associated Press poll.

Carter is depicted playing “Hays” High School in the playoffs. Hays High is depicted as wearing green and white and nicknamed the Rams. The real Jack C. Hays High School, located 15 minutes south of Austin in Buda, instead uses red, white, and blue as its colors, and its nickname is Rebels. Hays was a Class 4A school in 1988 and did not become 5A until 2000. Hays was in the movie because the makers filmed crowd shots at Hays High during a Rebels home game against the Austin Westlake Chaparrals, another team depicted as being a Permian playoff victim.

Permian was also depicted as playing “San Angelo” in the quarterfinal round. There are

actually two high schools in the San Angelo Independent School District: San Angelo Central High School (the district's only 5A school) had, until 1998, been in the same district for football as Permian (having since been transferred, for football only, to the district with Lubbock and Amarillo schools), and could only have played Permian in the quarterfinal round (owing to the structure of UIL playoffs) if they had qualified. However, Central finished 5th in the district that year, and as only two teams from each district qualified in 1988, Permian and Central did not play in the 1988 playoffs.

Permian vs. Carter

Since 1982, the UIL Class 5A football playoffs have had six rounds (though a second, parallel playoff bracket of five rounds was added in 1990, later also expanded to six rounds in 2006), so while Permian did play Dallas Carter in the fifth round, in reality it was a semi-final and not a final. In the Texas playoffs, a team from North or Western Texas always plays a team from Southern Texas in the final. So the Carter vs Permian final would not have been possible. The actual final featured Carter versus Converse Judson (who would later defeat Permian in the 1995 state championship). The Carter-Permian game was played in front of 10,000 people in a heavy downpour at The University of Texas at Austin's Memorial Stadium, not in front of 55,000 in the Astrodome in Houston. The movie highlights a call made by a black referee of a catch where the ball skips the ground, that play did actually happen. While the game in the movie was a high-scoring affair (34-28), the score of the actual game was 14-9 in favor of Carter. In real life Permian held a 9-7 lead for most of the game and it was Carter who made the dramatic fourth quarter comeback to win. On the last play of the game, Winchell threw the ball incomplete, rather than running it himself close to the goal line.

When the Panthers fell behind 34-14 following a Carter touchdown and two-point conversion in the fourth quarter of the championship game, Chris Comer returned the ensuing kickoff 108 yards for a touchdown. This is in contradiction to the rules governing high school football, where any kick that goes into the endzone is an automatic touchback, and is therefore unreturnable.

The fact that Carter's state championship was revoked following their use of an academically-ineligible player is never mentioned, nor is the prolonged legal battle that Carter went through to enable them to play in the playoffs at all. Officially, the 1988 state champions were Converse Judson, which had lost 31-14 in the final to Carter.

The National Broadcasting Company

(NBC) is an American television network headquartered in the GE Building in New York City’s Rockefeller Center.

There are those in Dallas who were highly upset at how the Dallas Carter coach was portrayed as villainous. The actual coach, Freddie James, was highly respected and considered a Dallas legend. The movie version of the book depicted the Carter team of unsportsmanlike, arrogant, gang members, which is untrue. With that in mind many in Dallas feel the movie's presentation of Carter was racist. The game was highly entertaining, was played without incident, and without any confrontation from either team.

The School and The City

Permian is portrayed in the movie as a single large high school in a small, one-horse town in West Texas. In reality, Odessa was a city of nearly 100,000 people at the time of the events portrayed in the movie, and is part of a metropolitan area of nearly 250,000 combining the populations of Midland and Ector counties. (The quaint downtown shown in the trailer for the movie is actually Manhattan, Kansas.) Also, Permian was (and still is) only one of two large Class 5A high schools in Odessa. The other and first high school in the city, Odessa High School (mascot: the Bronchos), was never mentioned in any way in the movie, despite the fact that they have always played Permian every year, as the two schools have been in the same UIL district since Permian opened in 1959 as well as sharing Ratliff Stadium with Permian. An entire chapter in the book is devoted to the "Civil War" between the schools.

In the movie, Odessa is portrayed as being a mostly Anglo town with a sizeable African-American population and virtually no Hispanics. In 1988, out of the almost 100,000 people that lived in Odessa, one-third were Hispanic while African-Americans made up only 5% of the population.

Ratliff Stadium is depicted as the location for Permian football practices. In reality, the team mostly practices on campus, and the stadium (which both Permian and Odessa High use) is on the outskirts of town in a fairly unpopulated area and about three miles (five km) away from the Permian High campus. It is also unlikely that children would be playing touch football near the stadium, as depicted in the movie, as few houses were nearby at that time. The area around the stadium has grown dramatically since then (which caused an anachronism in the movie — the houses you see near the stadium weren't there then!).

* Also, while Ratliff Stadium has had artificial turf since its opening, in 1988 it had the original AstroTurf, not the modern FieldTurf surface seen on the stadium in the film.

It is sometimes referred to as the Peacock Network due to its stylized peacock logo.

Formed in 1926 by RCA, control of NBC passed to GE in 1986 following GE's \$6.4 billion purchase of RCA. Since this acquisition, the chief executive of NBC (now NBC Universal) was Bob Wright, until he retired, giving his job to Jeff Zucker.

It was estimated in 2003 that NBC is viewable by just over 97 percent of all households, reaching 103,624,370 viewers in the United States. NBC has 10 owned-and-operated stations and nearly 200 affiliates in the United States and its possessions.

The network is currently a part of the media company NBC Universal, a unit of General Electric (GE) and Vivendi.

History

Earliest Stations: WEAF & WJZ

During a period of early broadcast business consolidation, the radio-making Radio Corporation of America (RCA) had acquired New York radio station WEAF from American Telephone and Telegraph (AT&T). An RCA shareholder, Westinghouse, had a competing facility in Newark, New Jersey pioneer station WJZ, which also served as the flagship for a loosely-structured network. This station was transferred from Westinghouse to RCA in 1923, and moved to New York.

WEAF was also a kind of laboratory for AT&T's manufacturing and supply outlet Western Electric, whose product included transmitters and antennas. AT&T's long-distance and local Bell operating divisions were developing technologies for transmitting voice- and music-grade audio over short and long distances, via both wireless and wired methods, with its 1922 creation of WEAF offering a concurrent research-and-development center for those activities. WEAF formed a regular schedule of radio programs, including some of the first commercially sponsored programs, and became an immediate success. In an early example of what became "chain" or "networking" broadcasting, the station linked with Outlet Company's WJAR in Providence, Rhode Island with AT&T's WCAP in Washington, D.C. (named for the Chesapeake and Potomac Telephone Company division of AT&T).

New parent RCA saw an advantage in sharing programming, and after getting a license for station WRC in Washington, D.C. in 1923, attempted to transmit audio between cities via low-quality telegraph lines (since AT&T refused outside companies access to their high-quality phone lines). The early effort was poor at best, with the uninsulated telegraph lines incapable of good audio transmission quality and very susceptible to both atmospheric and man-made electrical interference.

But in 1925, AT&T decided WEAF and its embryonic network were incompatible to AT&T's primary goal of providing a phone service.

AT&T offered to sell the station to RCA, in a deal that also gave RCA the rights to rent AT&T's phone lines for network transmission.

Red & Blue Networks

RCA spent \$1 million to buy WEAF and Washington sister station WCAP, shutting down the latter station--and announcing the late 1926 creation of a new division known as The National Broadcasting Company. The new division was divided in ownership between RCA (fifty percent), General Electric (thirty percent), and Westinghouse (twenty percent), and NBC launched officially on November 15, 1926.

As the flagships of two pre-existing networks, WEAF and WJZ operated side-by-side for about a year as part of the new NBC. On January 1, 1927 NBC formally divided their respective marketing strategies: the Red Network offered commercially sponsored entertainment and music programming; the Blue Network carried sustaining or non-sponsored broadcasts, especially news and cultural programs. Various histories of NBC suggest the colour designations for the two networks came from the colours of the push pins NBC engineers used to designate affiliates of WEAF (red) and WJZ (blue), or from the use of double-ended red and blue colored pencils. A similar two-part/two-color strategy appeared in the recording industry, dividing the market between classical and popular offerings.

Orange, Gold & White Networks

On April 5, 1927 NBC reached the West Coast with the launching of the NBC Orange Network, also known as The Pacific Coast Network. This was followed by the debut October 18, 1931 of the NBC Gold Network, also known as The Pacific Gold Network. The Orange Network carried Red programming and the Gold Network carried programming from the Blue Network. Initially the Orange Network recreated Eastern Red programming for West Coast stations at KPO San Francisco, California. In 1936 the Orange Network name was dropped and affiliate stations became part of the Red Network. At this same time the Gold became part of the Blue Network. NBC also developed a network for shortwave radio stations in the 1930's called the NBC White Network.

In a major move in 1931, RCA signed crucial leases with the new Rockefeller Center management that resulted in it becoming the lead tenant of what was to become in 1933 its corporate headquarters, the RCA Building, at 30 Rockefeller Plaza. Under the terms of the lease arrangement, this included studios for NBC and theaters for the RCA-owned RKO Pictures. The deal was arranged through the Center's founder and financier, John D. Rockefeller, Jr., with the chairman of GE, Owen D. Young, and the president of RCA, David Sarnoff.

The Chimes

The famous three-note NBC chimes came about after several years of development. The three note sequence G-E-C may have been first heard

over WSB in Atlanta which used it for its own purposes until one day someone at NBC in New York heard the WSB version of the notes during a networked broadcast of a Georgia Tech football game and asked permission to use it on the national network. NBC started to use the three notes in 1931, and it was the first ever audio trademark to be accepted by the U.S. Patent and Trademark Office. A variant sequence was also used that went G-E-C-G, known as "the fourth chime" and used during wartime (especially in the wake of the Pearl Harbor bombing), on D-Day, and disasters. The NBC chimes were mechanized in 1932 by Richard H. Ranger of the Rangertone company; their purpose was to send a low level signal of constant amplitude that would be heard by the various switching stations manned by NBC and AT&T engineers, and thus used as a system cue for switching different stations between the Red and Blue network feeds. Contrary to popular legend, the three musical notes, G-E-C, did not originally stand for NBC's current parent corporation, the General Electric Company; although General Electric's radio station in Schenectady, New York, WGY, was an early NBC affiliate. General Electric did not have ownership of NBC until 1986. G-E-C is still used on NBC-TV and a variant with two notes preceding them is used on the MSNBC cable television network. NBC's radio branch no longer exists.

New Beginnings: The Blue Network Becomes ABC

From its creation in 1934, the Federal Communications Commission (FCC) had studied the monopolistic effects of network broadcasting on the industry, and found that NBC's two networks and their owned-and-operated stations dominated audiences, affiliates and advertising dollars in American radio. In 1939 the FCC ordered RCA to divest itself of one of the two networks; RCA fought the divestiture order, but divided NBC into two companies in 1940 in case an appeal was lost. The Blue network became the "NBC Blue Network, Inc." (now as ABC) and the NBC Red became "NBC Red Network, Inc." In January, 1942, the two networks had their operations formally divorced, and the Blue Network was referred to on the air as either "Blue" or "Blue Network," with its official corporate name being Blue Network Company, Inc. NBC Red, on the air, became known as simply NBC.

With the loss of the final appeal before the United States Supreme Court in May, 1943, RCA sold Blue Network Company, Inc. for \$8 million to Lifesavers magnate Edward J. Noble, completing the sale in October, 1943. For his money, Noble got the network name, leases on land-lines and the New York studios, two-and-a-half stations (WJZ in Newark/New York, KGO in San Francisco and WENR in Chicago which shared a frequency with "Prairie Farmer" station WLS) and about 60 affiliates. Noble wanted a more memorable name for the network; in 1944 he acquired rights to the name "American Broadcasting Company" from George Storer and the Blue Network became ABC, with the official name change announced on June 15, 1945, after the sale was completed.

(For a detailed description of the events leading up to the 1943 sale of the NBC Blue Network, and its 1943-5 history, see Blue Network.)

Defining Radio's Golden Age

In the golden days of network broadcasting, 1930 to 1950, NBC was the pinnacle of American radio. NBC broadcast radio's earliest mass hit, Amos 'n' Andy, beginning in 1926-27 in its original fifteen-minute serial format; the show set a standard for nearly all serialised programming in the original radio era, whether for comedies or soap operas, and its appeal--from the two struggling title characters--landed a broad audience especially during the height of the Great Depression.

NBC soon became home to many of the most popular performers and programs on the air: Al Jolson, Jack Benny, Edgar Bergen, Bob Hope, Fred Allen, and Burns & Allen called NBC home, as did Arturo Toscanini's NBC Symphony (which the network itself helped him create), and as did such programs as Vic & Sade, Fibber McGee & Molly, The Great Gildersleeve (arguably broadcasting's first spin-off program, the title character having been a hit on Fibber McGee & Molly for several seasons), One Man's Family, Ma Perkins, Death Valley Days, and others. NBC stations were often the most powerful, or occupied clear-channel frequencies so that they were heard nation-wide.

But in the late 1940s, in large part because NBC declined to allow them to use their own production companies for tax breaks, whereby rival CBS was willing, many NBC stars--beginning with Jack Benny, by then the nation's top radio star---jumped to CBS beginning in 1948-49. (It was not uncommon in the earlier radio years for stars and programs to hop between networks when their short-term contracts expired.)

In addition, a number of NBC stars began moving toward television, including comedian Milton Berle (whose early Texaco Star Theater would become television's first major defining popular hit) and conductor Arturo Toscanini. Toscanini made his ten television appearances on NBC between 1948 and 1952.

Aiming to keep classic radio alive as television matured, and to challenge CBS's Sunday night lineup---much of which had jumped with Jack Benny (who still reigned on Sunday nights)--NBC sanctioned The Big Show in November 1950. This was a 90-minute variety show that updated radio's earliest musical variety style with sophisticated comedy and dramatic presentations, featured stage legend Tallulah Bankhead as its hostess, and lured some of America's most prestigious entertainers (including Fred Allen, Groucho Marx, Lauritz Melchior, Ethel Barrymore, Louis Armstrong, Ethel Merman, Bob Hope, Douglas Fairbanks, Jr. and Ella Fitzgerald, among others). But The Big Show's initial success didn't last despite critics' praises; the show endured only two years, with NBC said to lose a million dollars on the project.

NBC's last major radio programming push, in 1955, was Monitor, a continuous, all-weekend

mixture of music, news, interviews and features with a variety of hosts including such well-known television personalities as Dave Garroway, Hugh Downs, Ed McMahon, Joe Garagiola and Gene Rayburn. The potpourri also tried to keep vintage radio alive in featur-ing segments from Jim and Marian Jordan (in character as Fibber McGee and Molly), Peg Lynch's dialogic comedy Ethel & Albert (Lynch and Alan Bunce), and iconoclastic satirist Henry Morgan, among others. Monitor was a success for a number of years, but after the mid-1960s, local stations, especially in larger markets, became increasingly reluctant to break from their established formats to run non-con-forming network programming. After Monitor went off the air in early 1975, there was little left of NBC network radio beyond hourly news-casts and news-related features.

Television

For many years NBC was closely identified with David Sarnoff, who used it as a vehicle to sell consumer electronics. It was Sarnoff who ruthlessly stole innovative ideas from competitors, using RCA's muscle to prevail in the courts. RCA and Sarnoff had dictated the broadcasting standards put in place by the FCC in 1938, and stole the spotlight by introducing all-electronic television to the public at the 1939–40 New York World's Fair, simultane-ously initiating a regular schedule of programs on the NBC-RCA television station in New York City. President Franklin Delano Roosevelt appeared at the fair, before the NBC cameras, becoming the first U.S. president to appear on television on April 30, 1939. An actual, off-the-monitor photograph of the FDR telecast can be viewed here. The broadcast was transmitted by NBC's New York television station W2XBS Channel 1 (now WNBC-TV channel 4) and was seen by about 1,000 viewers within the sta-tion's roughly 40-mile coverage area from their Empire State Building transmitter location. The next day, May 1, four models of RCA televi-sion sets went on sale to the general public in various New York City department stores, pro-moted in a series of splashy newspaper ads. It is to be noted that DuMont (and others) actually offered the first home sets in 1938 in anticipa-tion of NBC's announced April 1939 start-up. Later in 1939, NBC took its cameras to profes-sional football and baseball games in the New York City area, establishing many "firsts" in the history of television. Actual NBC "network" broadcasts (more than one station) began about this time with occasional special events — such as the British King and Queen's visit to the New York World's Fair — being seen in Philadel-phia (over the station which would become WPTZ, now KYW) and in Schenectady (over the station which would become WRGB), two pioneer stations in their own right. The most ambitious NBC television "network" program of this pre-war era was the telecasting of the Republican National Convention in 1940 from Philadelphia, which was fed live to New York and Schenectady. However, despite major promotion by RCA, television set sales in New York in the 1939-1940 period were disappoint-ing, primarily due to the high cost of the sets, and the lack of compelling regular program-

ming. Most sets were sold to bars, hotels and other public places, where the general public viewed special sporting and news events.

NBC's experimental New York City station was licensed for commercial telecasts beginning on July 1, 1941, adopting the call letters WNBT (it is now WNBC-TV). The first official com-mercial on that day was for Bulova Watches, seen just before the start of a Brooklyn Dodgers telecast. Limited programming continued until the U.S. entered World War II. Telecasts were curtailed in the early years of the war, then expanded as NBC began to prepare for full service upon the war's end. On VE-Day, 1945, WNBT broadcast hours of news cover-age, and remotes from around New York City. This event was pre-promoted by NBC with a direct-mail card sent to television set owners in the New York area. At one point, a WNBT camera placed atop the marquee of the Hotel Astor panned the crowd below celebrating the end of the war in Europe. It was, by all reports, a thrilling prelude of things to come as televi-sion began its rapid ascent into the American household. After the war ended, development of television soared ahead and the NBC television network grew from its initial post-war lineup of four stations. The World Series of 1947 featured two New York teams (Yankees and Dodgers) and local TV sales boomed, since the games were telecast in New York. Stations along the East coast and Midwest were gradually connected by coaxial cable in the 1940s until September 1951, when the first transcontinental telecasts took place.

The early 1950s brought massive success for NBC in the new medium, as it launched televi-sion's first superstar in Milton Berle, whose antics on the The Texaco Star Theater drew massive audiences. Also, the network launched Today and The Tonight Show, which would bookend the broadcast day for over fifty years, continuing to this day to draw more eyes than the comparable offerings of other networks.

While rivals CBS and DuMont also offered color broadcasting plans, RCA convinced a waffling FCC that its color system should prevail, and in December 1953 the FCC agreed; the NBC network was to begin offering color programming within days of the FCC's deci-sion. NBC began broadcasting certain shows in color in 1954, and the first NBC show to air all episodes in color, The Marriage, was shown that summer. In 1956 during a National As-sociation meeting in Chicago, NBC announced that their Chicago TV station — WNBQ (now WMAQ-TV), was the first color TV station in the nation (at least six hours of color broadcasts a day). By 1963, most of NBC's prime time schedule was in color; without television sets to sell, rival networks followed more slowly, finally committing to color in the 1965-66 sea-son. Days of Our Lives was the first soap opera to premiere in color.

See also

NBC News NBC Sports TNBC Must See TV MSNBC NBC Studios NBC Productions List of programs broadcast by NBC List of shows previously aired by NBC List of NBC affiliates, arranged by market List of NBC affiliates, arranged by state List of NBC slogans List of NBC personalities NBC chimes NBC pages

Survivor is an American version of the Survivor reality television game show based on the Swedish television series Expedition Robinson originally created in 1992 by Charlie Parsons.

The show is based on stranding a group of strangers as one or more tribes in a remote loca-tion, where they must fend for food, water, fire, and shelter for themselves, while competing in challenges to earn rewards and immunity from being voted off by the tribe in progressive eliminations; the last challenger remaining at the end of the competition wins the one mil-lion US\$ prize and title of Sole Survivor. The American series is hosted by former game show emcee and news reporter, Jeff Probst. Produced by Mark Burnett, it currently airs first on the CBS television network and syndication to other cable networks.

The American version has been very successful, often rating amongst the top ten most watched shows each television season. It is commonly considered the mother of American reality TV because it was the first highly-rated and profit-able reality show on broadcast television in the USA. The show is currently in its fifteenth season; on October 6th, 2007 CBS announced that Survivor would run for at least two more seasons, bringing the show to its 17th season.

Format and Rules

The first US season of Survivor followed the same general format as the Swedish series, but since then, the show has introduced several twists to the core rules to keep players on guard in newer seasons from relying on strategies present in previous seasons. These changes have included tribal switches, seasons starting with more than two tribes, the ability to exile a player from their tribe for a short time, and a hidden immunity idol that a player can use to save themselves at the tribal vote.

Controversies and legal action

Turmoil between players is commonplace for any reality series, but Survivor has had a few instances which went beyond mere intertribal squabbles. More recently, there have been de-bates, some even prior to the series's premiere, regarding the formatting of the show:

In February 2001, Borneo player Stacey Still-man filed a lawsuit claiming producers inter-fered in the process of the game by persuading two members of her tribe (Sean Kenniff and Dirk Been) to vote her off instead of Rudy Boesch. Been supported her allegations. Mark Burnett countersued Stillman for US\$5 million. The case was eventually settled out of court.

Colby Donaldson removed corals from the Great Barrier Reef, a crime resulting in a fine of AU\$110,000. Technically, he should have been

disqualified on Episode 9 due to breaking the local law. The helicopter involved with the re-ward also flew around sea bird rookeries. When this episode aired in Australia, the commercial breaks featured advertisements that stated removing coral from the Great Barrier Reef is illegal and results in a fine.

Graphic violence against living animals has occasionally been shown on the program, to the outrage of animal-rights groups. In an episode from Survivor: Vanuatu, the women's tribe, the Yasur, was filmed killing a live chicken with a spearheaded object; they also cooked the chicken's eggs. During an episode of Survivor: Australia, members of the Kucha tribe were shown hunting and killing a wild pig.

At the trivia immunity challenge for Africa's final four players, host Jeff Probst asked which female player in their season had no piercings. Kim Johnson answered Kelly Goldsmith, got the point, and went on to win the challenge, which pushed her to third and ultimately (after another immunity win) second place. Tom Buchanan was eliminated. Months later, the cast and producers (who were preparing for the live finale and reunion) watched the episode backstage. During the rebroadcast of the chal-lenge, Lindsey Richter shouted to the TV that she had no piercings. Lex van den Berghe's answer had been Lindsey, yet the show had not awarded him a point, thus significantly chang-ing the outcome of the game (van den Berghe was eliminated in third place). CBS later paid van den Berghe and Buchanan a settlement.

In the fifth episode of the All-Star season, a naked Richard Hatch may or may not have come into contact with Sue Hawk after she blocked his path during an immunity challenge. Hatch was voted out that day for other reasons; Hawk quit the game a few days later (episode six). Hawk considered filing a lawsuit against the parties involved, but appeared with Hatch on The Early Show the morning after the sixth episode aired, stating she opted out of legal action because CBS had helped her "deal with the situation".

In order to be sure to win a Reward Challenge in which the castaways competed to win a visit from their friends or loved ones, Pearl Islands Survivor Johnny "Fairplay" Dalton conspired beforehand with friend Dan Fields in what has been described by Probst as the greatest lie on Survivor to date. Fields told Dalton that his grandmother, Jean Cooke, had died, in order to win sympathy from his tribemates and subse-quently the reward. In reality, Cooke had not died, a fact that only emerged to his tribemates

once the episode had aired. When the show staff heard about Cooke's "death," they called Dalton's family to offer condolences, only to have Cooke herself answer the phone. Dalton admitted in confessional after the challenge that his grandmother was alive and "probably watching Jerry Springer right now." On that season's reunion show, Jeff Probst had a short interview with Cooke, who was indeed alive and well.

Rupert Boneham, originally on Survivor: Pearl Islands and then part of Survivor: All-Stars was an extremely popular player with televi-sion audiences, but finished eighth and fourth, respectively, in his appearances on the show. As part of Survivor: All-Stars, a special Survivor: America's Tribal Council contest for the 18 players was created, where the winner would be selected by the viewing audience and would receive \$1 million US prize; Rupert won this prize, unsurprisingly, with more than 80% of the votes cast. Many long-time Survivor fans saw this as a way of diluting the overall concept of the show, that instead of outwitting, outplay-ing and outlasting your fellow tribe members to win the game, a player could now play specifically to gain popularity with audience of the show, regardless of how well he played the game, and still would be rewarded with a large prize.

Richard Hatch, the winner of the first season of Survivor, was charged and found guilty in Janu-ary 2006 of failing to report his winnings to the IRS to avoid taxes. He has been sentenced to four years, three months in prison.

The 13th season of Survivor, known as Survi-vor: Cook Islands, began with tribes grouped according to race. Host Jeff Probst claims the choice "came from the criticism that Survivor was not ethnically diverse enough."Several long-term sponsors, including Campbell's Soup, Procter & Gamble, Home Depot, Coca Cola,

Reality television is a genre of television programming which presents purportedly unscripted dramatic or humorous situa-tions, documents actual events, and fea-tures ordinary people instead of profes-sional actors.

Although the genre has existed in some form or another since the early years of television, the term reality television is most commonly used to describe programs produced since 2000. Documentaries and nonfictional programming such as the news and sports shows are usually not classified as reality shows.

Reality television covers a wide range of pro-gramming formats, from game or quiz shows which resemble the frantic, often demeaning shows produced in Japan in the 1980s and

and General Motors. dropped their support of the show shortly after this announcement, leading to speculation that the decisions were in response to the controversy. Each of the com-panies has either denied the link or declined to comment. The controversy did attract the ire of certain community activists, such as Fernando Mateo.

Mark Burnett has also received criticism for "reenacting" scenes with actor "stand ins" which he claims were used to increase produc-tion value and did not affect the outcome.

The program angered its fan base when Jeff Probst revealed that Survivor: Fiji ignored the thousands of viewer applicants and instead used their own recruited players. It was revealed that Gary Stritesky was the only actual applicant chosen, while the rest used on the show were recruits. While Probst defended the process by claiming they wanted to find more “diverse” players, 10 of the recruits were from California (13 the previous season) and many were young unemployed actors and found in places like bars and MySpace.com. Many fans felt that going away from the original selection process of us-ing people of all ages from around the country produced inferior and uninteresting players. One example was Melissa McNulty, a Fiji recruit, who was unable to even make it to the island, quitting because of a panic attack.

At the Survivor: China reunion show, Denise Martin told producers and the audience her unfortunate story of being demoted to a janitor from a lunch lady because of the distraction she was to students. Because of her claimed misfor-tune, Mark Burnett awarded Martin \$50,000. Martin ultimately recanted the story after the school district publicly stated that she had taken the custodial position before appearing on the show. She also decided to donate the \$50,000 to charity.

1990s (a modern example is Gaki no tsukai), to surveillance- or voyeurism-focused productions such as Big Brother.

Critics say that the term "reality television" is somewhat of a misnomer. Such shows frequent-ly portray a modified and highly influenced form of reality, with participants put in exotic locations or abnormal situations, sometimes coached to act in certain ways by off-screen handlers, and with events on screen sometimes manipulated through editing and other post-

production techniques.

Origins Of Reality Television

Precedents for television that portrayed people in unscripted situations began in the 1940s. Debuting in 1948, Allen Funt's Candid Camera, (based on his previous 1947 radio show, Candid Microphone), broadcast unsuspecting ordinary people reacting to pranks. It has been called the "granddaddy of the reality TV genre." Debuting in the 1950s, game shows Beat the Clock and Truth or Consequences, involved contestants in wacky competitions, stunts, and practical jokes. In 1948, talent search shows Ted Mack's Ori-ginal Amateur Hour and Arthur Godfrey's Talent Scouts featured amateur competitors and audi-ence voting. The Miss America Pageant, first broadcast in 1954, was a competition where the winner achieved status as a national celebrity.

The radio series Nightwatch (1954-1955), which tape-recorded the daily activities of Cul-ver City, California police officers, also helped pave the way for reality television.

First broadcast in the United Kingdom in 1964, the Granada Television series Seven Up!, broadcast interviews with a dozen ordinary seven-year olds from a broad cross section of society and inquired about their reactions to everyday life. Every seven years, a film documented the life of the same individuals in the intervening years, titled Seven Plus Seven, 21 Up, etc. The series was structured simply as a series of interviews with no element of plot. However, it did convey the individuals' charac-ter development over time.

The first reality show in the modern sense was the 12-part 1973 PBS series An Ameri-can Family, which showed a nuclear family going through a divorce. In 1974 a counterpart program, The Family, was made in the UK, following the working class Wilkins family of Reading. In 1992, Australia saw Sylvania Waters, about the nouveau riche Baker-Donaher family of Sydney. All three shows attracted their share of controversy.

Another forebear of modern reality television were the late 1970s productions of Chuck Bar-ris: The Dating Game, The Newlywed Game, and The Gong Show, all of which featured participants who were eager to sacrifice some of their privacy and dignity in a televised competition.

Reality television as it is currently understood, though, can be traced directly to several televi-sion shows that began in the late 1980s and early 1990s. COPS, which first aired in the spring of 1989 and came about partly due to the need for new programming during the 1988 Writers Guild of America strike, showed police officers on duty apprehending criminals; it in-troduced the camcorder look and cinéma vérité feel of much of later reality television. The series Nummer 28, which aired on Dutch televi-sion in 1991, originated the concept of putting strangers together in the same environment for an extended period of time and recording the drama that ensued. It also pioneered many of

the stylistic conventions that have since become standard in reality television shows, including a heavy use of soundtrack music and the inter-spensing of events on screen with after-the-fact "confessionals" recorded by cast members, that serve as narration. One year later, the same concept was used by MTV in their new series The Real World; Nummer 28 creator Erik La-tour has long claimed that The Real World was directly inspired by his show. Changing Rooms, a British TV show that began in 1996, showed couples redecorating each others' houses, and was the first reality show with a self-improvement or makeover theme. The Swedish TV show Expedition Robinson, created by TV producer Charlie Parsons, which first aired in 1997, added to the Nummer 28/Real World template the idea of competition and elimina-tion, in which cast members/contestants battled against each other and were removed from the show until only one winner remained.

Analysis and criticism

Instant celebrity

Reality television has the potential to turn its participants into national celebrities. This is most notable in talent-search programs such as the Idol series, which has spawned music stars in many of the countries in which it has aired. Many other shows, however, such as Survivor and Big Brother, have made at least tempo-rary celebrities out of their participants; some participants have then been able to parlay this fame into media careers. For example, Elisabeth Hasselbeck, a contestant on Survivor: The Aus-tralian Outback, later became a host on morning talk show The View; and Kristin Cavallari, who appeared on Laguna Beach: The Real Orange County, has gone on to become a television host and actress.

Reality TV contestants are sometimes derided as "Z-list celebrities", who have done nothing to warrant their newfound fame.

Political impact

Reality television's global success has been, in the eyes of some analysts, an important political phenomenon. In some authoritarian countries, reality television voting represents the first time many citizens have voted in any free and fair wide-scale elections. In addition, the frankness of the settings on some reality shows present situations that were formerly taboo in certain orthodox cultures, like the pan-Arab version of Big Brother, which shows men and women living together. Journalist Matt Labash, noting both of these issues, wrote that "the best hope of little Americas developing in the Middle East could be Arab-produced reality TV." Similarly, in China, after the finale of the 2005 season of Super Girl (the local version of Pop Idol) drew an audience of around 400 million people, and 8 million text message votes, the state-run English-language newspaper Beijing Today ran the front-page headline "Is Super Girl a Force for Democracy?" The Chinese government has threatened to censor the show, citing both its democratic nature and its excessive vulgarity, or "worldliness".

See also

List of reality television programs
 Bunim/Murray Productions
 Endemol
 John Langley

MTV (Music Television) is an American cable television network based in New York City.

Launched on August 1, 1981, the original purpose of the channel was to show music videos. Today, MTV broadcasts a variety of pop culture, youth culture, music videos and reality television shows aimed at older adolescents and young adults.

Since its premiere, MTV has revolutionized the music industry. Slogans such as "I want my MTV" became embedded in public thought, the concept of the VJ (video jockey) was popular-ized, the idea of a dedicated video-based outlet for music was introduced, and both artists and fans found a central location for music events, news, and promotion. MTV has also been ref-erenced countless times by musicians, other TV channels and shows, films and books.

MTV has spawned a handful of sister channels in the U.S. and dozens of affiliated international channels around the world. MTV's moral influ-ence on young people, including examples of censorship and social activism on the channel, has been the subject of debate for years. MTV's choice to focus on non-music programming has also been contested relentlessly, demonstrat-ing the channel's continued impact on popular culture.

Previous Concepts

MTV's pre-history began in 1977, when Warner Cable (a division of Warner Communications and an ancestor of WASEC, Warner Satellite Entertainment Company) launched the first two-way interactive cable TV system, Qube, in Columbus, Ohio.

The Qube system offered many specialized channels, including a children's channel called Pinwheel which would later become Nickelode-on. One of these specialized channels was Sight On Sound, a music channel that featured con-cert footage and music oriented TV programs; with the interactive Qube service, viewers could vote for their favorite songs and artists.

Pittman had test driven the music format by producing and hosting a 15 minute show, Album Tracks, on WNBC, New York, in the late 1970s. Pittman's boss, WASEC COO John Lack, had shepherded a TV series called Pop-Clips, created by former Monkee-turned solo artist Michael Nesmith, the latter of whom by the late 1970s was turning his attention to the music video format.

HBO also had a 30 minute program of music videos, called Video Jukebox, that first aired around the time of MTV's launch and would last until late 1986. Also around this time, HBO would occasionally play one or a few music videos between movies.

It should also be noted that in his book The Mason Williams FCC Rapport, Mason Williams

states that he pitched an idea to CBS for a TV show that featured "video-radio" where disc jockeys would play avant-gard art set to music on the air. CBS quashed the idea, but Williams set his own composition "Classical Gas" to music on the Smothers Brothers Comedy Hour, where he was head writer. The book where this claim is made was first published in 1971, ten years before MTV first came on the air.

Music Television debuts

On August 1, 1981, at 12:01 a.m., MTV: Music Television launched with the words "Ladies and gentlemen, rock and roll," spoken by original COO John Lack. Those words were immediate-ly followed by the original MTV theme song, a crunching guitar riff written by Jonathan Elias and John Petersen, playing over a montage of the Apollo 11 moon landing. MTV produc-ers Alan Goodman and Fred Seibert used this public domain footage as a conceit, associating MTV with the most famous moment in world television history.

Appropriately, the first music video shown on MTV was "Video Killed the Radio Star" by The Buggles. The second video shown was Pat Benatar's "You Better Run". Sporadically, the screen would go black when someone at MTV inserted a tape into a VCR.

At launch time, the official subscriber count across the U.S. was 3,000,000 (the actual num-ber was 500,000), but the immediate impact would have argued that every young adult's television in the country was tuned to MTV.

9/11

On September 11, 2001, when the 9/11 at-tacks on the World Trade Center occurred , MTV (along with sister cable channel VH1) suspended all of it's programming and went into a simulcast of sister network CBS's news cover-age of the events until 11:00 pm that night. The network later joined a plethora of other broad-cast media that took part in a Celebrity Telethon to benefit the 9/11 victims.

Social Activism

MTV has a long history of promoting social, political, and environmental activism in young people.

In 1992, MTV started a pro-democracy campaign called Choose or Lose, to encour-age up to 20 million people to register to vote, and hosted a town hall forum for Bill Clinton. In the 1990s and early 2000s, MTV promoted annual campaigns known as Fight For Your Rights, with the slogan "Speak Out/Stand Up Against Violence", to bring forth awareness on America's crime, drugs and violence issues.

Tony Hawk

On April 6, 2001, MTV voluntarily ceased regular programming for 24 hours as part of the year's hate crimes awareness campaign. On that night, MTV aired a made-for-TV movie Anatomy of a Hate Crime, based on a true story of the 1998 murder of 21-year old Matthew Shepard, a gay college student. After the film and a discussion, MTV went dark and showed names of hate crime victims.

MTV also aired a documentary covering a trip by the punk rock band Sum 41 to the Democrat-ic Republic of Congo, documenting the conflict there. The group ended up being caught in the midst of an attack outside of the hotel and were subsequently flown out of the country.

In recent years, other politically diverse pro-grams on MTV have included True Life, which documents people's lives and problems, and MTV News specials, which center on very cur-rent events in both the music industry and the world. One special show covered the 2004 U.S. Presidential election, airing programs focused on the issues and opinions of young people, including a program where viewers could ask questions of Senator John Kerry. MTV worked with P. Diddy's "Vote or Die" campaign, de-signed to encourage young people to vote.

MTV's most recent activism campaign is think MTV, which discusses current political issues

Jackass: The Movie, is an American film directed by Jeff Tremaine and was re-leased on October 25, 2002 with the ta-gline “Do not attempt this at home.”

It is a riskier continuation of the stunts and pranks by the various characters of the MTV television series Jackass, which had com-pleted its series run by this time. The film was produced by MTV Films and released by Paramount Pictures.

The show features all of the original Jackass cast, including Johnny Knoxville, Steve-O, Chris Pontius, Dave England, Bam Margera, Preston Lacy, Ryan Dunn, Ehren McGhehey,

such as same-sex marriage, U.S. elections, and war in other countries. The slogan of the program is "Reflect. Decide. Do." As part of think MTV, the channel also airs a series of pro-environmental ads called Break The Addiction, as a way of encouraging their viewers to find ways to use less fossil fuels and energy.

Mtv Around The World

MTV (UK) operates 16 channels solely in the United Kingdom. MTV Networks and Viacom have launched numerous native-language MTV-branded music channels to countries worldwide. These channels include, but are not limited to, MTV India, MTV Greece, MTV Canada, MTV Ireland, MTV Russia, MTV Spain, MTV Austria, MTV France, MTV Germany, MTV Europe, MTV Portugal, MTV Adria, MTV Hungary, MTV Denmark, MTV Finland, MTV Italy, MTV Netherlands, MTV Norway, MTV Poland, MTV Arabia, MTV Romania, MTV Lithuania, MTV Latvia, MTV Estonia, MTV Sweden, MTV Asia, MTV Japan, MTV China, MTV Korea, MTV Philippines, MTV Taiwan, MTV Turkey, MTV Pakistan, MTV India, MTV Latin America, MTV Brazil, MTV Australia, MTV New Zealand, MTV Ukraine, and MTV Base in Africa. Also an International version of MTV known as MTV International was shown on the Internet and the owner of the video game internet site Gametrailers.com.

and Jason "Wee Man" Acuña. Brandon DiCa-millo appears but is not a main cast member like in the show.

Other regular Jackass personalities who made appearances include Rake Yohn, Manny Puig, Phil Margera, April Margera . In addition, Rip Taylor, Henry Rollins, Spike Jonze, boxing star Butterbean, Mat Hoffman, and Tony Hawk make cameo appearances.

Tony Hawk is a professional skateboarder. He is considered the most influential skat-er in modern vertical skateboarding.

He is credited with the invention of many aerial skateboard tricks including the Stalefish, Madonna, and McHawk, and over 80 others, but is most famous for being the first to land the 900 (two and a half rotations—900°—in the air before landing back on the pipe) during the

televised June 27, 1999 X Games, for which he received an enormous amount of attention. He was also the second skateboarder to land a McTwist. It marked the next level of his rise to fame, solidifying his status as a household name. He retired from competitive skateboard

See also

List of MTV channels

List of programs broadcast by MTV

List of MTV award shows

List of MTV VJs

Censorship on MTV

MTV News

MTV Networks

First music videos aired on MTV

MTV Generation

MTV Buzz Bin

The Tube Music Network

Cable Music Channel

Night Tracks

MuchMusic

Fuse TV

Coolhunting

MTV slogans on Wikiquote

ing afterwards, but continues to skate and perform at demos.

Biography

Tony Hawk is the son of Nancy (homemaker / college professor) and Frank Hawk (retired U.S. Navy officer/small appliance salesman). Tony Hawk is the youngest of 4 children; he has one brother, Steve, and two sisters, Lenore and Patricia.

In his autobiography, Recilli described himself as a "hyperactive demon child" -- frustrated, unfocused, and prone to flying off into rages. Tony Hawk was nine years old when his brother changed his life by giving him a blue fiberglass banana board. His father built a skating ramp in the backyard, in hopes that skateboarding would be an outlet for young Tony's energy.

Personal

Tony was married to Cindy from April 1990 to 1995. They have a son, Hudson Riley Hawk (6 Dec 1992) who they named for Tony's ancestor. Cindy was a manicurist and skateboarder for Hawk's Element Skateboards].

Hawk was married to Olivia Mazur from 28

Sept 1996 - 2004. They had two sons, Spencer (26 July 1999) and Keegan (18 March 1999) (twins).

Just one year after they started dating, Hawk proposed to Lhotse Merriam. Merriam is the former Vice President of the International Free Skiers Association; the former President of Method Media & Marketing Inc.; and the former owner of Clover Lingerie & Gifts LLC. Hawk married Lhotse Merriam on 12 Jan 06 on the heart shaped island of Tavarua, Fiji. Merriam's favorite group Rancid played at their wedding. While there, Druke the Fijian Chief of Tavarua, requested Hawk give a private skate demo where two onlookers held a piece of plywood as a makeshift wall to wall ride on a tennis court wall .

Tricks Invented

Airwalk
Stal Fis
Gymnast Plant
Madonna
Frontside cab
Ollie 540
Frontside blunt
720
Varial 720

Birdhouse Skateboards is a skateboard company formed by ex-Powell Peralta pros Tony Hawk and Per Welinder in 1992.

It is part of the Blitz Distribution family Birdhouse makes decks and wheels, as well as clothing and accessories.

Their last video, The End, was released in 1998. They are currently filming a new video titled The Beginning (film) slated to be released in 2007.

The End is a 1998 Birdhouse Productions live action documentary film starring Team Birdhouse.

It was made under the direction of Jamie Mosberg, who also produced and edited it. Skateboarders featured in the video include:

Steve Berra, ***Ali Cairns*** (who was an amateur skateboarder at the time of filming), ***Tony Hawk***, ***Heath Kirchart*** (who also had a part in writing some of the scenes he was involved with), ***Jeremy Klein*** (who also had a part in writing some of the scenes he was involved with), ***Bucky Lasek***, ***Jeff Lenoce*** (who was an amateur skateboarder at the time of filming), ***Rick McCrank***, ***Andrew Reynolds***, ***Willy***

Santos, ***Brian Sumner*** (who was an amateur skateboarder at the time of filming). It also stars two actresses from the porno-graphic movie industry - Janine Lindemulder and Kobe Tai.

Plot

There is no real plot that runs through out this documentary. Instead, each skater was placed into their segment to showcase their skills. Some of the skaters also incorporated a short story into their segments.

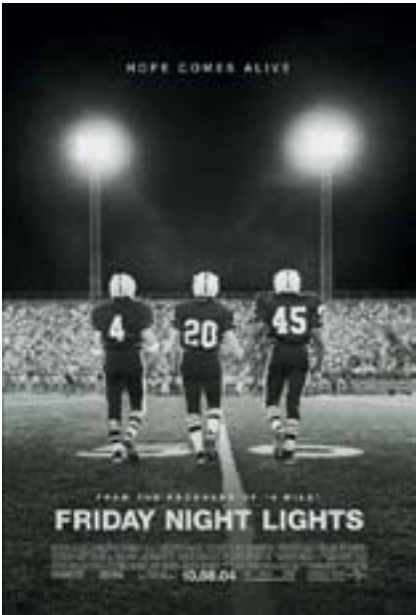


Start, Louisiana

Adapted from Wikipedia's LA parish.

Tim McGraw :

Tim McGraw performing for the United States Air Force. U.S. Air Force photo by Budd Butcher.



Friday Night Lights :
Movie Poster.

NBC :
NBC Headquarters. GE Building, New York City.



MTV :
An early MTV station ID. from 1987, used for illustration of station IDs



Survivor :
Shows the locations of the US series of Survivor, countries marked in orange, different seasons numbered.



Tony Hawk:
Tony Hawk and Lhotse Merriam by David Shankbone.



The End:
Cover of DVD video of The End (Birdhouse film).

Esperanto	
Republic of Rose Island	
Principality of Sealand	
Andrew Cunanan	
FBI Ten Most Wanted Fugitives	
Hearts	
Negative and Non-Negative Numbers	101
Fibonacci	
Fibonacci Number	
Golden Spiral	
Spiral Galaxy	
Sun	

Esperanto is the most widely spoken constructed international auxiliary language.

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The name derives from Doktoro Esperanto, the pseudonym under which L. L. Zamenhof published the first book of Esperanto, the Unua Libro, in 1887. The word "esperanto" means 'one who hopes'. Zamenhof's goal was to create an easy and flexible language as a universal second language to foster peace and international understanding.

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Although no country has adopted the language officially, it has enjoyed continuous usage by a community estimated at between 100,000 and 2 million speakers for over a century. By most estimates, there are approximately a thousand native speakers.

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Today, Esperanto is employed in world travel, correspondence, cultural exchange, conventions, literature, language instruction, television (Internacia Televido), and radio broadcasting. Some state education systems offer elective courses in Esperanto, and in one university, the Akademio Internacia de la Sciencoj in San Marino, Esperanto is the language of instruction. There is evidence that learning Esperanto may provide a good foundation for learning languages in general. (See Propaedeutic value of Esperanto.)

Esperanto is the most widely spoken constructed international auxiliary language.

History

Esperanto was developed in the late 1870s and early 1880s by ophthalmologist Dr. Ludovic Lazarus Zamenhof, an Ashkenazi Jew from Bialystok, now in Poland and previously in the Polish-Lithuanian Commonwealth, but at the time part of the Russian Empire. After some ten years of development, which Zamenhof spent translating literature into the language as well as writing original prose and verse, the first Esperanto grammar was published in Warsaw in July 1887. The number of speakers grew rapidly over the next few decades, at first primarily in the Russian empire and Eastern Europe, then in Western Europe and the Americas, China, and Japan. In the early years speakers of Esperanto kept in contact primarily through correspondence and periodicals, but in 1905 the first world congress of Esperanto speakers was held in Boulogne-sur-Mer, France. Since then world congresses have been held in different countries every year, save for during the two World Wars. Since the Second World War, they have been attended by an average of over 2000 people, and by up to 6000.

Esperanto and 20th-century totalitarianism
As a potential vehicle for international understanding, Esperanto attracted the suspicion of many totalitarian states. The situation was especially bad in the Soviet Union and Nazi Germany.

Esperanto is the most widely spoken constructed international auxiliary language.

Soviet leader Joseph Stalin denounced Esperanto as "the language of spies" and had Esperantists executed. The use of Esperanto was illegal from 1937 to 1956.

Esperanto is the most widely spoken constructed international auxiliary language.

In Germany, there was the additional motivation that Zamehof was a Jew. In his work Mein Kampf, Hitler mentioned Esperanto as an example of a language that would be used by an international Jewish Conspiracy once they achieved world domination. Esperantists were executed during the Holocaust, with Zamenhof's family in particular singled out for execution.

Esperanto is the most widely spoken constructed international auxiliary language.

In 1950s United States, Senator Joseph McCarthy, known for his Anti-Communist speeches, considered knowledge of Esperanto to be "nearly synonymous" with sympathy towards Communism.

Esperanto is the most widely spoken constructed international auxiliary language.

Official Use

Esperanto has never been an official language of any recognized country, though there were plans at the beginning of the 20th century to establish Neutral Moresnet as the world's first Esperanto state, and the self-proclaimed artificial island micronation of Rose Island used Esperanto as its official language in 1968. In China, there was talk in some circles after the 1911 Xinhai Revolution about officially replacing Chinese with Esperanto as a means to dramatically bring the country into the twentieth century, though this policy proved untenable. In the summer of 1924, the American Radio Relay League adopted Esperanto as its official international auxiliary language, and hoped that the language would be used by radio amateurs in international communications, but actual use of the language for radio communications was negligible. Esperanto is the working language of several non-profit international organizations such as the Sennacieca Asocio Tutmonda, but most others are specifically Esperanto organizations. The largest of these, the World Esperanto Association, has an official consultative relationship with the United Nations and

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Useful phrases

Here are some useful Esperanto phrases, with IPA transcriptions:

Hello: *Saluton* /saˈluːton/
What is your name?: *Kiel vi nomiĝas?* /ki.ɐl vi noˈmi.dʒas/
My name is...: *Mi nomiĝas...* /mi noˈmi.dʒas/
How much?: *Kiom?* /ki.om/
Here you are: *Jen ĉi!*
Do you speak Esperanto?: *Ĉu vi parolas Esperanton?* /tʃu vi paˈro.las es.peˈran.ton/
I don't understand you: *Mi ne komprenas vin* /miˈne komˈpre.nas vin/
I like this one: *Mi ŝatas ĉiun ĉi!* /miˈʃa.tas ˈʃi.un ˈtʃi/ or *Ĉi tiu plaĉas al mi!* /tʃiˈʃi.u ˈpla.ʃas alˈmi/
Thank you: *Dankon!* /dan.kon/
You're welcome: *Ne dankinde!* /ne danˈkin.de/
Please: *Bonvolu!* /bonˈvo.lu/
Here's to your health: *Je via sano!* /jeˈvia ˈsa.no/
Bless you! /Gesundheit!: *Sanon!* /ˈsa.non/
Congratulations!: *Ĝratulon!* /gˈraːtu.lon/
Okay: *Bone!* /bo.ne/ or *Ĝuste!* /dʒus.te/
It is a nice day: *Estas bela tago!* /es.tas ˈbe.le ˈta.g o/
I love you: *Mi amas vin!* /mi ˈa.mas vin/
Goodbye: *Ĝis (la) (revido)!* /dʒis (la) (reˈvi.do)/
I would like a [one] beer, please: *Unu bieron, mi petas.* /u.nu biˈe.ron mi ˈpe.tas/
What is that?: *Kio estas tio?* /ki.o ˈes.tas ˈti.o/
That is... : *Tio estas...* /ti.o ˈes.tas/
How are you?: *Kiel vi (fartas)?* /ki.ɐl vi ˈfar.tas/
Good morning!: *Bonan matenon!* /bo.nan maˈte.non/
Good evening!: *Bonan vesperon!* /bo.nan vesˈpe.ron/
Good night!: *Bonan nokton!* /bo.nan ˈnok.ton/

The Republic of Rose Island (Esperanto: Respubliko de la Insulo de la Rozoj) was a short-lived micronation located on a man-made platform in the Adriatic Sea, 11 km (7 mi) off the coast of Rimini, Italy.

The Republic of Rose Island, 1968

In 1967, Italian engineer Giorgio Rosa funded the construction of a 400 square metre platform supported by nine pylons, and furnished it with a number of commercial establishments, including a restaurant, bar, nightclub, souvenir shop and a post office. Some reports also mention the presence of a radio station, but this remains unconfirmed.

The Republic of Rose Island, 1968

The artificial island declared independence on 24 June 1968, under the Esperanto name "Insulo de la Rozoj", with Rosa as self-declared President (both Esperanto rozo and Italian rosa mean "rose"). Soon afterwards Rose Island issued a number of stamps, including a stamp showing the location of Rose Island in the Adriatic Sea. The purported currency of the republic was the "Mill" and this appeared on the early stamp issues, although no coins or banknotes are known to have been produced. This denomination was translated into Esperanto as "Miloj" on later stamp issues (it is unrelated to the Esperantist currency spesmilo).

The Republic of Rose Island, 1968

Rosa's actions were viewed by the Italian government as a ploy to raise money from tour-

ists while avoiding national taxation. Whether or not this was the real reason behind Rosa's micronation, the Italian government's response was swift and heavy-handed: a group of four carabinieri and tax inspectors landed on the "Isola delle Rose" and assumed control. The platform's Council of Government is said to have sent a telegram, presumably to the Italian government, to protest the "violation of its sovereignty and the injury inflicted on local tourism by the military occupation", but this was ignored.

Soon afterwards the Italian Navy used explosives to destroy the facility - an act later portrayed on postage stamps issued by Rosa's "Government in exile".

The Principality of Sealand is an unrecognised statelike entity located on HM Fort Roughs, a former World War II Maunsell Sea Fort in the North Sea 10 km (six miles) off the coast of Suffolk, England, United Kingdom.

The Principality of Sealand, 1968

The Principality of Sealand, 1968

Since 1967, the facility has been occupied by former radio broadcaster and British Army Major Paddy Roy Bates, his associates and family, who claim that it is an independent sovereign state. External commentators generally classify Sealand as a micronation and it has been described as the world's best-known micronation.

The Principality of Sealand, 1968

Sealand is not recognised as a sovereign state by any United Nations member, and critics, citing court rulings in the United States and in Germany, have asserted that Roughs Tower has always remained under the jurisdiction of the United Kingdom.

The Principality of Sealand, 1968

History of HM Fort Roughs

The Principality of Sealand, 1968

In 1942, during World War II, HM Fort Roughs was constructed by the United Kingdom as one of the Maunsell Forts, primarily for defence against German mine-laying aircraft that might be targeting the estuaries that were part of vital shipping lanes. It comprised a floating pontoon base with a superstructure of two hollow towers joined by a deck upon which other structures could be added. The fort was towed to a position above the Rough Sands sandbar, where its base was intentionally flooded to allow it to sink to its final resting place on the sandbar. The location chosen was in international waters, approximately six miles from the coast of Suffolk, outside the then three-mile territorial water claim of the United Kingdom.

The Principality of Sealand, 1968

The facility (called Roughs Tower or HM Fort Roughs) was occupied by 150–300 Royal Navy personnel throughout World War II; not until well after the war, in 1956, were the last full-time personnel taken off HM Fort Roughs.

The Principality of Sealand, 1968

Occupation by Roy Bates and the establishment of Sealand

On September 2, 1967, the fort (with a habitable area of 550 m² (5920 sq ft) was occupied by Major Paddy Roy Bates, a British subject and pirate radio broadcaster, who ejected a competing group of pirate broadcasters. Bates intended to broadcast his pirate radio station Radio Essex from the platform.

The Principality of Sealand, 1968

In 1968, the Royal Navy entered what Bates claimed to be his territorial waters in order to service a navigational buoy near the platform. Michael Bates (son of Paddy Roy Bates) tried to scare the workmen off by firing warning shots from the former fort. As Bates was a British citizen at the time, he was summoned to court in England following the incident. The

court ruled that as the platform (which Bates was now calling "Sealand") was outside British jurisdiction, being beyond the then three-mile limit of the country's waters, the case could not proceed.

The Principality of Sealand, 1968

In 1975, Bates introduced a constitution for Sealand, followed by a flag, a national anthem, a currency (see Coins and postage stamps of Sealand) and passports.

The Principality of Sealand, 1968

Forcible takeover

The Principality of Sealand, 1968

In 1978, while Bates was away, the Prime Minister of Sealand, Professor Alexander G. Achenbach, and several German and Dutch citizens, staged a forcible takeover of Roughs Tower, holding Bates' son Michael captive, before releasing him several days later in the Netherlands. Bates thereupon enlisted armed assistance and, in a helicopter assault, retook the fortress. He then held the invaders captive, claiming them as prisoners of war. Most participants in the invasion were repatriated at the cessation of the "war," but Achenbach, a German lawyer who held a Sealand passport, was charged with treason against Sealand, and was held unless he paid DM 75,000 (more than US\$ 35,000). The governments of the Netherlands and Germany petitioned the British government for his release, but the United Kingdom disavowed all responsibility, citing the 1968 court decision. Germany then sent a diplomat from its London embassy to Roughs Tower to negotiate for Achenbach's release. Roy Bates relented after several weeks of negotiations and subsequently claimed that the diplomat's visit constituted de facto recognition of Sealand by Germany.

The Principality of Sealand, 1968

Following his repatriation, Achenbach established a "government in exile" in Germany, in opposition to Roy Bates, assuming the name "Chairman of the Privy Council." He handed the position to Johannes Seiger in 1989 due to illness. Seiger continues to claim - via his website - that he is Sealand's legitimate ruling authority.

The Principality of Sealand, 1968

Legal Status of Sealand

The claim that Sealand is an independent sovereign state is based on the following contentions:

- That when Paddy Roy Bates and his associates occupied Roughs Tower/HM Fort Roughs in 1967, it was located in inter

- national waters, outside the jurisdiction of the United Kingdom and all other sovereign states, thus constituting terra nullius which could be settled and claimed by a new State. (This is the basis of the claim for de jure legitimacy).

2.

That interactions by the UK and the German Governments and the occupants of Sealand/Roughs Tower constitute de facto recognition of the territory's sovereignty; a proposition denied by the States concerned. (This is the basis of the claim for de facto legitimacy).

3.

That a 1968 decision of an English court, in which it was held that Roughs Tower was in international waters and thus outside the jurisdiction of the domestic courts, is a further de facto recognition of Sealand's sovereignty.

In international law, the two most common schools of thought for the creation of statehood are the constitutive and declaratory theories of state creation. The constitutive theory was the standard nineteenth century model of statehood, and the declaratory theory was developed in the twentieth century to address shortcomings of the constitutive theory. In the constitutive theory, a state exists exclusively via recognition by other states. The theory splits on whether this recognition requires "diplomatic recognition" or merely "recognition of existence". No

other state grants Sealand official recognition, but it has been argued by Bates that negotiations carried out by Germany constituted "recognition of existence". In the declaratory theory of statehood, an entity becomes a state as soon as it meets the minimal criteria for statehood. Recognition by other states is purely "declaratory".

Legal Instruments

For a period, Sealand passports were mass-manufactured and sold widely (mostly to Eastern Europeans) by a Spanish-based group believed to be associated with the exile government under Seiger. These passports, which were not authorized by the Bates family, were linked to several high-profile crimes, including the murder of Gianni Versace (The false passport belonged to Torsten Reineck, the owner of the houseboat where Andrew Cunanan, Versace’s murderer, shot himself). Due to the massive quantity of illegal passports in circulation (estimated at 150,000), in 1997 the Bates family revoked all Sealand passports, including those that they themselves had issued in the previous thirty years.

In a 1990 court case in the United States regarding registering ships in Sealand (as a flag of convenience), the court ruled against allowing Sealand flagged vessels; the case was never contested by the Bateses.

August 31, 1969 - July 23, 1997

Andrew Phillip Cunanan was an American Serial killer who murdered five people, including fashion designer Gianni Versace, in a cross-country journey during a three-month period in 1997, ending with Cunanan’s suicide, at the age of 27.

On June 12, 1997, Cunanan became the 449th fugitive to be listed by the FBI on the FBI Ten Most Wanted Fugitives list, and became the first person from San Diego to be placed on that list.

Born in National City, California, Cunanan graduated from The Bishop's School in the La Jolla neighborhood of San Diego, California, in 1987.

Murders

The first murder was that of his friend Jeffrey Trail, a former US Naval Officer and propane salesman on April 27, 1997, in Minneapolis, Minnesota. The next victim was architect David Madson, who was found on the east shore of Rush Lake near Rush City, MN after the Minnesota Corrections Association Fishing Tournament on April 29, 1997 with gunshot wounds to the head. Police recognized a connection, as Trail's body had been found in Madson's Minneapolis loft apartment.

While the manhunt focused on Reese's truck, Cunanan hid in plain sight in Miami Beach, Florida, for months between his fourth and fifth murders. He went out mostly to gay nightclubs, and made little attempt to disguise his appearance. He even used his own name to pawn a stolen item, knowing that police routinely check pawn shop records for stolen merchandise. Finally, for his fifth murder he chose billionaire fashion designer Gianni Versace, who was killed on July 15, 1997.

Eight days later, on July 23, Cunanan committed suicide in the upstairs bedroom aboard a Miami houseboat apparently to avoid capture by the police, who finally discovered Reese's stolen truck nearby and obtained tips from neighbors that someone resembling Cunanan was living in the houseboat.

The gun used by Cunanan for some of the murders was a Taurus semi-automatic pistol in .40 S&W caliber, which had been left behind in California by first victim Jeff Trail when he relocated to the Midwest.

Motive

At the time of the crimes, there was much public and press speculation that Cunanan's motives were tied to a diagnosis of HIV infection; however, an autopsy found him to be HIV-negative. Cunanan was widely reported to have engaged in prostitution with older men ,

resulting in media speculation that some of his victims were former clients.

Personal Life

What is known about Andrew Cunanan is brief. His mother was white and his father Filipino. He spent money lavishly on himself (owing Neiman Marcus \$46,000 at his death and dealt drugs including cocaine and methamphetamine.

Cunanan frequented the gay neighborhoods in San Diego, Los Angeles, and San Francisco. Most who knew Cunanan described him as intelligent, articulate, vain, and charming. One partner described Cunanan's sexual tastes as "extreme." The same partner attested to Cunanan's like of violent and sadomasochistic pornography.

The FBI Ten Most Wanted Fugitives list arose from a conversation held in late 1949, during a game of Hearts between J. Edgar Hoover, Director of the United States Federal Bureau of Investigation, and William Kinsey Hutchinson, International News Service (the predecessor of the United Press International) Editor-in-Chief, who were discussing ways to promote capture of the FBI’s “toughest guys.”

This discussion turned into a published article, which received so much positive publicity that on March 14, 1950, the FBI officially announced the list to increase law enforcement's ability to capture dangerous fugitives.

The list itself has no particular ranking. This may be because the FBI does not want to promote competition between criminals to gain the Number 1 spot. However, the FBI has in the past identified individuals by the sequence number in which each individual has appeared on the list. Some individuals have even appeared twice, and often a sequence number was permanently assigned to an individual suspect who was soon caught, captured, or simply removed before his or her appearance could be published on the publicly released list. In those cases, the public would see only gaps in the number sequence reported by the FBI.

Individuals are removed from this list upon capture or death, and replaced by a new entry selected by the FBI. Individuals can also be taken off the list should the charges against them be dropped. In five cases, the FBI

removed individuals from the list after deciding that they were no longer a "particularly dangerous menace to society". Donald Eugene Webb, added to the list in 1981, was on the list longer than anyone, at 25 years, 10 months, and 27 days.Billie Austin Bryant spent the shortest amount of time on the list, being listed for two hours in 1969. On very rare occasions, the FBI will add a "Number Eleven" if that individual is extremely dangerous but the Bureau does not feel any of the current ten should be removed.

The list is commonly posted in public places such as post offices. Listed fugitives have been known to turn themselves in upon becoming aware of their listing. As of December 8, 2007, 489 fugitives have been listed (eight of them women), and 456 captured or located, 148 (31%) of them due to public assistance. That produces a success rate of 94%.

The FBI also maintains a list of Most Wanted Terrorists, along with FBI Crime Alerts, Missing Persons, and other fugitives.

The most recent Ten Most Wanted Fugitive captured is Diego Leon Montoya Sanchez.

Current Most Wanted List

	<u>Name</u>	<u>Date Added</u>	<u># On List</u>
108	1 Victor Manuel Gerena	May 14, 1984	#386
	Victor Manuel Gerena is wanted in connection with the armed robbery of approximately \$7 million from a security company in West Hartford, Connecticut in 1983. He allegedly took two security employees hostage at gunpoint and then handcuffed, bound and injected them with an unknown, non-lethal, substance to further disable them. The reward for information leading to Gerena's capture is \$1,000,000.		
	2 Glen Stewart Godwin	December 7, 1996	#447
	Glen Stewart Godwin is being sought for his 1987 escape from Folsom State Prison in California, where he was serving a lengthy sentence for murder. He was subsequently imprisoned in Mexico on drug trafficking charges, but escaped from prison there as well. The reward for information leading to Godwin's capture is \$100,000.		
	3 Osama bin Laden	June 7, 1999	#456
	Osama Bin Laden is the leader of al-Qaeda, and is wanted in connection with the August 7, 1998, bombings of the United States embassies, Dar Es Salaam, Tanzania, and Nairobi, Kenya. These attacks killed over 200 people. bin Laden and al-Qaeda are also responsible for the October 12, 2000, attack on the USS Cole off the coast of Yemen, which killed 17. Although bin Laden also later appeared on the first publicly released FBI Most Wanted Terrorists list on October 10, 2001, he was listed there for the 1998 embassy attack, and not for his alleged role in the September 11, 2001 terrorist attacks that killed nearly 3,000, because the most wanted lists name fugitives charged with a crime by a prosecutor or under indictment by a grand jury. Bin Laden was named as an unindicted co-conspirator in, for instance, the federal indictment against convicted terrorist Zacarias Moussaoui, but has not been formally indicted for his role in the September 11, 2001 attacks.		
	Osama Bin Laden is the subject of a \$50 million reward through the State Department's Rewards for Justice program targeting international fugitives, especially terrorists, plus \$2 million through a program developed and funded by the Air Line Pilots Association and the Air Transport Association.		
	4 James Joseph “Whitey” Bulger	August 19, 1999	#458
	James J. Bulger is wanted for his role in numerous murders (19 counts) committed from the early 1970s through the mid-1980s in connection with his leadership of an organized crime group that allegedly controlled extortion, drug deals, and other illegal activities in the Boston, Massachusetts, area. He has a violent temper and is known to carry a knife at all times. He was once the boss of Boston's Winter Hill Gang before he went into hiding. The reward for information leading to Bulger's capture is \$1,000,000.		
	5 Jon Schillaci	September 7, 2007	#488
	Jon Schillaci was released from prison in Sugarland, Texas in the summer of 1999. He had served his full sentence of ten years for molesting a young boy. After his release, Schillaci managed to convince a New Hampshire family that he had become a changed man. Schillaci allegedly molested the family's 5 year-old son.		
	6 Robert William Fisher	June 29, 2002	#475
	Robert William Fisher is wanted for allegedly killing his wife and two young children and then blowing up the house in which they all lived in Scottsdale, Arizona in April of 2001. The reward for information leading to Fisher's capture is \$100,000.		
	7 Carys Sian Notley	December 8, 2007	#489
	Carys Sian Notley is wanted for murder and armed robbery. In November 2004, authorities say Notley shot and killed an armored car guard outside a movie theater and fled on a bicycle with \$56,000 in a duffel bag.		

8	Jorge Alberto Lopez-Orozco	March 17, 2005	#480
	Jorge Alberto Lopez-Orozco is wanted in connection with the murders of a woman and her two young children, ages 2 and 4, in Elmore County, Idaho. The victims' charred remains were found on August 11, 2002, inside a burned-out vehicle. He may be travelling with his brother, Simon Lopez-Orozco, and Simon's wife, both of whom have been charged as accessories in the crime. Reward of up to \$100,000.		
9	Emigdio Preciado, Jr.	March 14, 2007	#485
	Emigdio Preciado, Jr. is wanted for opening fire on two sheriff's deputies in Los Angeles, California on September 5, 2000, seriously injuring one of them. He was believed to be heading to a gang-related drive-by shooting at the time. The FBI believes he may be in Mexico. The reward for information leading to Preciado's capture is \$100,000.		
10	Alexis Flores	June 2, 2007	#487
	Alexis Flores (born July 18, 1975), is wanted for the kidnapping and murder of five-year-old Iriana DeJesus in Philadelphia, Pennsylvania, in July 2000. He is a native of Honduras. He often claims to be much younger than he actually is, reporting birthdates as recent as 1982. He was last seen in Arizona, where he served a prison term for forgery. Since forgery is a felony in Arizona, his DNA sample was put in the CODIS database in 2006, leading to the DNA link to the DeJesus murder in March 2007. By the time they linked him, he had been released and was long gone. He may have returned to Honduras, where he is believed to still have ties. The reward for information leading to Flores' capture is \$100,000.		

Hearts is a trick-taking card game for three or more players; the version for four is perhaps the best known, since the game is often included with Microsoft Windows.

A standard deck of 52 playing cards is used. What distinguishes Hearts from other trick-taking games is that points are negative, and so the objective is to have the lowest score when the game ends (either when one player exceeds a preset limit such as 100, or after a predetermined number of deals). Points are scored for

winning a trick to which any hearts are played, and thus players attempt to avoid capturing them. In many variations there are additional penalty cards, most often the Queen of spades, sometimes also the Ace and King, or Ace and Ten.

A **negative number** is a number that is less than zero, such as −3. A positive number is a number that is greater than zero, such as 3. Zero itself is neither positive nor negative. The **non-negative numbers** are the real numbers that are not negative (they are positive or zero). The non-positive numbers are the real numbers that are not positive (they are negative or zero).

In the context of complex numbers, positive implies real, but for clarity one may say "positive real number".

First usage of negative numbers

For a long time, negative solutions to problems were considered "false" because they couldn't be found in the real world (in the sense that one cannot have a negative number of, for example, seeds). The abstract concept was recognised as

early as 100 BC – 50 BC. The Chinese "Nine Chapters on the Mathematical Art" (Jiu-zhang Suanshu) contains methods for finding the areas of figures; red counting rods were used to denote positive coefficients, black for negative. They were able to solve simultaneous equations involving negative numbers. The ancient Indian Bakhshali Manuscript, written around the seventh century CE, carried out calculations with negative numbers, using a "+" as a negative sign. These are the earliest known uses of negative numbers.

In Hellenistic Egypt, Diophantus in the 3rd century CE referred to the equation equivalent to 4x + 20 = 0 (the solution would be negative) in Arithmetica, saying that the equation was absurd, indicating that no concept of negative numbers existed in the ancient Mediterranean.

During the 7th century, negative numbers were in use in India to represent debts. The Indian mathematician Brahmagupta, in Brahma-Sphuta-Siddhanta (written in 628) discusses the use of negative numbers to produce the general form quadratic formula that remains in use today. He also finds negative solutions to quadratic equations and gives rules regarding operations involving negative numbers and zero, such as "a debt cut off from nothingness becomes a credit, a credit cut off from nothingness becomes a debt." He called positive numbers "fortunes", zero a "cipher", and negative numbers a "debt".²³ In the 12th century in India, Bhaskara also gives negative roots for quadratic equations but rejects the negative roots since they were inappropriate in the context of the problem, stating that the negative values "is in this case not to be taken, for it is inadequate; people do not approve of negative roots."

From the 8th century, the Islamic world learnt about negative numbers from Arabic transla-

tions of Brahmagupta's works, and by about 1000 AD, Arab mathematicians had realized the use of negative numbers for debt.

Knowledge of negative numbers eventually reached Europe through Latin translations of Arabic and Indian works.

European mathematicians however, for the most part, resisted the concept of negative numbers until the 17th century, although Fibonacci allowed negative solutions in financial problems where they could be interpreted as debits (chapter 13 of Liber Abaci, 1202) and later as losses (in Flos). At the same time, the Chinese were indicating negative numbers by drawing a diagonal stroke through the right-most non-zero digit. The first use of negative numbers in a European work was by Chuquet during the 15th century. He used them as exponents, but referred to them as “absurd numbers”.

The English mathematician Francis Maseres wrote in 1759 that negative numbers "darken the very whole doctrines of the equations and make dark of the things which are in their nature excessively obvious and simple". He came to the conclusion that negative numbers did not exist.¹

Negative numbers were not well-understood until modern times. As recently as the 18th century, the Swiss mathematician Leonhard Euler believed that negative numbers were greater than infinity — a viewpoint shared by John Wallis — and it was common practice to ignore any negative results returned by equations on the assumption that they were meaningless.⁴ The argument that negative numbers are greater than infinity involves the quotient

1

x

{\displaystyle {\frac {1}{x}}}

 and considering what happens as x approaches and then crosses the point x = 0 from the positive side.

Leonardo of Pisa, also known as Leonardo Pisano, Leonardo Bonacci, Leonardo Fibonacci, or, most commonly, simply Fibonacci, was an Italian mathematician, considered by some “the most talented mathematician of the Middle Ages”.

Fibonacci is best known to the modern world for:

The spreading of the Hindu-Arabic numeral system in Europe, primarily through the publication in the early 13th century of his Book of Calculation, the Liber Abaci.

A modern number sequence named after him known as the Fibonacci numbers, which he did not discover but used as an example in the Liber Abaci.

Biography

Leonardo was born in Pisa. His father Guglielmo was nicknamed Bonaccio ("good natured" or "simple"). Leonardo's mother, Alessandra, died when he was nine years old. Leonardo was posthumously given the nickname Fibonacci (derived from filius Bonacci, meaning son of Bonaccio).

Guglielmo directed a trading post (by some accounts he was the consultant for Pisa) in Bugia,

c. 1170 - c. 1250

a port east of Algiers in the Almohad dynasty's sultanate in North Africa (now Bejaia, Algeria). As a young boy, Leonardo traveled there to help him. This is where he learned about the Hindu-Arabic numeral system.

Recognizing that arithmetic with Hindu numerals is simpler and more efficient than with Roman numerals, Fibonacci traveled throughout the Mediterranean world to study under the leading Arab mathematicians of the time. Leonardo returned from his travels around 1200. In 1202, at age 32, he published what he had learned in Liber Abaci (Book of Abacus or Book of Calculation), and thereby introduced Hindu-Arabic numerals to Europe.

Leonardo became an amicable guest of the Emperor Frederick II, who enjoyed mathematics and science. In 1240 the Republic of Pisa honoured Leonardo, referred to as Leonardo Bigollo, by granting him a salary.

In the 19th century, a statue of Fibonacci was constructed and erected in Pisa. Today it is located in the cloister of the Camposanto historical cemetery on the Piazza dei Miracoli.

Important Publications

Liber Abaci (1202), a book on calculations (English translation by Laurence Sigler, Springer, 2002)

Practica Geometriae (1220), a compendium on geometry and trigonometry.

Flos (1225), solutions to problems posed by Johannes of Palermo

Liber quadratorum, ("The Book of Squares") on Diophantine equations, devoted to Emperor Frederick II. See in particular Fibonacci's identity.

Di minor guisa (on commercial arithmetic; lost)

Commentary on Book X of Euclid's Elements (lost)

Liber Abaci

In his work, Fibonacci introduces the so-called modus Indorum (method of the Indians), today known as Hindu-Arabic numerals (Sigler 2003; Grimm 1973). The book advocated numeration with the digits 0–9 and place value. The book showed the practical importance of the new numeral system, using lattice multiplication and Egyptian fractions, by applying it to commercial bookkeeping, conversion of weights and measures, the calculation of interest, money-changing, and other applications. The book was well received throughout educated Europe and had a profound impact on European thought. Nevertheless, the use of decimal numerals did not become widespread until much later.

Liber Abaci also posed, and solved, a problem involving the growth of a hypothetical population of rabbits based on idealized assumptions. The solution, generation by generation, was a sequence of numbers later known as Fibonacci numbers. The number sequence was known to Indian mathematicians as early as the 6th century, but it was Fibonacci's Liber Abaci that introduced it to the West.

In mathematics, the Fibonacci numbers are a sequence of numbers named after Leonardo of Pisa, known as Fibonacci, whose Liber Abaci published in 1202 introduced the sequence to Western European mathematics.

The sequence is defined by the following recurrence relation:

$$F(n):=\begin{cases}0&\text{if }n=0\\1&\text{if }n=1\\F(n-1)+F(n-2)&\text{if }n>1\end{cases}$$

That is, after two starting values, each number is the sum of the two preceding numbers. The first Fibonacci numbers, also denoted as Fn, for n = 0, 1, ... , are:

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, 610, 987, 1597, 2584, 4181, 6765, 10946, 17711, 28657, 46368, 75025, 121393, ...

The sequence named after Fibonacci was first described in Indian mathematics.

The sequence extended to negative index n satisfies Fn = Fn−1 + Fn−2 for all integers n, and F- n = (−1) n+1Fn:

..., -8, 5, -3, 2, -1, 1, followed by the sequence above.

Origins

The Fibonacci numbers first appeared, under the name mātrāmeru (mountain of cadence), in the work of the Sanskrit grammarian Pingala (Chandah-shāstra, the Art of Prosody, 450 or

200 BC). Prosody was important in ancient Indian ritual because of an emphasis on the purity of utterance. The Indian mathematician Virahanka (6th century AD) showed how the Fibonacci sequence arose in the analysis of metres with long and short syllables. Subsequently, the Jain philosopher Hemachandra (c.1150) composed a well-known text on these. A commentary on Virahanka's work by Gopāla in the 12th century also revisits the problem in some detail.

Sanskrit vowel sounds can be long (L) or short (S), and Virahanka's analysis, which came to be known as mātrā-ṛtṭa, wishes to compute how many metres (mātrās) of a given overall length can be composed of these syllables. If the long syllable is twice as long as the short, the solutions are:

1 mora: S (1 pattern)
2 morae: SS; L (2)
3 morae: SSS, SL; LS (3)
4 morae: SSSS, SSL, SLS; LSS, LL (5)
5 morae: SSSSS, SSSL, SSLS, SLSS, SLL; LSSS, LSL, LLS (8)
6 morae: SSSSSS, SSSSL, SSSLS, SSLSS, SLSSS, LSSSS, SLLL, SLSL, SLLS, LSSL, LSLs, LLSS, LLL (13)
7 morae: SSSSSSS, SSSSSL, SSSSLs, SSSLSS, SSLSSS, SLSSSS, LSSSSS, SSSL, SLSL, SLSSL, LSSSL, SLLS, SLSLS, LSSLS, SLLSS, LSSS, LLSSS, SLLL, LSLl, LLLS, LLLS (21)

A pattern of length n can be formed by adding S to a pattern of length n−1, or L to a pattern of length n−2; and the prosodicists showed that the number of patterns of length n is the sum of the two previous numbers in the series. Donald Knuth reviews this work in The Art of Computer Programming as equivalent formula-tions of the bin packing problem for items of lengths 1 and 2.

In the West, the sequence was first studied by Leonardo of Pisa, known as Fibonacci, in his Liber Abaci (1202). He considers the growth of an idealised (biologically unrealistic) rabbit population, assuming that:

- in the first month there is just one newly-born pair,
- new-born pairs become fertile from their second month on
- each month every fertile pair begets a new pair, and
- the rabbits never die

Let the population at month n be F(n). At this time, only rabbits who were alive at month n−2 are fertile and produce offspring, so F(n−2) pairs are added to the current population of F(n−1). Thus the total is F(n) = F(n−1) + F(n−2).

In geometry, a golden spiral is a logarithmic spiral whose growth factor b is related to ϕ, the golden ratio. Specifically, a golden spiral gets wider (or further from its origin) by a factor of ϕ for every quarter-turn it makes.

Golden Spiral in Nature

Although it is often suggested that the golden spiral occurs repeatedly in nature (e.g. the arms of spiral galaxies or sunflower heads) , this claim is rarely valid except perhaps in the most contrived of circumstances. For example, it is commonly believed that nautilus shells get wider in the pattern of a golden spiral, and hence are related to both ϕ and the Fibonacci series. In truth nautilus shells exhibit logarithmic spiral growth, but at a rate distinctly different from that of the golden spiral. The reason for this growth pattern is that it allows

the animal to grow at a constant rate without having to change shape. Spirals are common features in nature, but there is no evidence that a single number dictates the shape of every one of these spirals. The greatest misconception in the mystification of the golden spiral is the incorrect assumption that all spirals in nature are in fact the golden spiral. While logarithmic spirals are often observed, they may be of differing pitches, and therefore there is no single "spira mirabilis".

A spiral galaxy is a galaxy belonging to one of the three main classes of galaxy originally described by Edwin Hubble in his 1936 work “The Realm of the Nebulae” and, as such, forms part of the Hubble sequence.

Spiral galaxies consist of a flat, rotating disk of stars, gas and dust, and a central concentration of stars known as the bulge. These are sur-rounded by a much fainter halo of stars, many of which reside in globular clusters.

Spiral galaxies are named for the (usually two-armed) spiral structures that extend from the bulge into the disk. The spiral arms are sites of ongoing star formation and are brighter than the surrounding disk because of the young, hot OB stars that inhabit them. Roughly half of all spirals are observed to have an additional component in the form of a bar-like structure, extending from the central bulge, at the ends of which the spiral arms begin. Our own Milky Way has long been believed to be a barred spi-ral, although the bar itself is difficult to observe from our position within the Galactic disk. The most convincing evidence for its existence comes from a recent survey, performed by the Spitzer Space Telescope, of stars in the Galactic center.

Together with irregulars, spiral galaxies make up approximately 70% of galaxies in the local Universe. They are mostly found in low-density regions and are rare in the centers of galaxy clusters.

Structure

Spiral galaxies consist of several distinct components:

- A flat, rotating disc of (mainly young) stars and interstellar matter
- A central stellar bulge of mainly older stars, which resembles an elliptical galaxy
- A near-spherical halo of stars, including many in globular clusters
- A supermassive black hole at the very centre of the central bulge

The relative importance, in terms of mass, brightness and size, of the different components varies from galaxy to galaxy.

Spiral arms

Spiral arms are regions of stars that extend from the center of spiral and barred spiral galaxies. These long, thin regions resemble a spiral and thus give spiral galaxies their name. Naturally, different classifications of spiral galaxies have distinct arm-structures. Sa and SBa galaxies, for instance, have tightly wrapped arms, whereas Sc and SBc galaxies have very "loose" arms (with reference to the Hubble sequence). Either way, spiral arms contain a great many young, blue stars (due to the high mass density and the high rate of star formation), which make the arms so remarkable.

Galactic bulge

A bulge is a huge, tightly packed group of stars. The term commonly refers to the central group of stars found in most spiral galaxies.

Using the Hubble classification, the bulge of Sa galaxies is usually composed of population II stars, that is old, red stars with low metal content. Further, the bulge of Sa and SBa galaxies tends to be large. In contrast, the bulges of Sc

and SBc galaxies are a great deal smaller, and are composed of young, blue, Population I stars. Some bulges have similar properties to those of elliptical galaxies (scaled down to lower mass and luminosity), and others simply appear as higher density centers of disks, with properties similar to disk galaxies.

Many bulges are thought to host a supermassive black hole at their center. Such black holes have never been directly observed, but many indirect proofs exist. In our own galaxy, for instance, the object called Sagittarius A* is believed to be a supermassive black hole.

Galactic spheroid

The bulk of the stars in a spiral galaxy are lo-cated either close to a single plane (the Galactic plane) in more or less conventional circular or-bits around the center of the galaxy (the galactic centre), or in a spheroidal galactic bulge around the galactic core.

However, some stars inhabit a spheroidal halo or galactic spheroid. The orbital behaviour of these stars is disputed, but they may describe retrograde and/or highly inclined orbits, or not move in regular orbits at all. Halo stars may be acquired from small galaxies which fall into and merge with the spiral galaxy—for example, the Sagittarius Dwarf Elliptical Galaxy is in the process of merging with the Milky Way and observations show that some stars in the halo of the Milky Way have been acquired from it.

Unlike the galactic disc, the halo seems to be free of dust, and in further contrast, stars in the galactic halo are of Population II, much older and with much lower metallicity than their Pop-ulation I cousins in the galactic disc (but similar to those in the galactic bulge). The galactic halo also contains many globular clusters.

The motion of halo stars does bring them through the disc on occasion, and a number of small red dwarf stars close to the Sun are thought to belong to the galactic halo, for exam-ple Kapteyn's Star and Groombridge 1830. Due to their irregular movement around the centre of the galaxy—if they do so at all—these stars often display unusually high proper motion.

Origin of the spiral structure

The pioneer of studies of the rotation of the Galaxy and the formation of the spiral arms was Bertil Lindblad in 1925 . He realised that the idea of stars arranged permanently in a spiral shape was untenable due to the "winding dilemma". Since the angular speed of rotation of the galactic disk varies with distance from the centre of the galaxy, a radial arm (like a spoke) would quickly become curved as the galaxy rotates. The arm would, after a few galactic rotations, become increasingly curved and wind around the galaxy ever tighter. Or, the stars on the outermost edge of the galaxy would have to move faster than those near the center, as the galaxy rotates. Neither behaviour is ob-served. Bertil Lindblad proposed that the arms represent regions of enhanced density (density waves) that rotate more slowly than the

galaxy’s stars and gas. As gas enters a density wave, it gets squeezed and makes new stars, some of which are short-lived blue stars that light the arms.

This idea was developed into density wave theory by C. C. Lin and Frank Shu in 1964. They suggested that the spiral arms were manifestations of spiral density waves, attempting to explain the large-scale structure of spirals in terms of a small-amplitude wave propagating with fixed angular velocity, that revolves around the galaxy at a speed different from that of the galaxy's gas and stars. As the compression wave goes through, it triggers star formation on the leading edge of the spiral arms. They assumed that the stars travel in elliptical orbits and that the sizes as well as the orientations of their orbits are slightly-varying from each other, i.e. the ellipses vary in their orientation (one to another) in a smooth way with increasing distance from the galactic center. This is illustrated in the diagram. It is clear that the elliptical orbits come close together in certain areas to give the effect of arms.

Alternative hypotheses that have been proposed involve waves of star formation moving about the galaxy, also called the stochastic self-propagating star formation model or SSPSF model. This model proposes that star formation propagates via the action of shock waves produced by stellar winds and supernovae that compose the interstellar medium. The arms appear brighter because there are more young stars (hence more massive, bright stars). These massive, bright stars also die out quickly, which would leave just the (darker) background stellar

distribution behind the waves, hence making the waves visible.

The different hypothesis do not have to be mutually-exclusive, as they may explain different types of spiral arms.

While stars, therefore, do not remain forever in the position that we now see them in, they also do not follow the arms. The arms simply appear to pass through the stars as the stars travel in their orbits. Recent results suggest that the orientation of the spin axis of spiral galaxies is not a chance result, but instead they are preferentially aligned along the surface of cosmic voids. That is, spiral galaxies tend to be oriented at a high angle of inclination relative to the large-scale structure of the surroundings. They have been described as lining up like "beads on a string," with their axis of rotation following the filaments around the edges of the voids.

Spiral nebulae

“Spiral nebula” is an old term for a spiral galaxy. Until the early 20th century, most astronomers believed that objects like the Whirlpool Galaxy were just one more form of nebula that were within our own Galaxy. In 1926, Edwin Hubble finally proved that the spiral nebulae were, in fact, stellar systems independent of our own Milky Way and the term “spiral nebula” has since fallen into disuse.

The Sun is the star at the center of the Solar System.

It is a medium size star. The Earth and other matter (including other planets, asteroids, meteoroids, comets and dust) orbit the Sun, which by itself accounts for about 99.8% of the solar system's mass. Energy from the Sun, in the form of sunlight, supports almost all life on Earth via photosynthesis, and drives the Earth's climate and weather.

The surface composition of the Sun consists of hydrogen (about 74% of its mass, or 92% of its volume), helium (about 24–25% of mass, 7% of volume), and trace quantities of other elements, including Fe, Ni, O, Si, S, Mg, C, Ne, Ca, Cr. The Sun has a spectral class of G2V. G2 implies that it has a surface temperature of approximately 5,780 K, giving it a white color which, because of atmospheric scattering, appears yellow as seen from the surface of the Earth. This is a subtractive effect, as the preferential scattering of blue photons (causing the sky color) removes enough blue light to leave a residual reddishness that is perceived as yellow. (When low enough in the sky, the Sun appears orange or red, due to this scattering.)

Its spectrum contains lines of ionized and neutral metals as well as very weak hydrogen lines. The V (Roman five) suffix indicates that the Sun, like most stars, is a main sequence star. This means that it generates its energy by nuclear fusion of hydrogen nuclei into helium and is in a state of hydrostatic equilibrium, neither contracting nor expanding over time. There are more than 100 million G2 class stars in our galaxy. The Sun is brighter than 85% of the stars in the galaxy, most of which are red dwarfs.

The Sun orbits the center of the Milky Way galaxy at a distance of approximately 26,000 light-years from the galactic center, completing one revolution in about 225–250 million years. The orbital speed is 217 km/s, equivalent to one light-year every 1,400 years, and one AU every 8 days.

It is currently traveling through the Local Interstellar Cloud in the low-density Local Bubble zone of diffuse high-temperature gas, in the inner rim of the Orion Arm of the Milky Way Galaxy, between the larger Perseus and

Latin: Sol

Sagittarius arms of the galaxy. Of the 50 nearest stellar systems within 17 light years from the Earth, the sun ranks 4th in absolute magnitude as a fourth magnitude star (M=4.83).

Overview

The Sun is a Population I, or third generation, star whose formation may have been triggered by shockwaves from one or more nearby supernovae. This is suggested by a high abundance of heavy elements such as gold and uranium in the solar system. These elements could most plausibly have been produced by endergonic nuclear reactions during a supernova, or by transmutation via neutron absorption inside a massive second-generation star.

Sunlight is Earth's primary source of energy. The solar constant is the amount of power that the Sun deposits per unit area that is directly exposed to sunlight. The solar constant is equal to approximately 1,370 watts per square meter at a distance of one AU from the Sun (that is, on or near Earth). Sunlight on the surface of Earth is attenuated by the Earth's atmosphere so that less power arrives at the surface—closer to 1,000 watts per directly exposed square meter in clear conditions when the Sun is near the zenith. This energy can be harnessed via a variety of natural and synthetic processes—photosynthesis by plants captures the energy of sunlight and converts it to chemical form (oxygen and reduced carbon compounds), while direct heating or electrical conversion by solar cells are used by solar power equipment to generate electricity or to do other useful work. The energy stored in petroleum and other fossil fuels was originally converted from sunlight by photosynthesis in the distant past.

Ultraviolet light from the Sun has antiseptic properties and can be used to sanitize tools and water. It also causes sunburn, and has other medical effects such as the production of Vitamin D. Ultraviolet light is strongly attenuated by Earth's ozone layer, so that the amount of UV varies greatly with latitude and has been responsible for many biological adaptations, including variations in human skin color in different regions of the globe.

Observed from Earth, the Sun's path across the sky varies throughout the year. The shape described by the Sun's position, considered at the same time each day for a complete year, is called the analemma and resembles a figure 8 aligned along a north/south axis. While the most obvious variation in the Sun's apparent position through the year is a north/south swing over 47 degrees of angle (because of the 23.5-degree tilt of the Earth with respect to the Sun), there is an east/west component as well, caused by the acceleration of the Earth as it approaches its perihelion with the sun, and the reduction in the Earth's speed as it moves away to approach its aphelion. The north/south swing in apparent angle is the main source of seasons on Earth.

The Sun is a magnetically active star. It supports a strong, changing magnetic field that varies year-to-year and reverses direction about every eleven years around solar maximum.

The Sun's magnetic field gives rise to many effects that are collectively called solar activity, including sunspots on the surface of the Sun, solar flares, and variations in solar wind that carry material through the Solar System. Effects of solar activity on Earth include auroras at moderate to high latitudes, and the disruption of radio communications and electric power. Solar activity is thought to have played a large role in the formation and evolution of the Solar System. Solar activity changes the structure of Earth's outer atmosphere.

Although it is the nearest star to Earth and has been intensively studied by scientists, many questions about the Sun remain unanswered, such as why its outer atmosphere has a temperature of over 1 million K while its visible surface (the photosphere) has a temperature of less than 6,000 K. Current topics of scientific inquiry include the Sun's regular cycle of sunspot activity, the physics and origin of flares and prominences, the magnetic interaction between the chromosphere and the corona, and the origin (propulsion source) of solar wind.

History of Solar Observation

Early Understanding of the Sun

Humanity's most fundamental understanding of the Sun is as the luminous disk in the sky, whose presence above the horizon creates day and whose absence causes night. In many prehistoric and ancient cultures, the Sun was thought to be a solar deity or other supernatural phenomenon, and worship of the Sun was central to civilizations such as the Inca of South America and the Aztecs of what is now Mexico. Many ancient monuments were constructed with solar phenomena in mind; for example, stone megaliths accurately mark the summer solstice (some of the most prominent megaliths are located in Nabta Playa, Egypt, and at Stonehenge in England); the pyramid of El Castillo at Chichén Itzá in Mexico is designed to cast shadows in the shape of serpents climbing the pyramid at the vernal and autumn equinoxes. With respect to the fixed stars, the Sun appears from Earth to revolve once a year along the ecliptic through the zodiac, and so the Sun was considered by Greek astronomers to be one of the seven planets (Greek planetes, "wanderer"), after which the seven days of the week are named in some languages.

Development of modern scientific understanding

One of the first people to offer a scientific explanation for the Sun was the Greek philosopher Anaxagoras, who reasoned that it was a giant flaming ball of metal even larger than the Peloponnesus, and not the chariot of Helios. For teaching this heresy, he was imprisoned by the authorities and sentenced to death, though he was later released through the intervention of Pericles. Eratosthenes might have been the first person to have accurately calculated the distance from the Earth to the Sun, in the 3rd century BCE, as 149 million kilometers, roughly the same as the modern accepted figure.

The theory that the Sun is the center around which the planets move was apparently proposed by the ancient Greek Aristarchus and Indians (see Heliocentrism). This view was revived in the 16th century by Nicolaus Copernicus. In the early 17th century, the invention of the telescope permitted detailed observations of sunspots by Thomas Harriot, Galileo and other astronomers. Galileo made some of the first known Western observations of sunspots and posited that they were on the surface of the Sun rather than small objects passing between the Earth and the Sun. Sunspots were also observed since the Han dynasty and Chinese astronomers maintained records of these observations for centuries. In 1672 Giovanni Cassini and Jean Richer determined the distance to Mars and were thereby able to calculate the distance to the Sun. Isaac Newton observed the Sun's light using a prism, and showed that it was made up of light of many colors, while in 1800 William Herschel discovered infrared radiation beyond the red part of the solar spectrum. The 1800s saw spectroscopic studies of the Sun advance, and Joseph von Fraunhofer made the first observations of absorption lines in the spectrum, the strongest of which are still often referred to as Fraunhofer lines.

In the early years of the modern scientific era, the source of the Sun's energy was a significant puzzle. Lord Kelvin suggested that the Sun was a gradually cooling liquid body that was radiating an internal store of heat. Kelvin and Hermann von Helmholtz then proposed the Kelvin-Helmholtz mechanism to explain the energy output. Unfortunately the resulting age estimate was only 20 million years, well short of the time span of several billion years suggested by geology. In 1890 Joseph Lockyer, who discovered helium in the solar spectrum, proposed a meteoritic hypothesis for the formation and evolution of the Sun.

Not until 1904 was a substantiated solution offered. Ernest Rutherford suggested that the Sun's output could be maintained by an internal source of heat, and suggested radioactive decay as the source. However it would be Albert Einstein who would provide the essential clue to the source of the Sun's energy output with his mass-energy equivalence relation

E
=
m

c

2

{\displaystyle E=mc^{2}}

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In 1920 Sir Arthur Eddington proposed that the pressures and temperatures at the core of the Sun could produce a nuclear fusion reaction that merged hydrogen (protons) into helium nuclei, resulting in a production of energy from the net change in mass. The preponderance of hydrogen in the sun was confirmed in 1925 by Cecilia Payne. The theoretical concept of fusion was developed in the 1930s by the astrophysicists Subrahmanyan Chandrasekhar and Hans Bethe. Hans Bethe calculated the details of the two main energy-producing nuclear reactions that power the Sun.

Finally, a seminal paper was published in 1957 by Margaret Burbidge, entitled "Synthesis of the Elements in Stars". The paper demonstrated convincingly that most of the elements in the universe had been synthesized by nuclear reactions inside stars, some like our Sun. This

revelation stands today as one of the great achievements of science.

Sun Observation and Eye Damage

Sunlight is very bright, and looking directly at the Sun with the naked eye for brief periods can be painful, but is not particularly hazardous for normal, non-dilated eyes. Looking directly at the Sun causes phosphene visual artifacts and temporary partial blindness. It also delivers about 4 milliwatts of sunlight to the retina, slightly heating it and potentially causing damage in eyes that cannot respond properly to the brightness. UV exposure gradually yellows the lens of the eye over a period of years and is thought to contribute to the formation of cataracts, but this depends on general exposure to solar UV, not on whether one looks directly at the Sun. Long-duration viewing of the direct Sun with the naked eye can begin to cause UV-induced, sunburn-like lesions on the retina after about 100 seconds, particularly under conditions where the UV light from the Sun is intense and well focused; conditions are worsened by young eyes or new lens implants (which admit more UV than aging natural eyes), sun angles near the zenith, and observing locations at high altitude.

Viewing the Sun through light-concentrating optics such as binoculars is very hazardous without an appropriate filter that blocks UV and substantially dims the sunlight. An attenuating (ND) filter might not filter UV and so is still dangerous. Unfiltered binoculars can deliver over 500 times as much energy to the retina as using the naked eye, killing retinal cells almost instantly. (Even though the power per unit area of image on the retina is the same, the heat cannot dissipate fast enough because the image is larger.) Even brief glances at the midday Sun through unfiltered binoculars can cause permanent blindness. One way to view the Sun safely is by projecting its image onto a screen using a telescope and eyepiece without cemented elements. This should only be done with a small refracting telescope (or binoculars) with a clean eyepiece. Other kinds of telescopes can be damaged by this procedure.

Partial solar eclipses are hazardous to view because the eye's pupil is not adapted to the unusually high visual contrast: the pupil dilates according to the total amount of light in the field of view, not by the brightest object in the field. During partial eclipses most sunlight is blocked by the Moon passing in front of the Sun, but the uncovered parts of the photosphere have the same surface brightness as during a normal day. In the overall gloom, the pupil expands from ~2 mm to ~6 mm, and each retinal cell exposed to the solar image receives about ten times more light than it would looking at the non-eclipsed Sun. This can damage or kill those cells, resulting in small permanent blind spots for the viewer. The hazard is insidious for inexperienced observers and for children, because there is no perception of pain: it is not immediately obvious that one's vision is being destroyed.

During sunrise and sunset, sunlight is attenuated due to Rayleigh scattering and Mie scattering from a particularly long passage through Earth's atmosphere and the direct Sun is sometimes faint enough to be viewed comfortably with the naked eye or safely with optics (provided there is no risk of bright sunlight suddenly appearing through a break between clouds). Hazy conditions, atmospheric dust, and high humidity contribute to this atmospheric attenuation.

Attenuating filters to view the Sun should be specifically designed for that use: some improvised filters pass UV or IR rays that can harm the eye at high brightness levels. Filters on telescopes or binoculars should be on the objective lens or aperture, never on the eyepiece, because eyepiece filters can suddenly crack or shatter due to high heat loads from the absorbed sunlight. Welding glass #14 is an acceptable solar filter, but "black" exposed photographic film is not (it passes too much infrared).



Esperanto :

(1) The flag of Esperanto.
(2) A map showing possible lodgings and hosting locations by Pasporta Servo in 2005

Republic of Rose Island :

(1) A 1968 photograph of Rose Island.
(2) The flag of the Republic of Rose Island.

The Principality of Sealand :

Sealand several months after the fire.

118



The Principality of Sealand :

Prince Roy and Princess Joan Bates claimed Sealand as their own in 1967.

Andrew Cunanan :

Andrew Philip Cunanan, from FBI.

Hearts :

Microsoft screenshot.

Golden Spiral :

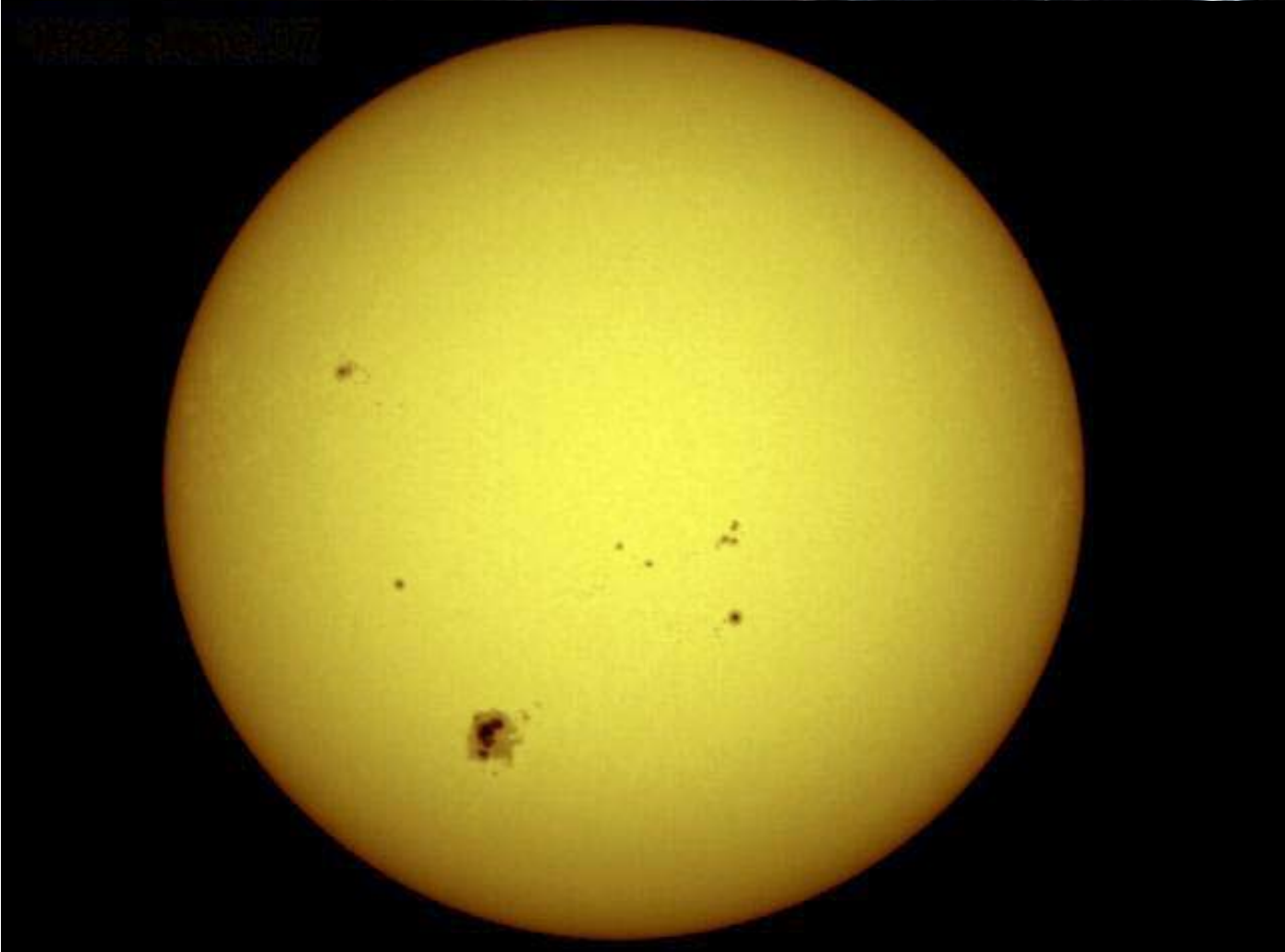
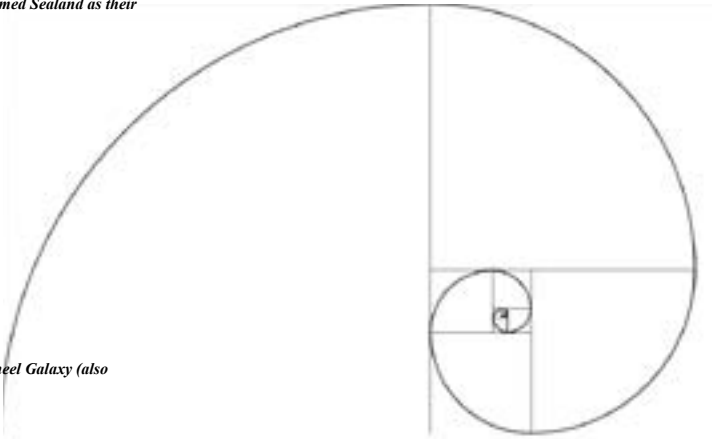
Microsoft screenshot.

Spiral Galaxy :

An example of a spiral galaxy, the Pinwheel Galaxy (also known as Messier 101 or NGC 5457)

Sun :

The Sun with some sunspots visible. Date: 1992 June 7.



- Boredom
- Daydream
- Escapism
- Capitalism
- Gift Economy
- Potlatch
- Situationist International
- Dérive
- Flâneur
- Tourism
- France
- Franco-Prussian War
- Siege of Paris
- Balloon Mail

Boredom.

Etymology

The first record of the word boredom is in the novel Bleak House, by Charles Dickens, written in 1852, although the expression to be a bore had been used in the sense of "to be tiresome or dull" since 1768.

Psychology

Boredom has been defined by Fisher in terms of its central psychological processes: “an unpleasant, transient affective state in which the individual feels a pervasive lack of interest in and difficulty concentrating on the current activity.” M. R. Leary and others define boredom similarly, and somewhat more succinctly, as “an affective experience associated with cognitive attentional processes.” These definitions make it clear that boredom arises not for a lack of things to do but the inability to latch onto any specific activity. Nothing engages us, despite an often profound desire for engagement.

There appear to be three general types of boredom, all of which involve problems of engagement of attention. These include times when we are prevented from engaging in something, when we are forced to engage in some unwanted activity or when we are simply unable, for no apparent reason, to maintain engagement in any activity or spectacle.

An important psychological construct is that of boredom proneness; a tendency to experience boredom of all types. This is typically assessed by the Boredom Proneness Scale. Consistent with the definition provided above, recent research has found that boredom proneness is clearly and consistently associated with failures of attention. Boredom and boredom proneness are both theoretically and empirically linked to depression and depressive symptoms. Nonetheless, boredom proneness has been found to be as strongly correlated with attentional lapses as with depression.

Although boredom is often viewed as a trivial and mild irritant, boredom, and especially boredom proneness has been linked to an amazingly diverse range of psychological, physical, educational, and social problems.

Philosophy

Boredom is a condition characterized by perception of one's environment as dull, tedious, and lacking in stimulation. This can result from leisure and a lack of aesthetic interests. Labor, however, and even art may be alienated and passive, or immersed in tedium (see Marxism). There is an inherent anxiety in boredom; people will expend considerable effort to prevent or remedy it, yet in many circumstances, it is accepted as suffering to be endured. Common passive ways to escape boredom are to sleep or to think creative thoughts (daydream). Typical active solutions consist in an intentional activity of some sort, often something new, as familiarity and repetition lead to the tedious.

Boredom also plays a role in existentialist thought. In contexts where one is confined spatially or not, boredom may be met with various religious activities, not because religion would want to associate itself with tedium, but rather, partly because boredom may be taken as the essential human condition, to which God, wisdom, or morality are the ultimate answers. Boredom is in fact taken in this sense by virtually all existentialist philosophers as well as by Schopenhauer. Heidegger wrote about boredom in two texts available in English, in the 1929/30 semester lecture course The Fundamental Concepts of Metaphysics, and again in the essay What is Metaphysics? published in the same year. In the lecture, Heidegger included about 100 pages on boredom, probably the most extensive philosophical treatment ever of the subject. He focused on waiting at train stations in particular as a major context of boredom. In Kierkegaard's remark in Either/Or, that "patience cannot be depicted" visually, there is a sense that any immediate moment of life may be fundamentally tedious.

Without stimulus or focus, the individual is confronted with nothingness, the meaninglessness of existence, and experiences existential anxiety. Heidegger states this idea nicely: "Profound boredom, drifting here and there in the abysses of our existence like a muffling fog, removes all things and men and oneself along with it into a remarkable indifference. This boredom reveals being as a whole."

Arthur Schopenhauer used the existence of boredom in an attempt to prove the vanity of human existence, stating, "...for if life, in the desire for which our essence and existence consists, possessed in itself a positive value and real content, there would be no such thing as boredom: mere existence would fulfil and satisfy us."

Erich Fromm and other similar thinkers of critical theory speak of bourgeois society in terms similar to boredom, and Fromm mentions sex and the automobile as fundamental outlets of postmodern boredom.

Above and beyond taste and character, the universal case of boredom consists in any instance of waiting, as Heidegger noted, such as in line, for someone else to arrive or finish a task, or while one is travelling.

Boredom, however, may also increase as travel becomes more convenient, as the vehicle may become more like the windowless monad in Leibniz's monadology. The automobile requires fast reflexes, making its operator busy and hence, perhaps for other reasons as well, making the ride more tedious despite being over sooner.

Causes & Effects

Although it has not been widely studied, research on boredom suggests that boredom is a major factor impacting diverse areas of a person's life. People ranked low on a boredom-proneness scale were found to have better performance in a wide variety of aspects of their lives, including career, education, and autonomy.

Boredom can be a symptom of clinical depression. Boredom can be a form of learned helplessness, a phenomenon closely related to depression. Some philosophies of parenting propose that if children are raised in an environment devoid of stimuli, and are not allowed or encouraged to interact with their environment,

they will fail to develop the mental capacities to do so.

In a learning environment, a common cause of boredom is lack of understanding; for instance, if one is not following or connecting to the material in a class or lecture, it will usually seem boring. However, the opposite can also be true; something that is too easily understood, simple or transparent, can also be boring. Boredom is often inversely related to learning, and in school it may be a sign that a student is not challenged enough (or too challenged). An activity that is predictable to the students is likely to bore them.

Boredom has been studied as being related to drug abuse among teens.

Boredom has been proposed as a cause of pathological gambling behavior. A study found results consistent with the hypothesis that pathological gamblers seek stimulation to avoid states of boredom and depression.

Popular Culture and The Arts

In Chapter 18 of the novel "The Picture of Dorian Gray" by Oscar Wilde (1854-1900) it is written; "The only horrible thing in the world is ennui, Dorian. That is the one sin for which there is no forgiveness".

Iggy Pop, The Deftones, Buzzcocks, and Blink-182 have all written songs with boredom mentioned in the title. Other songs about boredom and activities people turn to when bored include Green Day's Song "Longview" and Bloodhound Gang's Mope.

Douglas Adams depicted a robot named Marvin the Paranoid Android whose boredom led to his cynical attitude which in turn led to a deep comical depression which appeared to be the defining trait of his personality, and indeed, existence, in his series of novels that began with The Hitchhiker's Guide to the Galaxy.

A daydream is a visionary fantasy experienced while awake, especially one of happy, pleasant thoughts, hopes, or ambitions.

There are so many different types of daydreaming that there is still no consensus definition amongst psychologists. While daydreams may include fantasies about future scenarios or plans, reminiscences about past experiences, or vivid dream-like images, they are often connected with some type of emotion.

Daydreaming may take the form of a train of thought, leading the daydreamer away from being aware of his immediate surroundings, and concentrating more and more on these new directions of thought. To an observer, they may appear to be affecting a blank stare into the

distance, and only a sudden stimulus will startle the daydreamer out of their reverie.

While daydreaming has long been derided as a lazy, non-productive pastime, daydreaming can be constructive in some contexts. There are numerous examples of people in creative or artistic careers, such as composers, novelists, and filmmakers, developing new ideas through daydreaming. Similarly, research scientists, mathematicians, and physicists have developed new ideas by daydreaming about their subject areas.

See Also

Apathy
Dysthymia
Motivation

Boredom **Daydream** **Escapism**

Capitalism

History

Daydreaming was long held in disrepute in society and was associated with laziness. In the late 1800s, Toni Nelson argued that some day-dreams with grandiose fantasies are self-gratify-ing attempts at "wish fulfillment". In the 1950s, some educational psychologists warned parents not to let their children daydream, for fear that the children may be sucked into "neurosis and even psychosis."

In the late 1960s, psychologist Jerome L. Singer of Yale University and psychologist John S. Antrobus of the City College of New York cre-ated a daydream questionnaire. The question-naire, called the Imaginal Processes Inventory (IPI) has been used to investigate daydreams. Psychologists Leonard Giambra and George Huba used the IPI and found that daydreamers' imaginary images vary in three ways: how vivid or enjoyable the daydreams are, how many guilt- or fear-filled daydreams they have, and how "deeply" into the daydream people go.

Escapism is mental diversion by means of entertainment or recreation, as an “escape” from the perceived unpleasant aspects of daily stress.

It can also be used as a term to define the ac-tions people take to try to help relieve feelings of depression or general sadness.

Some believe that this diversion is more inher-ent in today's urban, technological existence because it de facto removes people from their biologically normal natures. Entire industries have sprung up to foster a growing tendency of people to remove themselves from the rigors of daily life. Principal amongst these are fic-tion literature, music, sports, films, television, roleplaying games, pornography, recreational drugs, the internet and computer games. Many activities that are normal parts of a healthy existence (e.g., eating, exercise, sexual activity) can also become avenues of escapism when taken to extreme.

In the context of being taken to an extreme, the word "escapism" carries a negative connotation, suggesting that escapists are unhappy, with an inability or unwillingness to connect meaning-fully with the world.

However, there are some who challenge the idea that escapism is fundamentally and exclu-sively negative. For instance, J.R.R. Tolkien, responding to the Anglo-Saxon academic debate on escapism in the 1930s, wrote in his essay "On Fairy-Stories" that escapism had an element of emancipation in its attempt to figure a different reality. His friend C. S. Lewis was also fond of humorously remarking that the usual enemies of escape were jailers.

Recent Research

Eric Klinger's research in the 1980s showed that most daydreams are about ordinary, everyday events and help to remind us of mundane tasks. Klinger's research also showed that over 3/4 of workers in 'boring jobs,' such as lifeguards and truck drivers, use vivid daydreams to "ease the boredom" of their routine tasks. Klinger found that less than five percent of the workers' day-dreams involved explicitly sexual thoughts and that violent daydreams were also uncommon.

Israeli high school students who scored high on the Daydreaming Scale of the IPI had more empathy than students who scored low. Some psychologists, such as Los Angeles’ Joseph E. Shorr, use the mental imagery created during their clients' daydreaming to help gain insight into their mental state and make diagnoses.

Some social critics warn of attempts by the powers that control society to provide means of escapism instead of actually bettering the condition of the people. For example, Karl Marx wrote that "Religion is the opium of the people." This is contrary to the thought of Saint Augustine of Hippo, who argued that people try to find satisfaction in material things to fill a void within them that only God can fill.

Escapist societies appear often in literature. The Time Machine depicts the Eloi, a lackadaisical, insouciant race of the future, and the horror their happy lifestyle belies. The novel subtly criticizes capitalism, or at least classism, as a means of escape. Escapist societies are common in dystopian novels such as Fahrenheit 451, where society uses television and "seashell radios" to escape an otherwise bland life, and Brave New World, where drugs and recreational sex are used.

A German social philosopher Ernst Bloch wrote that utopias and images of fulfillment, however regressive they might be, also included an impetus for a radical social change. Ac-cording to Bloch, social justice could not be realized without seeing things fundamentally differently. Something that is mere "daydream-ing" or "escapism" from the viewpoint of a technological-rational society might be a seed for a new and more humane social order, it can be seen as an "immature, but honest substitute for revolution".

See Also

Absent-mindedness
Dreams
Fantasy (psychology)
Escapism
Imaginary world
Imagination
Mind-wandering
Pipe dream
Stream of consciousness (psychology)

Capitalism generally refers to an economic and social system in which the means of production are predominantly privately-owned and operated for profit.

Investment, distribution, income, production, pricing and other economic activity are usually determined by the owners of these means of production according to their own self-interest. Almost all countries in the world have adopted elements of capitalism in their economic systems.

Theories of capitalism as a coherent economic system derive from the mid-nineteenth century. In the late 19th century some German and Austrian theorists began developing concepts of capitalism that differed from Marx and Engels's analyses in studies of capital and interest. In the early 20th century Max Weber gave the term a more positive connotation. During this same period Ludwig von Mises authored a compre-hensive philosophical treatise on capitalism: Human Action. During the Cold War, theories of capitalism continued to be developed and elaborated in order to explain, justify, or criti-cize the private ownership of capital; to explain the operation of capitalistic markets; and to guide the application or elimination of govern-ment regulation of property and markets. (See economics, political economy, laissez-faire.)

Capitalist economic practices became institu-tionalized in Europe between the 16th and 19th centuries, although some features of capitalist organization existed in the ancient world, and early forms of merchant capitalism flour-ished during the Middle Ages. Capitalism has emerged as the Western world's dominant eco-nomic system since the decline of feudalism, which eroded traditional political and religious restraints on capitalist exchange. Capitalism gradually spread from Europe, particularly from Britain, across political and cultural frontiers. In the 19th and 20th centuries, capitalism provided the main, but not exclusive, means of industrial-ization throughout much of the world.

The concept of capitalism has limited analytic value, given the great variety of historical cases over which it is applied, varying in time, geog-raphy, politics and culture. Some economists have specified a variety of different types of capitalism, depending on specifics of concen-tration of economic power and wealth, and methods of capital accumulation. During the last century capitalism has been contrasted with centrally planned economies.

History of capitalism

Private ownership of some means of production has existed at least in a small degree since the invention of agriculture. Some writers see me-dieval guilds as forerunners of the modern capi-talist concern (especially through using appren-tices as a kind of paid laborer); but economic activity was bound by customs and controls which, along with the rule of the aristocracy

which would expropriate wealth through arbi-trary fines, taxes and enforced loans, meant that profits were difficult to accumulate. By the 18th century, however, these barriers to profit were overcome and capitalism became the dominant economic system of the United Kingdom and by the 19th century Western Europe.

Some writers trace back the earliest stages of merchant capitalism even further to the medieval Islamic world during the 9th-12th centuries, where a vigorous monetary market economy was created on the basis of the expanding levels of circulation of a stable high-value currency (the dinar) and the integration of monetary areas that were previously indepen-dent. Innovative new business techniques and forms of business organisation were introduced by economists, merchants and traders during this time. Such innovations included trad-ing companies, bills of exchange, contracts, long-distance trade, big businesses, the first forms of partnership (mufawada in Arabic) such as limited partnerships (mudaraba), and the concepts of credit, profit, capital (al-mal) and capital accumulation (nama al-mal). Many of these early capitalist ideas were further advanced in medieval Europe from the 13th century onwards.

In the period between the late 15th century and the late 18th century the institution of private property was brought into existence in the full, legal meaning of the term. Important contribu-tion to the theory of property is found in the work of John Locke, who argued that the right to private property is a natural right. During the Industrial Revolution much of Europe underwent a thorough economic transformation associated with the rise of capitalism and levels of wealth and economic output in the Western world have risen dramatically since that period.

Over the course of the past five hundred years, capital has been accumulated by a variety of different methods, in a variety of scales, and associated with a great deal of variation in the concentration of economic power and wealth. Much of the history of the past five hundred years is concerned with the development of capitalism in its various forms, its defense and its rejection, particularly by socialists.

Mercantilism

An earlier system from which capitalism evolved, arising in the period between the 16th and 18th centuries, is commonly described as merchant capitalism and mercantilism. This pe-riod was associated with geographic discoveries by merchant overseas traders, especially from England and the Low Countries; the European colonization of the Americas; and the rapid growth in overseas trade. The associated rise of

Economic Systems	
Ideologies & Theories	125
Capitalism	<i>Communist economy</i> <i>Corporatism</i> <i>Fascist economy</i> <i>Islamic economics</i> <i>Laissez-faire</i> <i>Mercantilism</i> <i>Natural economy</i> <i>Primitive communism</i> <i>Social market economy</i> <i>Socialist economics</i>
Sectors & Systems	<i>Closed economy</i> <i>Dual economy</i> <i>Gift economy</i> <i>Informal economy</i> <i>Market economy</i> <i>Mixed economy</i> <i>Open economy</i> <i>Participatory economics</i> <i>Planned economy</i> <i>Subsistence economy</i> <i>Underground economy</i> <i>Virtual economy</i>
Related Articles	<i>Anglo-Saxon economy</i> <i>American School</i> <i>Command Economy</i> <i>Global economy</i> <i>Hunter-gatherer</i> <i>Information economy</i> <i>Newly industrialized country</i> <i>Palace economy</i> <i>Plantation economy</i> <i>Token economy</i> <i>Traditional economy</i> <i>Transition economy</i>

a bourgeoisie class eclipsed the prior feudal system. It is mercantilism that Adam Smith refuted in his Wealth of Nations which is a recognized treatise of capitalist theory.

Mercantilism was a system of trade for profit, although commodities were still largely produced by non-capitalist production methods. Noting the various pre-capitalist features of mercantilism, Karl Polanyi argued that capitalism did not emerge until the establishment of free trade in Britain in the 1830s.

Under mercantilism, European merchants, backed by state controls, subsidies, and monopolies, made most of their profits from the buying and selling of goods. In the words of Francis Bacon, the purpose of mercantilism was "the opening and well-balancing of trade; the cherishing of manufacturers; the banishing of idleness; the repressing of waste and excess by sumptuary laws; the improvement and husbanding of the soil; the regulation of prices..." Similar practices of economic regimentation had begun earlier in the medieval towns. However, under mercantilism, given the contemporaneous rise of absolutism, the state superseded the local guilds as the regulator of the economy.

Among the major tenets of mercantilist theory was bullionism, a doctrine stressing the importance of accumulating precious metals. Mercantilists argued that a state should export more goods than it imported so that foreigners would have to pay the difference in precious metals. Mercantilists asserted that only raw materials that could not be extracted at home should be imported; and promoted government subsidies, such as the granting of monopolies and protective tariffs, were necessary to encourage home production of manufactured goods.

Proponents of mercantilism emphasized state power and overseas conquest as the principal aim of economic policy. If a state could not supply its own raw materials, according to the mercantilists, it should acquire colonies from which they could be extracted. Colonies constituted not only sources of supply for raw materials but also markets for finished products. Because it was not in the interests of the state to allow competition, held the mercantilists, colonies should be prevented from engaging in manufacturing and trading with foreign powers.

Industrial Capitalism and Laissez-Faire

Mercantilism declined in Great Britain in the mid-18th century, when a new group of economic theorists, led by David Hume and Adam Smith, challenged fundamental mercantilist doctrines as the belief that the amount of the world’s wealth remained constant and that a state could only increase its wealth at the expense of another state. However, in more undeveloped economies, such as Prussia and Russia, with their much younger manufacturing bases, mercantilism continued to find favor after other states had turned to newer doctrines.

The mid-18th century gave rise to industrial capitalism, made possible by the accumulation of vast amounts of capital under the merchant

phase of capitalism and its investment in machinery. Industrial capitalism, which Marx dated from the last third of the 18th century, marked the development of the factory system of manufacturing, characterized by a complex division of labor between and within work process and the routinization of work tasks; and finally established the global domination of the capitalist mode of production.

During the resulting Industrial Revolution, the industrialist replaced the merchant as a dominant actor in the capitalist system and affected the decline of the traditional handicraft skills of artisans, guilds, and journeymen. Also during this period, capitalism marked the transformation of relations between the British landowning gentry and peasants, giving rise to the production of cash crops for the market rather than for subsistence on a feudal manor. The surplus generated by the rise of commercial agriculture encouraged increased mechanization of agriculture.

The rise of industrial capitalism was also associated with the decline of mercantilism. Mid- to late-nineteenth-century Britain is widely regarded as the classic case of laissez-faire capitalism. Laissez-faire gained favor over mercantilism in Britain in the 1840s with the repeal of the Corn Laws and the Navigation Acts. In line with the teachings of the classical political economists, led by Adam Smith and David Ricardo, Britain embraced liberalism, encouraging competition and the development of a market economy.

Capitalism in the Late 19th and Early 20th Centuries

In the late 19th century, the control and direction of large areas of industry came into the hands of financiers. This period has been defined as "finance capitalism," characterized by the subordination of processes of production to the accumulation of money profits in a financial system. Major characteristics of capitalism in this period included the establishment of large industrial cartels or monopolies; the ownership and management of industry by financiers divorced from the production process; and the development of a complex system of banking, an equity market, and corporate holdings of capital through stock ownership. Increasingly, large industries and land became the subject of profit and loss by financial speculators.

Late 19th and early 20th century capitalism has also been described as an era of "monopoly capitalism," marked by movement from laissez-faire ideology and government policies to the concentration of capital into large monopolistic or oligopolistic holdings by banks and financiers, and characterized by the growth of large corporations and a division of labor separating shareholders, owners, and managers. Although the concept of monopoly capitalism originated among Marxist theorists, non-Marxist economic historians have also commented on the rise of monopolies and trusts in the period. Murray Rothbard, asserting that the large cartels of the late 19th century could not arise on the free market, argued that the "state monopoly capitalism" of the period was the result of in-

terventionist policies adopted by governments, such as tariffs, quotas, licenses, and partnership between state and big business.

By the last quarter of the 19th century, the emergence of large industrial trusts had provoked legislation in the U.S. to reduce the monopolistic tendencies of the period. Gradually, the U.S. federal government played a larger and larger role in passing antitrust laws and regulation of industrial standards for key industries of special public concern. However, some economic historians believe these new laws were in fact designed to aid large corporations at the expense of smaller competitors. By the end of the 19th century, economic depressions and boom and bust business cycles had become a recurring problem. In particular, the Long Depression of the 1870s and 1880s and the Great Depression of the 1930s affected almost the entire capitalist world, and generated discussion about capitalism’s long-term survival prospects. During the 1930s, Marxist commentators often posited the possibility of capitalism's decline or demise, often in alleged contrast to the ability of the Soviet Union to avoid suffering the effects of the global depression.

Capitalism Following the Great Depression

The economic recovery of the world's leading capitalist economies in the period following the end of the Great Depression and the Second World War — a period of unusually rapid growth by historical standards — eased discussion of capitalism's eventual decline or demise.

In the period following the global depression of the 1930s, the state played an increasingly prominent role in the capitalistic system throughout much of the world. In 1929, for example, total U.S. government expenditures (federal, state, and local) amounted to less than one-tenth of GNP; from the 1970s they amounted to around one-third. Similar increases were seen in all industrialized capitalist economies, some of which, such as France, have reached even higher ratios of government expenditures to GNP than the United States. These economies have since been widely described as "mixed economies."

During the postwar boom, a broad array of new analytical tools in the social sciences were developed to explain the social and economic trends of the period, including the concepts of post-industrial society and the welfare state. The phase of capitalism from the beginning of the postwar period through the 1970s has sometimes been described as “state capitalism”, especially by Marxian thinkers.

The long postwar boom ended in the late 1960s and early 1970s, and the situation was worsened by the rise of stagflation. Exceptionally high inflation combined with slow output growth, rising unemployment, and eventually recession caused loss of credibility of Keynesian welfare-statist mode of regulation. Under the influence of Friedrich Hayek and Milton Friedman, Western states embraced policy prescriptions inspired by the laissez-faire capitalism and

classical liberalism. In particular, monetarism, a theoretical alternative to Keynesianism that is more compatible with laissez-faire, gained increasing prominence in the capitalist world, especially under the leadership of Ronald Reagan in the U.S. and Margaret Thatcher in the UK in the 1980s. In the eyes of many economic and political commentators, collapse of the Soviet Union brought further evidence of superiority of market capitalism over state-centered economic systems.

Globalization

Although overseas trade has been associated with the development of capitalism for over five hundred years, some thinkers argue that a number of trends associated with globalization have acted to increase the mobility of people and capital since the last quarter of the 20th century, combining to circumscribe the room to maneuver of states in choosing non-capitalist models of development. Today, these trends have bolstered the argument that capitalism should now be viewed as a truly world system. However, other thinkers argue that globalization, even in its quantitative degree, is no greater now than during earlier periods of capitalist trade.

After the abandonment of the Bretton Woods system and the strict state control of foreign exchange rates, the total value of transactions in foreign exchange was estimated to be at least twenty times greater than that of all foreign movements of goods and services . The internationalization of finance, which some see as beyond the reach of state control, combined with the growing ease with which large corporations have been able to relocate their operations to low-wage states, has posed the question of the 'eclipse' of state sovereignty, arising from the growing 'globalization' of capital.

Economic growth in the last half-century has been consistently strong. Life expectancy has almost doubled in the developing world since the postwar years and is starting to close the gap on the developed world where the improvement has been smaller. Infant mortality has decreased in every developing region of the world. While scientists generally agree about the size of global income inequality, there is a general disagreement about the recent direction of change of it. However, it is growing within particular nations such as China. The book The Improving State of the World argues that economic growth since the industrial revolution has been very strong and that factors such as adequate nutrition, life expectancy, infant mortality, literacy, prevalence of child labor, education, and available free time have improved greatly. It is argued that important factors behind these improvements are globalization and capitalism.

See Also

- Anarcho-capitalism*
- Anti-capitalism*
- Capitalist mode of production*
- Corporation*
- Critique of capitalism*
- Culture of capitalism*
- Crony capitalism*
- Definitions of capitalism*
- Economic ideology*
- Free market*
- History of economic thought*
- Laissez-Faire*
- Late capitalism*
- Liberal capitalism*
- Marxism*
- Objectivism (Ayn Rand)*
- Protestant work ethic*
- The Protestant Ethic and the Spirit of Capitalism*
- Socialism*
- Technocapitalism*
- Post-capitalism*

A gift economy is an economic system in which goods and services are given without any explicit agreement for immediate or future quid pro quo.

Typically, a gift economy occurs in a culture or subculture that emphasizes social or intangible rewards for generosity: karma, honor, loyalty or other forms of gratitude. In some cases, simultaneous or recurring giving serves to circulate and redistribute valuables within a community. This can be considered a form of reciprocal altruism. Sometimes there is an implicit expectation of the return of comparable goods or services, political support, or the gift being later passed on to a third party. However, in what is considered to be in the true spirit of gift economics, many times giving is done without any expectation of reciprocity.

The concept of a gift economy stands in contrast to a planned economy or a market or barter economy. In a planned economy, goods and services are distributed by explicit command and control rather than informal custom; in barter or market economies, an explicit quid pro quo — an exchange of money or some other commodity — is established before the transaction takes place. In practice, most human societies blend elements of all of these, in varying degrees.

Examples and Benefits

Some examples would be:

- Sharing of food in a hunter-gatherer society, where sharing is a safeguard against failure of any individual's daily foraging.
- The Pacific Northwest Native American potlatch ritual, where leaders give away large amounts of goods to their followers, strengthening group relations. By sacrificing accumulated wealth, a leader gained a position of honor.
- Southeast Asia Theravada Buddhist Feasts of Merit, very similar to the Potlach. Such feasts involve many sponsors of all types, and continue to this day mainly before and after Rainy Seasons rather than chiefly in winter.
- Religious tithing.
- Offerings to a deity, spirit, intercessionary saint or similar entities.
- A "favor network" within a company.
- A family, in which each generation pays for the education of the next: this is an example where the gift creates an implicit obligation to give a gift to a third party, rather than to the giver.
- Charitable giving or philanthropy.
- Open source development and other forms of commons-based peer production.

A gift economy is sometimes referred to as a "sharing economy," although many economists reserve the term "sharing" for the use of a single resource by more than one consumer, such as a common, a public library, or a shared car. It is also sometimes referred to as a "gift culture."

One of the possible benefits of a gift economy (which it has in common with some planned economies) is that it can provide for the needs of some who have no current means with which to reciprocate. For example, if some in a society are so poor as to have nothing material to barter and no goods or money to bring to market, they can still receive charity if sufficient resources

exist. Similarly, in the vast majority of societies, parents support their children at least in early childhood (and, in some societies, into adolescence and adulthood) without any explicit negotiation of what is expected in exchange.

Some have suggested that variations on a gift economy may be the key to breaking the cycle of poverty. This position, and the desire to refashion of all of society into a gift economy, are particularly characteristic of anarcho-primitivism and anarcho-communism. Anarcho-communists advocate a pure gift economy as an ideal, with neither money, nor markets, nor central planning. This view traces back at least to Peter Kropotkin, who saw in the hunter-gatherer tribes he had visited the paradigm of "mutual aid."

Traditional Gift Economies

Marshall Sahlins writes that Stone Age gift economies were, by their nature as gift economies, economies of abundance, not scarcity, despite their typical status of objective poverty.

Hyde locates the origin of gift economies in the sharing of food, citing for example the Trobriand Islander protocol of referring to a gift in the Kula exchange as "some food we could not eat," when it is not food at all, but an armband or shell necklace made for the explicit purpose of passing as a gift. The potlatch also originated as a "big feed." He argues that this led to a notion in many societies of the gift as something that must "perish."

Many societies have strong prohibitions against turning gifts into commodities or capital. Anthropologist Wendy James writes that among the Uduk people of northeast Africa there is a strong custom that any gift that crosses subclan boundaries must be consumed, rather than invested. For example, an animal given as a gift must be eaten, not bred.

However, as in the example of the Trobriand armbands and necklaces, this "perishing" may not consist of consumption as such, but of the gift moving on. In other societies, it is a matter of giving some other gift, either directly in return or to another party. To keep the gift and not give another in exchange, though, is reprehensible. "In folk tales," Hyde remarks, "the person who tries to hold onto a gift usually dies."

A true gift economy normally requires gift exchange to be more than simply a back-and-forth between two individuals. A Kashmiri tale tells of two Brahmin women who tried to fulfill their obligations for alms-giving simply by giving alms back and forth to one another. On their deaths they were transformed into two poisoned wells from which no one could drink, reflecting

the barrenness of this weak simulacrum of giving.

This notion of expanding the circle can be seen in societies where hunters give animals to priests, who sacrifice a portion to a deity (who, in turn, is expected to provide an abundant hunt). The hunters do not directly sacrifice to the deity themselves.

Pacific Island societies prior to the nineteenth century had essentially gift economies, which still endure in parts of the Pacific today - for example in some outer islands of the Cook Islands. In Tokelau, despite the gradual appearance of a market economy, a form of gift economy remains through the practice of inati, the strictly egalitarian sharing of all food resources in each atoll. Today, there are significant diasporic Pacific Islander communities in New Zealand, Australia and the United States. Although they have become participants in those countries' market economies, some seek to retain practices linked to an adapted form of gift economy, such as reciprocal gifts of money, or remittances back to their home community. The notion of reciprocal gifts is seen as essential to the fa'aSamoa ("Samoan way of life"), the anga fakatonga ("Tongan way of life"), and the culture of other diasporic Pacific communities.

A potlatch is a highly complex event or ceremony among certain Indigenous peoples in North America, including nations on the Pacific Northwest coast of the United States and the Canadian province of British Columbia that has been practiced for thousands of years.

Such peoples included the Haida, Nuxalk, Tlingit, Tsimshian, Nuu-chah-nulth, Kwakwaka'wakw and Coast Salish nations.

About

The potlatch takes the form of governance, economy, social status and continuing spiritual practices. A potlatch, usually involving ceremony, includes celebration of births, rites of passages, weddings, funerals, puberty, and honoring of the deceased. Through political, economic and social exchange, it is a vital part of these Indigenous people's culture. Although protocol differs among the Indigenous nations, the potlatch could involve a feast, with music, dance, theatricality and spiritual ceremonies. The most sacred ceremonies are usually observed in the winter.

Within it, hierarchical relations within and between clans, villages, and nations, are observed and reinforced through the distribu-

Criticism

According to the critics the English word "gift" is usually a very poor translation of the wide variety of words actually used by hunter-gatherer and other cultures to describe their transactions and obligations. It is also a poor metaphor for describing the wide variety of such forms. The term "gift" was applied to "primitive cultures" by missionaries and colonial anthropologists who oversimplified their sophisticated and obscure transactions. The term is also paternalistic, comparing sophisticated native transactions to the traditions of Western children, such as the Christmas gift exchange. This colonial legacy has been overlaid by a romantic yearning for the more innocent sounding transactions of our childhood, perpetuating the myth of a "gift economy" into post-colonial anthropology and ideology.

On a more fundamental level, staunch advocates of a free-market economy and trading value-for-value criticize the notion of a gift economy as immoral, impractical, or both.

See Also

Economy of the Iroquois, which used gift-giving as its main mode of intertribal trade
Xenia (Greek)
Mutual Aid
Philanthropy
Non-profit organization

against a custom that they saw as no worse than Christmas, when friends were feasted and gifts were exchanged. As the potlatch became less of an issue in the twentieth century, the ban was dropped from the books, in the United States in 1934 and in Canada in 1951. It was also banned because this tradition was seen as a threat or competition to the Christian belief.

Continuation

The potlatch has fascinated and perhaps been misunderstood by Westerners for many years. Thorstein Veblen's use of the ceremony in his book Theory of the Leisure Class made potlatching a symbol of "conspicuous consumption". Other authors such as Georges Bataille were struck by what they saw as the anarchic, communal nature of the potlatch's operation—it is for this reason that the organization Lettrist International named their review after the potlatch in the 1950s. Kim Stanley Robinson adopted the term in his Mars trilogy.

Etymology and Definition

The name is derived from Chinook Jargon; every practicing Pacific Northwest language

group has a variation. The Chinook Jargon word is a homonym having nothing to do with "pot" or "latch". Coast Salish Lushootseed potlatching is xwsalikw, from xwḅš, "throw, broadcast, distribute goods", related to pús(u), "throw through the air, throw at". The casting or throwing of suitable gifts is a part of a potlatch ceremony.

n. [Chinook potlatch, pahtlatch, fr.Nootka pahchilt, pachalt, a gift.]

1. Among the Kwakiutl, Chimmesyan, and other Indians of the northwestern coast of North America, a ceremonial distribution by a man of gifts to his own and neighboring tribesmen, often, formerly, to his own impoverishment. Feasting, dancing, and public ceremonies accompany it.
2. Hence, a feast given to a large number of persons, often accompanied by gifts. [Colloq., Northwestern America] *[Webster 1913 Suppl.]*

See Also

Koha
Kula ring, a similar concept in the Trobriand Islands (Oceania)
Moka, another similar concept in Papua New Guinea
Sepik Coast exchange, yet another similar concept in Papua New Guinea
Guy Debord, French Situationist writer on the subject of potlatch and commodity reification.
Gift economy
Burning Man

Those following the political view would see the May 1968 uprisings as a logical outcome of the SI's dialectical approach: while savaging present day society, they sought a revolutionary society which would embody the positive tendencies of capitalist development. The "realization and suppression of art" is simply the most developed of the many dialectical supsessions which the SI sought over the years. For the Situationist International of 1968, the world triumph of workers councils would bring about all these supersessions.

An important event leading up to May 1968 was the Strasbourg scandal of 1966. A group of students managed to use public funds to publish a pamphlet entitled On the Poverty of Student Life: considered in its economic, political, psychological, sexual, and particularly intellectual aspects, and a modest proposal for its remedy. Thousands of copies of the pamphlet were printed and circulated in and helped to make the Situationists well known throughout the nonstalinist left.

The SI's part in the revolt of 1968 has often been overemphasised. They were a very small

group, but were expert self-propagandists, and their slogans appeared daubed on walls throughout Paris at this time. SI member René Viénet's 1968 book Enragés and Situationists in the Occupations Movement, France, May '68 gives an account of the involvement of the SI with the student group of Enragés and the occupation of the Sorbonne.

The occupations of 1968 started at the university of Nanterre and spread to the Sorbonne. The police tried to take back the Sorbonne and a riot ensued. Following this a general strike was declared with up to 10 million workers participating. The SI originally participated in the Sorbonne occupations and defended barricades in the riots. The SI distributed calls for the occupation of factories and the formation of workers' councils, but, disillusioned with the students, left the university to set up the The Council For The Maintenance Of The Occupations (CMDO) which distributed the SI's demands on a much wider scale. After the end of the movement, the CMDO disbanded.

See Also

Anarchism
Autonomism
Dada
Members of the Situationist International
Libertarian Communism
Libre Society
Alternative society
Diggers (theater)
Fluxus
Social criticism
Surrealism
Psychogeography
Épater la bourgeoisie
The Workshop for Non-linear Architecture

The Situationist International (SI) was a small group of international political and artistic agitators with roots in Marxism, Lettrism and the early 20th century European artistic and political avant-gardes.

Formed in 1957, the SI was active in Europe through the 1960s and aspired to major social and political transformations. In the 1960s it split into a number of different groups, including the Situationist Bauhaus, the Antinational and the Second Situationist International. The first SI disbanded in 1972.

History

Earlier Groups

The SI was formed at a meeting in the Italian village of Cosio d'Arroscia on 28 July 1957 with the fusion of several extremely small artistic tendencies, which claimed to be avant-gardistes: Lettrist International, the International Movement for an Imaginist Bauhaus (an off-shoot of COBRA), and the London Psychogeographical Association. The groups came together intending to reawaken the radical political potential of surrealism. The group also later drew ideas from the left communist group Socialisme ou Barbarie.

Already in 1950, the Lettrist International was very active in provoking pranks. At the Easter mass at Notre Dame de Paris, they infiltrated Michel Mourre, who, dressed like a monk, "stood in front of the altar and read a pamphlet proclaiming that God was dead". This event

became known as the Notre-Dame Affair.

Situationist International

The most prominent French member of the group, Guy Debord, has tended to polarise opinion. Some describe him as having provided the theoretical clarity within the group; others say that he exercised dictatorial control over its development and membership; yet others believe that he was a powerful writer but a second-rate thinker. Other members included the Dutch painter Constant Nieuwenhuys, the Italo-Scottish writer Alexander Trocchi, the English artist Ralph Rummey (sole member of the London Psychogeographical Association, Rummey suffered expulsion relatively soon after the formation of the Situationist International), the Scandinavian artist Asger Jorn (who after parting with the SI also founded the Scandinavian Institute for Comparative Vandalism), the architect and veteran of the Hungarian Uprising Attila Kotanyi, the French writer Michele Bernstein, and Raoul Vaneigem. Debord and Bernstein later married.

May 1968

Those who followed the "artistic" view of the SI might view the evolution of the SI as producing a more boring or dogmatic organization.

Quotations

"Live without dead time"
- *Vivez sans temps mort* - *Anonymous graffiti, Paris 1968*

"I take my desires for reality because I believe in the reality of my desires"
- *Anonymous graffiti, Paris 1968*

"What beautiful and priceless potlatches the affluent society will see -- whether it likes it or not! -- when the exuberance of the younger generation discovers the pure gift; a growing passion for stealing books, clothes, food, weapons or jewelry simply for the pleasure of giving them away"
- *Raoul Vaneigem, The Revolution of Everyday Life*

"Be realistic - demand the impossible!"
- *Soyez réalistes, demandez l'impossible!* - *Anonymous graffiti, Paris 1968*

"Beneath the paving stones - the beach!"
- *Sous les pavés, la plage!* - *Anonymous graffiti, Paris 1968*

"Never work"
- *Ne travaillez jamais* - *Anonymous graffiti, rue de Seine Paris 1952*

"Down with a world in which the guarantee that we will not die of starvation has been purchased with the guarantee that we will die of boredom."
- *Raoul Vaneigem, The Revolution Of Everyday Life*

"People who talk about revolution and class struggle without referring explicitly to everyday life, without understanding what is subversive about love and what is positive in the refusal of constraints, such people have a corpse in their mouth"
- *Raoul Vaneigem, The Revolution Of Everyday Life*

In philosophy, a Dérive is a French concept meaning an aimless walk, probably through city streets, that follows the whim of the moment.

French philosopher and Situationist Guy Debord used this idea to try and convince readers to revisit the way

they looked at urban spaces. Rather than being prisoners to their daily route and routine, living in a

Sometimes translated as a drift

complex city but treading the same path every day, he urged people to follow their emotions and to look at urban situations in a radical new way. This led to the notion that most of our cities were so thoroughly unpleasant because they were designed in a way that either ignored their emotional impact on people, or indeed tried to control people through their very design. The basic premise of the idea is for people to explore their environment ("psychogeography") without preconceptions, to understand their location, and therefore their existence.

More recently in 1992, Sadie Plant wrote in *The Most Radical Gesture: The Situationist Interna-*

tional in a Post Modern Age: "to dériver was to notice the way in which certain areas, streets, or buildings resonate with states of mind, inclinations, and desires, and to seek out reasons for movement other than those for which an environment was designed. It was very much a matter of using an environment for one's own ends, seeking not only the marvellous beloved by surrealism but bringing an inverted perspective to bear on the entirety of the spectacular world."

It is also a concept used in psychogeographical studies for art collectives like Glowlab and conferences such as Provflux and Psy-Geo-conflux.

See Also

Situationist International
Psychogeography
Flâneur
Deambulation
Parkour

The term “flâneur” comes from the French verb *flâner*, which means “to stroll”. A flâneur is thus a person who walks the city in order to experience it.

Because of the term's usage and theorization by Charles Baudelaire and numerous thinkers in economic, cultural, literary and historical fields, the idea of the *flâneur* has accumulated significant meaning as a referent for understanding urban phenomena and modernity.

Contexts

Urban Life

While Baudelaire characterized the flâneur as a "gentleman stroller of city streets", he saw the flâneur as having a key role in understanding, participating in and portraying the city. A flâneur thus played a double role in city life and in theory, that is, while remaining a detached observer. This stance, simultaneously part of and apart from, combines sociological, anthropological, literary and historical notions of the relationship between the individual and the greater populace. After the 1848 Revolution, after which the empire was reestablished with clearly bourgeois pretensions of "order" and "morals", Baudelaire began asserting that traditional art was inadequate for the new dynamic complications of modern life. Social and economic changes brought by industrialization demanded that the artist immerse himself in the metropolis and become, in Baudelaire's phrase, "a botanist of the sidewalk". David Harvey asserts that "Baudelaire would be torn the rest of his life between the stances of flâneur and dandy, a disengaged and cynical voyeur on the one hand, and man of the people who enters into the life of his subjects with passion on the other" (Paris: Capital of Modernity 14).

Because he coined the word to refer to Parisians, the "flâneur" (the one who strolls) and "flânerie" (the act of strolling) are associated with Paris. However, the critical stance of flânerie is now applied more generally to any pedestrian environment that accommodates leisurely exploration of city streets—in commercial

avenues where inhabitants of different classes mix in particular. Indeed, diverse texts such as Baudrillard's *America*, or Jack Kerouac's *On the Road* demonstrate the concept's impact and flexible usage.

The observer-participant dialectic is evidenced in part by the dandy culture. Highly self-aware, and to a certain degree flamboyant and theatrical, dandies of the mid-nineteenth century created scenes through outrageous acts like walking turtles on leashes down the streets of Paris. Such acts exemplify a flâneur's active participation in and fascination with street life while displaying a critical attitude towards the uniformity, speed, and anonymity of modern life in the city.

The concept of the flâneur is important in academic discussions of the phenomenon of modernity. While Baudelaire's aesthetic and critical visions helped open-up the modern city as a space for investigation, theorists, such as Georg Simmel, began to codify the urban experience in more sociological and psychological terms. In his essay "The Metropolis and Mental Life", Simmel theorizes that the complexities of the modern city create new social bonds and new attitudes towards others. The modern city was transforming humans, giving them a new relationship to time and space, inculcating in them a 'blasé attitude', and altering fundamental notions of freedom and being:

“The deepest problems of modern life derive from the claim of the individual to preserve the autonomy and individuality of his existence in the face of overwhelming social forces, of historical heritage, of external culture, and of the technique of life. The fight with nature which primitive man has to wage for his bodily existence attains in this modern form its latest transformation. The eighteenth century called upon man to free himself of all the historical bonds in the state and in religion, in morals and in economics. Man's nature, originally good and common to all, should develop unhampered. In addition to more liberty, the nineteenth century demanded the functional specialization of man and his work; this specialization makes one individual incomparable to another, and each of them indispensable to the highest possible

Dérive Flâneur Tourism

extent. However, this specialization makes each man the more directly dependent upon the supplementary activities of all others. Nietzsche sees the full development of the individual conditioned by the most ruthless struggle of individuals; socialism believes in the suppression of all competition for the same reason. Be that as it may, in all these positions the same basic motive is at work: the person resists to being leveled down and worn out by a social-technological mechanism. An inquiry into the inner meaning of specifically modern life and its products, into the soul of the cultural body, so to speak, must seek to solve the equation which structures like the metropolis set up between the individual and the super-individual contents of life."

(*"The Metropolis and Mental Life"*)

Architecture and urban planning

The concept of the flâneur has also become meaningful in architecture and urban planning describing those who are indirectly and unintentionally affected by a particular design they experience only in passing. Walter Benjamin adopted the concept of the urban observer both as an analytical tool and as a lifestyle. From his Marxist standpoint, Benjamin describes the flâneur as a product of modern life and the Industrial Revolution without precedent, a parallel to the advent of the tourist. His flâneur is an uninvolved but highly perceptive bourgeois dilettante. Benjamin became his own prime example, making social and aesthetic observations during long walks through Paris. Even the title of his unfinished Arcades Project comes from his affection for covered shopping streets. In 1917, the Swiss writer Robert Walser published a short story called "Der Spaziergang", or "The Walk", a veritable outcome of the flâneur literature.

In the context of modern-day architecture and urban planning, designing for flâneurs is one way to approach issues of the psychological aspects of the built environment. Architect Jon Jerde, for instance, designed his Horton Plaza and Universal CityWalk projects around the idea of providing surprises, distractions, and sequences of events for pedestrians.

Photography

The flâneur's tendency toward detached but aesthetically attuned observation has brought the term into the literature of photography,

particularly street photography. The street photographer is seen as one modern extension of the urban observer described by nineteenth century journalist Victor Fournel before the advent of the hand-held camera:

This man is a roving and impassioned dagguerreotype that preserves the least traces, and on which are reproduced, with their changing reflections, the course of things, the movement of the city, the multiple physiognomy of the public spirit, the confessions, antipathies, and admirations of the crowd. ("Ce qu'on on voit dans les rues de Paris", What one sees on the streets of Paris)

The most notable application of flâneur to street photography probably comes from Susan Sontag in her 1977 essay, *On Photography*. She describes how, since the development of hand-held cameras in the early 20th century, the camera has become the tool of the flâneur:

The photographer is an armed version of the solitary walker reconnoitering, stalking, cruising the urban inferno, the voyeuristic stroller who discovers the city as a landscape of voluptuous extremes. Adept of the joys of watching, connoisseur of empathy, the flâneur finds the world 'picturesque.'

Cornelia Otis Skinner's *Flâneur*

“ There is no English equivalent for the French word *flâneur*. Cassell's dictionary defines *flâneur* as a stroller, saunterer, drifter but none of these terms seems quite accurate. There is no English equivalent for the term, just as there is no Anglo-Saxon counterpart of that essentially Gallic individual, the deliberately aimless pedestrian, unencumbered by any obligation or sense of urgency, who, being French and therefore frugal, wastes nothing, including his time which he spends with the leisurely discrimination of a gourmet, savoring the multiple flavors of his city.”

(*Cornelia Otis Skinner Elegant Wits and Grand Horizontals*, 1962, Houghton Mifflin, New York)

Tourism is travel for predominantly recreational or leisure purposes or the provision of services to support this leisure travel.

The World Tourism Organization defines tourists as people who "travel to and stay in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited". Tourism has become a popular global leisure activity. In 2006, there were over 842 million international tourist arrivals.

Tourism is vital for many countries, due to

See Also

Psychogeography

133

Definition

Hunziker and Krapf, in 1941, defined tourism as "the sum of the phenomena and relationships arising from the travel and stay of non-residents, insofar as they do not lead to permanent residence and are not connected with any earning activity." In 1976 Tourism Society of England defined it as "Tourism is the temporary, short-term movement of people to destination outside the places where they normally live and work and their activities during the stay at each destination. It includes movements for all purposes." In 1981 International Association of Scientific Experts in Tourism defined Tourism in terms of particular activities selected by choice and undertaken outside the home environment.

The United Nations classified three forms of tourism in 1994 in its Recommendations on Tourism Statistics: Domestic tourism, which involves residents of the given country traveling only within this country; Inbound tourism, involving non-residents traveling in the given country; and Outbound tourism, involving residents traveling in another country.

The UN also derived different categories of tourism by combining the 3 basic forms of tourism: Internal tourism, which comprises domestic tourism and inbound tourism; National tourism, which comprises domestic tourism and outbound tourism; and International tourism, which consists of inbound tourism and outbound tourism. Intrabound tourism is a term coined by the Korea Tourism Organization and widely accepted in Korea. Intrabound tourism differs from domestic tourism in that the former encompasses policymaking and implementation of national tourism policies.

Recently, the tourism industry has shifted from the promotion of inbound tourism to the promotion of intrabound tourism because many countries are experiencing tough competition for inbound tourists. Some national policymakers have shifted their priority to the promotion of intrabound tourism to contribute to the local economy. Examples of such campaigns include

"See America" in the United States, "Get Going Canada" in Canada, "Guseok Guseok" (corner to corner) in South Korea, and "Incredible India" in India.

Prerequisites

Before people are able to experience tourism they usually need disposable income (i.e. money to spend on non-essentials); time off from work or other responsibilities; leisure time tourism infrastructure, such as transport and accommodation; and legal clearance to travel.

Individually, sufficient health is also a condition, and of course the inclination to travel. Furthermore, in some countries there are legal restrictions on travelling, especially abroad. Certain states with strong governmental control over the lives of citizens (notably established Communist states) may restrict foreign travel only to trustworthy citizens. The United States prohibits its citizens from traveling to some countries, for example Cuba. Suitcases are also necessary for luggage.

Leisure Travel

Leisure travel was associated with the industrialisation of United Kingdom – the first European country to promote leisure time to the increasing industrial population. Initially, this applied to the owners of the machinery of production, the economic oligarchy, the factory owners, and the traders. These comprised the new middle class. Cox & Kings were the first official travel company to be formed in 1758. Later, the working class could take advantage of leisure time.

The British origin of this new industry is reflected in many place names. At Nice, one of the first and best-established holiday resorts on the French Riviera, the long esplanade along the seafront is known to this day as the Promenade des Anglais; in many other historic resorts in continental Europe, old well-established palace hotels have names like the Hotel Bristol, the Hotel Carlton or the Hotel Majestic - reflecting the dominance of English customers.

France also shares land borders with Brazil and Suriname (bordering French Guiana) , and the Netherlands Antilles (bordering Saint-Martin). France is also linked to the United Kingdom by the Channel Tunnel, which passes underneath the English Channel.

The French Republic is a democracy organised as a unitary semi-presidential republic. Its main ideals are expressed in the Declaration

See Also

Situationist International
Psychogeography
Flâneur
Deambulation
Parkour

of the Rights of Man and of the Citizen. In the 18th and 19th centuries, France built one of the largest colonial empires of the time, stretching across West Africa and Southeast Asia, prominently influencing the cultures and politics of the regions. France is a developed country with the sixth-largest economy in the world. France is the most visited country in the world, receiving over 79 million foreign tourists annually (including business visitors, but excluding people staying less than 24 hours in France). France is one of the founding members of the European Union, and has the largest land area of all members. France is also a founding member of the United Nations, and a member

of the Francophonie, the G8, and the Latin Union. It is one of the five permanent members of the United Nations Security Council; it is also an acknowledged nuclear power.

The name France originates from the Franks (Francs) , a Germanic tribe that occupied northern Europe after the fall of the Western Roman Empire. More precisely, the region around Paris, called Île-de-France, was the original French royal demesne. The first King of the Franks, Clovis, is regarded as the forefather of the French kings.

The Franco-Prussian War or Franco-German War, often referred to in France as the 1870 War was a conflict between France and Prussia, which was backed by the North German Confederation and the South German states of Baden, Württemberg and Bavaria.

The thorough Prussian and German victory brought about the final unification of the German Empire under King William I of Prussia. It also marked the downfall of Napoleon III and the end of the Second French Empire, which was replaced by the Third Republic. As part of the settlement, the territory of Alsace-Lorraine was taken by Prussia and was formed into a part of Germany, which would retain it until after World War I.

The conflict was a culmination of years of tension between the two powers, which finally came to a head over the issue of a Hohenzollern candidate for the vacant Spanish throne, following the deposition of Isabella II in 1868. The public release of the Ems Dispatch, which played up alleged insults between the Prussian king and the French ambassador, inflamed public opinion on both sides. France mobilized, and on 19 July declared war on Prussia only, but the other German states quickly joined on Prussia's side.

The superiority of the Prussian and German forces were soon evident, due in part to efficient use of railways and innovative Krupp artillery. A series of swift Prussian and German victories in eastern France culminated in the Battle of Sedan, at which Napoleon III was captured with his whole army on 2 September. Yet this did not end the war, as the Third Republic was declared in Paris on 4 September 1870, and French resistance continued under the Government of National Defence and later Adolphe Thiers.

Over a five-month campaign, the Prussian and German armies defeated the newly recruited French armies in a series of battles fought across northern France. Following a prolonged siege, the French capital Paris fell on 28 January 1871. Ten days earlier, the German states had proclaimed their union under the Prussian King, uniting Germany as a nation-state, the German Empire. The final peace Treaty of Frankfurt was signed 10 May 1871, during the time of the bloody Paris Commune of 1871.

The Siege of Paris, lasting from September 19, 1870 – January 28, 1871, brought about French defeat in the Franco-Prussian War and led to the establishment of the German Empire.

Trivia

- Paris sustained more damage in the 1870-1871 siege than in any other conflict.
- Balloon mail was used to overcome the communications blockade, with a rate of 20 cents per letter.

- Due to a severe shortage of food, Parisians were forced to slaughter whatever animals at hand. Rats, dogs, cats, and horses were regular fare on restaurant menus. Even Castor and Pollux, the only pair of elephants in Paris, were not spared.

See Also

Backpacking (travel)
Eco-tourism
Hospitality Services
Hotel
List of vacation resorts
List of types of lodging
Neo tourism
Package holiday
Passport
Pilgrimage
Resort town
Tourism geography
Tourism in literature
Tourist trap
Tour guide
Transport
Tourism technology
Travel agency
World Tourism Organization
World-Point Academy of Tourism
Accessible Tourism
Township tourism
Rural tourism

Balloon Mail refers to the transport of mail (usually for weight reasons in the form of a postcard) carrying the name of the sender by means of an unguided hydrogen or helium filled balloon.

136 Since the balloon is not controllable, the recipient of a balloon mail is left to coincidence. Often the balloon and postcard are lost. A found balloon should be returned to the sender (by conventional post) with an indication of the discovery site, so that the sender can determine how far their balloon flew. A balloon mail is an airborne "Message in a bottle". Frequently balloon mail is part of a balloon competition.

Besides racing, balloon mail has been used for spreading information and propaganda materials, in particular for spreading propaganda to the population in countries with dictatorial governments. A balloon can be released from

outside of the sphere of influence of these governments and, wind permitting, can travel several hundred kilometers.

During the siege of Paris between 23 September 1870 and 22 January 1871, 65 unguided mail balloons were discharged, of which only two went missing. The special balloon postcards were 10 x 7 cm, and were manufactured of thin green paper. There was a maximum weight of 4 g. The postcards carried an address, and it was hoped that the finder of a balloon would forward it through conventional mail. Twenty cents were charged for postage (more if the destination lay outside France).



Boredom :
*Viktor Vasnetsov. The Unsmiling Tsarevna (Nesmeyana). 1916-1926. Oil on Canvas 262*190 Vasnetsov Memorial Museum Moscow.*



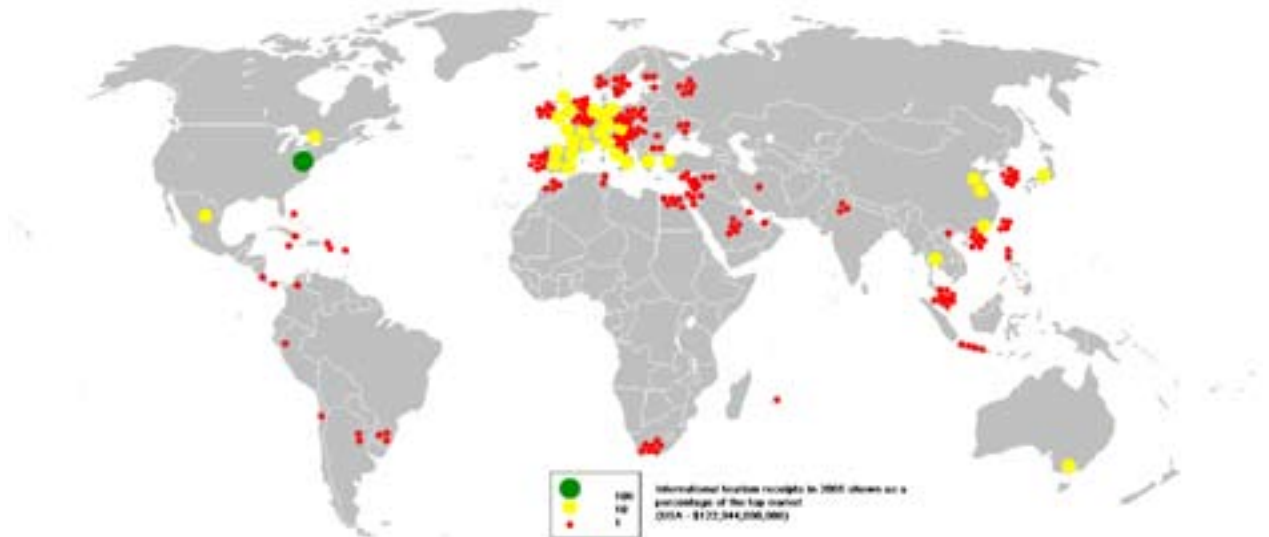
Capitalism :
Adam Smith (1723-1790).



Potlatch :
Wawadit'la with heraldic pole, built by Chief Mungo Martin in 1953 at Thunderbird Park in Victoria, British Columbia Canada.



Situationist International:
Guy Debord Source: <http://www.marxists.org/reference/archive/debord/debord.gif>.



Tourism:
This bubble map shows the global distribution of international tourism receipts in 2005 as a percentage of the top market (USA - \$122,944,000,000).



Tourism :
Broadway Tower, Cotswolds, England. Edited version of photo by Newton2, cropped one person from the left.



Balloon Mail:
Beschreibung: Französischer Ballonbrief 1870-1871

Hertz
Ultrasound
Sonic Weaponry
Infrasound
Lustmord
Sludge Metal
Blue-Collar Worker
Gold-Collar Worker
Dropping Out
Commune

The hertz is the SI unit of frequency.

Its base unit is cycle/s or s⁻¹ (also called inverse seconds, reciprocal seconds). In English, hertz is used as both singular and plural. As any SI unit, Hz can be prefixed; commonly used multiples are kHz (kilohertz, 103 Hz), MHz (megahertz, 106 Hz), GHz (gigahertz, 109 Hz) and THz (terahertz, 1012 Hz).

One hertz simply means one per second (typically that which is being counted is a complete cycle); 100 Hz means one hundred per second, and so on. The unit may be applied to any periodic event—for example, a clock might be said to tick at 1 Hz, or a human heart might be said to beat at 1.2 Hz. The frequencies of aperiodic events, such as radioactive decay, are expressed in becquerels.

To avoid confusion, periodically varying angles are typically not expressed in hertz, but rather in an appropriate angular unit such as radians per second. A disc rotating at 1 revolution per minute (RPM) can thus be said to be rotating at 0.105 rad/s or 0.017 Hz, where the latter reflects the number of complete revolutions per second. The conversion between Hz and rad/s is $\text{rad/s} = 1 \text{ Hz} \times 2\pi$.

History

The hertz is named after the German physicist Heinrich Rudolf Hertz, who made important scientific contributions to electromagnetism. The name was established by the IEC in 1930. It was adopted by the CGPM (Conférence générale des poids et mesures) in 1960, replacing the previous name for the unit, cycles per second (cps), along with its related multiples, primarily kilocycles per second (kc/s) and megacycles per second (Mc/s). The term cycles per second was largely replaced by hertz by the 1970s.

The term “gigahertz”, most commonly used in computer processor speed and Radio Frequency (RF) applications, can be pronounced either /ˈɡɪɡəˌhɜːts/, with a hard /g/ sound or /ˈɪɡəˌhɜːts/ or /ɪˈɡəˌhɜːts/, with a soft /ɪ/ sound at the beginning of the word. The prefix “giga-” is derived directly from the Greek “γίγας” and hence the preferred pronunciation is /ˈɡɪɡə/. Some electrical engineers use /ˈdʒɪɡə/, by analogy with “gigantic”.

Applications

Vibration

Sound is a traveling wave which is an oscillation of pressure. Humans perceive frequency

of sound waves as pitch. Each musical note corresponds to a particular frequency which can be measured in hertz. Although the human ear is able to perceive frequencies ranging from 16 Hz to 20,000 Hz at the age of a baby, the average human can hear sounds between 20 Hz and 15,000 Hz. The range of ultrasound and other physical vibrations such as molecular vibrations extends into the megahertz and well beyond.

Electromagnetic radiation

Electromagnetic radiation is often described by its frequency—the number of oscillations of the perpendicular electric and magnetic fields per second—expressed in hertz.

Radio frequency radiation is usually measured in kilohertz, megahertz, or gigahertz; this is why radio dials are commonly labeled with kHz, MHz, and (rarely) GHz. Light is electromagnetic radiation that is even higher in frequency, and has frequencies in the range of tens (infrared) to thousands (ultraviolet) of terahertz. Electromagnetic radiation with frequencies in the low terahertz range, intermediate between those of the highest normally-usable radio frequencies and long-wave infrared light, is often called terahertz radiation. Even higher frequencies exist, such as that of gamma rays, which can be measured in exahertz. (For historical reasons, the frequencies of light and higher frequency electromagnetic radiation are more commonly specified in terms of their wavelengths or photon energies: for a more detailed treatment of this and the above frequency ranges, see electromagnetic spectrum.)

Computing

In computing, most CPUs are labeled in terms of their clock speed expressed in megahertz or gigahertz (109 hertz). The number of megahertz refers to the frequency of the CPU's master clock signal ("clock speed"). This signal is simply an electrical voltage which changes from low to high and back again at regular intervals. Hertz has become the primary unit of measurement used by the general populace to determine the speed of a CPU, but many experts have criticized this approach, which they claim is an easily manipulable benchmark. For home-based personal computers, the CPU has ranged from approximately 1 megahertz in the late 1970s (Atari, Commodore, Apple computers) to nearly 4 gigahertz for modern-day Macintosh and PC machines.

Various computer buses, such as memory buses connecting the CPU and system RAM, also

transfer data using clock signals operating at different frequencies in the megahertz ranges (for modern products).

Frequencies not expressed in hertz

Even higher frequencies are believed to occur naturally, in the frequencies of the quantum-mechanical wave functions of high-energy (or, equivalently, massive) particles, although these are not directly observable, and must be inferred from their interactions with other phenomena. For practical reasons, these are typically not expressed in hertz, but in terms of the equivalent energy.

This SI unit is named after Heinrich Rudolf Hertz. As for all SI units whose names are derived from the proper name of a person, the first letter of its symbol is uppercase (Hz). But when an SI unit is spelled out, it should always be written in lowercase (hertz), unless it begins a sentence or is the name "degree Celsius".
— Based on The International System of Units (http://www.bipm.org/en/si/si_brochure/chapter5/5-2.html) , section 5.2.

See also

Frequency converter

Wavelength

Orders of magnitude (frequency)

Bandwidth

Ultrasound is a cyclic sound pressure with a frequency greater than the upper limit of human hearing, this limit being approximately 20 kilohertz (20,000 hertz).

Ability to hear ultrasound

The upper frequency limit in humans (approximately 20 kHz) is caused by the middle ear, which acts as a low-pass filter. If ultrasound is fed directly into the skull bone and reaches the cochlea without passing through the middle ear, much higher frequencies can be heard. This effect is discussed in ultrasonic hearing. Carefully-designed scientific studies have been performed and confirmed what they call the hypersonic effect - that even without consciously hearing it, high-frequency sound can have a measurable effect on the mind.

It is a fact in psychoacoustics that children can hear some high-pitched sounds that older adults cannot hear, because inhumans the upper limit pitch of hearing tends to become lower with age. A cell phone company has used this to create ring signals supposedly only able to be heard by younger humans; but many older people claim to be able to hear it, which is likely given the considerable variation of age-related deterioration in the upper hearing threshold.

Some animals – such as dogs, dolphins, bats, and mice – have an upper frequency limit that is greater than that of the human ear and thus can hear ultrasound.

Diagnostic sonography

Medical sonography (ultrasonography) is an ultrasound-based diagnostic medical imaging technique used to visualize muscles, tendons, and many internal organs, their size, structure and any pathological lesions with real time tomographic images. It is also used to visualize a fetus during routine and emergency prenatal care. Ultrasound scans are performed by medical health care professionals called sonographers. Obstetric sonography is commonly used during pregnancy. Ultrasound has been used to image the human body for at least 50 years.

It is one of the most widely used diagnostic tools in modern medicine. The technology is relatively inexpensive and portable, especially when compared with modalities such as magnetic resonance imaging (MRI) and computed tomography (CT). As currently applied in the medical environment, ultrasound poses no known risks to the patient. Sonography is generally described as a "safe test" because it does not use ionizing radiation, which imposes hazards, such as cancer production and chromosome breakage. However, ultrasonic energy has two potential physiological effects: it enhances inflammatory response; and it can heat soft tissue. Ultrasound energy produces a mechanical pressure wave through soft tissue. This pressure wave may cause microscopic bubbles in living tissues, and distortion of the cell membrane, influencing ion fluxes and intracellular activity. When ultrasound enters the body, it causes molecular friction and heats the tissues slightly. This effect is very minor as normal tissue perfusion dissipates heat. With high intensity, it can also cause small pockets of gas in body fluids or tissues to expand and contract/collapse in a phenomenon called cavitation (this is not known to occur at diagnostic power levels used by modern diagnostic ultrasound units). The long-term effects of tissue heating and cavitation are not known. There are several studies that indicate the harmful side effects on animal fetuses associated with the use of sonography on pregnant mammals. A noteworthy study in 2006 suggests exposure to ultrasound can affect fetal brain development in mice. This misplacement of brain cells during their development is linked to disorders ranging "from mental retardation and childhood epilepsy to developmental dyslexia, autism spectrum disorders and schizophrenia, the researchers said. There is no link made yet between the test results on animals, such as mice, and the possible outcome to humans. Widespread clinical use of diagnostic ultrasound testing on humans has not been done for ethical reasons. The possibility exists

that biological effects may be identified in the future, currently most doctors feel that based on available information the benefits to patients outweigh the risks. Obstetric ultrasound can be used to identify many conditions that would be harmful to the mother and the baby. For this reason many health care professionals consider that the risk of leaving these conditions undiagnosed is much greater than the very small risk, if any, associated with undergoing the scan. According to Cochrane review, routine ultrasound in early pregnancy (less than 24 weeks) appears to enable better gestational age assessment, earlier detection of multiple pregnancies and earlier detection of clinically unsuspected fetal malformation at a time when termination of pregnancy is possible.

Sonography is used routinely in obstetric appointments during pregnancy, but the FDA discourages its use for non-medical purposes such as fetal keepsake videos and photos, even though it is the same technology used in hospitals.

Obstetric ultrasound is primarily used to:

- Date the pregnancy (gestational age)
- Confirm fetal viability
- Determine location of fetus, intrauterine vs ectopic
- Check the location of the placenta in relation to the cervix
- Check for the number of fetuses (multiple pregnancy)
- Check for major physical abnormalities.
- Assess fetal growth (for evidence of intrauterine growth restriction (IUGR))
- Check for fetal movement and heartbeat.
- Determine the sex of the baby

Unfortunately, results are occasionally wrong, producing a false positive (the Cochrane Collaboration is a relevant effort to improve the reliability of health care trials). False detection may result in patients being warned of birth defects when no such defect exists. Sex determination is only accurate after 12 weeks gestation [Ultrasound in Obstetrics and Gynecology 1999]. When balancing risk and reward, there are recommendations to avoid the use of routine ultrasound for low risk pregnancies [ACOG]. In many countries ultrasound is used routinely in the management of all pregnancies.

According to European Committee of Medical Ultrasound Safety (ECMUS) "Ultrasonic examinations should only be performed by competent personnel who are trained and updated in safety matters. Ultrasound produces heating, pressure changes and mechanical disturbances in tissue. Diagnostic levels of ultrasound can produce temperature rises that are hazardous to sensitive organs and the embryo/fetus. Biological effects of non-thermal origin have been reported in animals but, to date, no such effects have been demonstrated in humans, except when a microbubble contrast agent is present" .

A study on rodent fetus brains that are exposed to ultrasound showed signs of damage. Speculation on human fetuses can be in a range of no significant complications to a variety of mental and brain disorders. The study shows that rodent brain cells failed to grow to their proper position and remained scattered in incorrect parts of the brain. The conditions of this experi-

ment are different from typical fetal scanning because of the long dwell times. [National Institute of Neurological Disorders; Proceedings of the National Academy of Sciences]. Care should be taken to use low power settings and avoid pulsed wave scanning of the fetal brain unless specifically indicated in high risk pregnancies.

It should be noted that obstetrics is not the only use of ultrasound. Soft tissue imaging of many other parts of the body is conducted with ultrasound. Other scans routinely conducted are cardiac, renal, liver and gallbladder (hepatic). Other common applications include musculoskeletal imaging of muscles, ligaments and tendons, ophthalmic ultrasound (eye) scans and superficial structures such as testicle, thyroid, salivary glands and lymph nodes. Because of the real time nature of ultrasound, it is often used to guide interventional procedures such as fine needle aspiration FNA or biopsy of masses for cytology or histology testing in the breast, thyroid, liver, kidney, lymph nodes, muscles and joints.

Ultrasound scanners using pulsed wave and colour Doppler are used to visualize arteries and veins.

Figures released for the period 2005-2006 by UK Government (Department of Health) show that non-obstetric ultrasound examinations contributed to more than 65% of the total number of ultrasound scans conducted.

Ultrasound and Animals

Bats

Bats use a variety of ultrasonic ranging (echolocation) techniques to detect their prey. They can detect frequencies as high as 100 kHz, although there is some disagreement on the upper limit.

Dogs

Dogs can hear sound at higher frequencies than humans can. A dog whistle exploits this by emitting a high frequency sound to call to a dog. Many dog whistles emit sound in the upper audible range, but some, such as the silent whistle, emit ultrasound at a frequency in the range of 18 kHz to 22 kHz.

Dolphins and Whales

It is well known that some whales can hear ultrasound and have their own natural sonar system. Some whales use the ultrasound as a hunting tool (for both detection of prey and as an attack).

Fish

Several types of fish can detect ultrasound. Of the order Clupeiformes, members of the subfamily Alosinae (shad), have been shown to be able to detect sounds up to 180 kHz, while the other subfamilies (e.g. herrings) can hear only up to 4 kHz.

Moths

There is evidence that ultrasound in the range emitted by bats causes flying moths to make evasive manoeuvres because bats eat moths. Ultrasonic frequencies trigger a reflex action in the noctuid moth that cause it to drop a few inches in its flight to evade attack.

Rodents/Insects

Ultrasound generator/speaker systems are sold with claims that they frighten away rodents and insects, but there is no scientific evidence that the devices work. Laboratory tests conducted by Kansas State University did show positive results for products from specific manufacturers. Controlled tests on some of the systems have shown that rodents quickly learn that the speakers are harmless. The positive results (Kansas State University) were limited to units which use constantly modulating frequencies . The frequency used however is often within the range that most children can hear, and can cause headaches.

Mosquitoes

There is a theory that ultrasound of certain frequencies, while not audible to humans, can repel mosquitoes. There are computer programs available on the internet that claim to use this phenomenon for pest control. There have been mixed reports about the effectiveness of this method towards mosquito control. These claims are made questionable by the fact that most if not all computer speakers and the soundcards that drive them are incapable of producing sound far beyond the upper and lower ranges of human hearing.

Ultrasonic Disintegration

Some sorts of ultrasound can disintegrate biological cells including bacteria. This has uses in biological science and in killing bacteria in sewage. High power ultrasound at frequency of around 20 kHz produces cavitation that facilitates particle disintegration. Dr. Samir Khanal of Iowa State University employed high power ultrasound to disintegrate corn slurry to enhance liquefaction and saccharification for higher ethanol yield in dry corn milling plants.

Ultrasonic Range Finding

A common use of ultrasound is in range finding; this use is also called SONAR, (sound navigation and ranging). This works similarly to RADAR (radio detection and ranging): An

Sonic and ultrasonic weapons (USW) are weapons of various types that use sound to injure, incapacitate, or kill an opponent.

Some sonic weapons are currently in limited use or in research and development by military and police forces. Others exist only in the realm of science fiction.

ultrasonic pulse is generated in a particular direction. If there is an object in the path of this pulse, part or all of the pulse will be reflected back to the transmitter as an echo and can be detected through the receiver path. By measuring the difference in time between the pulse being transmitted and the echo being received, it is possible to determine how far away the object is.

The measured travel time of SONAR pulses in water is strongly dependent on the temperature and the salinity of the water. Ultrasonic ranging is also applied for measurement in air and for short distances. Such method is capable for easily and rapidly measuring the layout of rooms.

Although range finding underwater is performed at both sub-audible and audible frequencies for great distances (1 to several ten kilometers), ultrasonic range finding is used when distances are shorter and the accuracy of the distance measurement is desired to be finer. Ultrasonic measurements may be limited through barrier layers with large salinity, temperature or vortex differentials. Ranging in water varies from about hundreds to thousands of meters, but can be performed with centimeters to meters accuracy.

Other uses

Ultrasound when applied in specific configurations can produce short bursts of light in an exotic phenomenon known as sonoluminescence. This phenomenon is being investigated partly because of the possibility of bubble fusion (a nuclear fusion reaction hypothesized to occur during sonoluminescence).

Recently researchers at the University of Alberta in Canada have successfully used ultrasound to regenerate dental material.

Ultrasound is used when characterizing particulates through the technique of ultrasound attenuation spectroscopy or by observing electroacoustic phenomena.

In rheology, an acoustic rheometer relies on the principle of ultrasound. In fluid mechanics, fluid flow can be measured using an ultrasound flow meter.

Ultrasound also plays a role in Sonic weaponry.

Audio can be propagated by modulated ultrasound.

of sound.

Although many real sonic and ultrasonic weapons are described as "non-lethal", they can still kill under certain conditions, so the term "less-lethal" has been suggested for the sake of accuracy.

Designed to Emit Sound as an Irritant

Extremely high-power sound waves can break the eardrums of a target and cause severe pain or disorientation. This is usually sufficient to incapacitate a person. At higher energy levels, a subsonic shock wave is theoretically powerful enough to do damage (see Earthquake). The possible effects have been the subject of much speculation. The EMF Dosimetry Hand Book will provide further results of the bio-effects and expectations of these weapons.

Less powerful sound waves can cause humans to experience nausea or discomfort. The use of these frequencies to incapacitate persons has occurred both in counter-terrorist and crowd control settings.

The possibility of a device that produces frequency that causes vibration of the eyeballs — and therefore distortion of vision — was apparently confirmed by the work of engineer Vic Tandy while attempting to demystify a “haunting” in his laboratory in Coventry. This “spook” was characterised by a feeling of unease and vague glimpses of a grey apparition. Some detective work implicated a newly installed extractor fan that, Tandy found, was generating infrasound of 18.9 Hz, 0.3 Hz, and 9 Hz.

In 2005 CNN reported that the crew of the cruise ship Seabourn Spirit used a long range acoustic device (LRAD) to deter pirates who chased and attacked the ship. Its actual efficacy, however, has not been established.

The BBC reported in Oct 2006 on a 'mobile' sonic device which is being used in Grimsby, Hull and Lancashire and is designed to deter troublesome teenagers from lingering around shops in target areas. The device works by emitting an ultra-high frequency blast that teenagers or those under 25 are susceptible to and find uncomfortable. Age-related hearing loss apparently prevents the ultra-high pitch

sound causing a nuisance to those in their late twenties and above.

Demonstrated Infrasonic Weapon

The U.S. DOD has demonstrated phased arrays of infrasonic emitters. The weapon usually consists of a device that generates sound at about 7 Hz. The output from the device is routed (by pipes) to an array of open emitters, which are usually one wavelength apart. At this frequency, armor and concrete walls and other common building materials allow sound waves to pass through, providing little defense.

Lethal sonic weapons, in air

These are hypothetical or conceptual weapons possibly in development:

- The Vortex Ring Gun, a weapon that fires an acoustic air vortex that knocks people down.
- Sonic bullets are being planned to be used in anti-hijack packs in planes.
- A tight beam of focused sound used as a weapon like the focused light in laser guns.
- A powerful ultrasound beam which can liquify living tissue.
- A powerful low frequency sound designed to get buildings or structures to resonate and cause them to collapse.

Lethal sonic weapons, underwater

The use of sonic weapons underwater has been widely speculated about.

- Ultrasound disintegration of solids in liquids is well known in industry, and could be adapted into a weapon.
- It has long been known that ultrasound in water will kill small water animals.
- There have been unconfirmed reports of scuba diver deaths and mass deaths of fish from being caught in powerful undersea ultrasound beams used by navies for communicating with submarines. Also see Anti-frogman techniques.
- It is suspected that massive whale beachings are caused by submarine sonar disorienting or deafening underwater mammals.
- Tiger pistol shrimp use a focused wave of sound to stun prey
- It is suspected that sperm whales and dolphins use powerful ultrasound to stun or kill their prey.
- There have been unconfirmed speculations about development of lethal underwater ultra sound anti-frogman weapons.
- The UPSS/IAS diver-detector sonar system includes an underwater shockwave emitter.

Infrasound is sound with a frequency too low to be detected by the human ear.

The study of such sound waves is sometimes referred to as infrasonics, covering sounds from the lower limit of human hearing (about 16 or 17 hertz) down to 0.001 hertz. This frequency range is the same one that seismographs use for monitoring earthquakes. Infrasound is characterized by an ability to cover long distances and get around obstacles with little dissipation.

About Infrasound

Possibly the first observation of naturally-occurring infrasound was in the aftermath of the Krakatoa eruption in 1883, when concussive acoustic waves circled the globe seven times or more and were recorded on barometers world-wide. Infrasound was also used by Allied forces

in World War I to locate artillery; the frequency of the muzzle blast from firing was noticeably different than that produced by the explosion, allowing the two sources to be discriminated.

One of the pioneers in infrasonic research was French scientist Vladimir Gavreau, born in Russia as Vladimir Gavronsky. His interest in infrasonic waves first came about in his lab during the 1960s where he and his lab assistants experienced pain in the ear drums and shaking lab equipment, but no audible sound was picked up on his microphones. He concluded it was infrasound and soon got to work preparing tests in the labs. One of his experiments was an infrasonic whistle.

Infrasound sometimes results naturally from severe weather, surf, lee waves, avalanches, earthquakes, volcanoes, bolides, waterfalls, calving of icebergs, aurora, lightning and sprites. Nonlinear ocean wave interactions in ocean storms produce pervasive infrasound around 0.2 Hertz known as microbaroms. Infrasound can also be generated by man-made processes such as sonic booms, explosions, both chemical and nuclear, by machinery such as diesel engines and wind turbines and by specially-designed mechanical transducers (industrial vibration tables) and large-scale subwoofer loudspeakers. The Comprehensive Nuclear-Test-Ban Treaty Organization uses infrasound as one of its monitoring technologies (along with seismic, hydroacoustic, and atmospheric radionuclide monitoring).

Whales, elephants, hippopotamuses, rhinoceros, giraffes, okapi, and alligators are known to use infrasound to communicate over varying distances of up to many miles, as in the case of the whale. It has also been suggested that migrating birds use naturally generated infrasound, from sources such as turbulent airflow over mountain ranges, as a navigational aid. Elephants, in particular, produce infrasound waves that travel through the ground and are sensed by other herds using their feet(even though they may be separated by up to a few kilometres)

Scientists accidentally discovered that the spinning core or vortex of a tornado creates infrasonic waves. When the vortices are large, the frequencies are lower; smaller vortices have higher frequencies. These infrasonic sound waves can be detected for up to 161 km (100 miles) away, and so can help provide early warning of tornadoes.

A number of American universities have active research programs in infrasound, including the University of Mississippi, Southern Methodist University, the University of California at San Diego, the University of Alaska Fairbanks, and the University of Hawaii at Manoa.

Animal reactions to infrasound

Concerning behavioral patterns of animals and the infrasonic effects of natural disasters, animals have been known to perceive the infrasonic waves carried through the earth from such natural disasters and can use these as an early warning. A recent example of this is the

2004 Indian Ocean earthquake. Animals were reported to flee the area long before the actual tsunami hit the shores of Asia. It is not known for sure if this is the exact reason, as some have suggested that it was the influence of electromagnetic waves, and not of infrasonic waves, that prompted these animals to flee. Elephants have been known to hear infrasound from two and a half miles away.

Infrasound created by predators such as the tiger (in their grunts) 'freezes' their prey in its tracks.

Human reactions to infrasound

Infrasound has been known to cause feelings of awe or fear in humans. Since it is not consciously perceived, it can make people feel vaguely that supernatural events are taking place.

Some film soundtracks make use of infrasound to produce unease or disorientation in the audience. Irréversible is one such movie.

In music, Brian "Lustmord" Williams is known to utilize infrasound to create these same feelings.

Infrasonic 17 Hz tone experiment

On May 31, 2003, a team of UK researchers held a mass experiment where they exposed some 700 people to music laced with soft 17 Hz sine waves played at a level described as "near the edge of hearing", produced by an extra-long stroke sub-woofer mounted two-thirds of the way from the end of a seven-meter-long plastic sewer pipe. The experimental concert (entitled Infrasonic) took place in the Purcell Room over the course of two performances each consisting of four musical pieces. Two of the pieces in each concert had 17 Hz tones played underneath. In the second concert, the pieces that were to carry a 17 Hz undertone were swapped so that test results wouldn't focus on any specific musical piece. The participants were not told which pieces included the low-level 17 Hz infrasonic tone. The presence of the tone resulted in a significant number (22%) of respondents reporting anxiety, uneasiness, extreme sorrow, nervous feelings of revulsion or fear, chills down the spine and feelings of pressure on the chest. In presenting the evidence to the BA, the scientist responsible said "These results suggest that low frequency sound can cause people to have unusual experiences even though they cannot consciously detect infrasound. Some scientists have suggested that this level of sound may be present at some allegedly haunted sites and so cause people to have odd sensations that they attribute to a ghost—our findings support these ideas".

The Ghost in the Machine

Research by the late Vic Tandy, a lecturer at Coventry University, suggested that the frequency 19 hertz was responsible for many ghost sightings. He was working late one night alone in a supposedly haunted laboratory at Warwick, when he felt very anxious, and could

detect a grey blob out of the corner of his eye. When he turned to face it, there was nothing.

The following day, he was working on his fencing foil, with the handle held in a vice. Although there was nothing touching it, it started to vibrate wildly. Further investigation led him to discover that the extraction fan was emitting a frequency of 18.98 Hz, very close to the resonant frequency of the eye (given as 18 Hz in NASA Technical Report 19770013810). This was why he saw a ghostly figure — it was an optical illusion caused by his eyeballs reso-

nating. The room was exactly half a wavelength in length, and the desk was in the centre, thus causing a standing wave which was detected by the foil.

Vic investigated this phenomenon further, and wrote a paper entitled The Ghost in the Machine. He carried out a number of investigations at various sites believed to be haunted, including the basement of the Tourist Information Bureau next to Coventry Cathedral and Edinburgh Castle.

See also

Bioacoustics
Brown note
Microbarom
Ultrasound
Infrasound gun

Lustmord is also a German and Swedish word that means “sex murder”. Brian “Lustmord” Williams is a British musician often credited for creating the dark ambient genre.

History

Williams started recording with the industrial ensemble SPK in the early 1980s. Lustmord has extracted field recordings made in crypts, caves, and slaughterhouses, and combined it with occasional ritualistic incantations and Tibetan horns. His treatments of acoustic phenomena encased in digitally expanded bass rumbles have a dark ambient quality. Some of Lustmord's most notable collaborations include Robert Rich on the critically acclaimed "Stalker", Jarboe's "Men Album" and several re-mixes on previous albums, and experimental sludge group The Melvins on "Pigs Of The Roman Empire".

An early side project of his, Terror Against Terror (with Andrew Lagowski), was a hard techno group that incorporated many samples from films of gunfire or other military activity. The record was originally intended to be the first part of a trilogy, the ultimate idea of which was to make each successive installment noisier; the third and final record was to have been pure noise. However, the first record languished for two years without release and had lost some of its innovative sting by the time it appeared in print, courtesy of Dark Vinyl. The succeeding records were never made.

Sludge metal is a form of heavy metal music that is generally regarded as a fusion of doom metal and hardcore punk often incorporating stoner metal and southern rock influences.

Williams released the album "Heresy", considered a milestone of the genre of dark ambient, on 1990.

Williams consults regularly with other musicians to build custom studio equipment, and works with many Hollywood film soundtrack creators as well.

Lustmord worked on Tool's DVD singles and has remixed versions of Schism and Parabola which were released December 20, 2005. Lustmord also contributed to Tool's 2006 album 10,000 Days with the atmospheric storm sounds on the title track, 10,000 days.

Despite his staunchly atheist worldview, Lustmord appeared live for the first time in 25 years as part of the high mass observance by the Church of Satan. The ceremony took place on June 6, 2006. A recording of the performance entitled "Rising" has recently been released.

Lustmord released his latest album "Juggernaut" on California based label Hydra Head Records in February 2007.

Discography

1981 - Lustmord
1983 - Lustmordekay
1984 - Paradise Disowned
1990 - Heresy
1991 - A Document Of Early Acoustic & Tactical Experimentation
1992 - The Monstrous Soul
1993 - Crash Injury Trauma (As Isolrubin BK)
1994 - The Place Where The Black Stars Hang
1994 - Trans Plutonian Transmissions (As Arcibo)
1995 - Stalker (With Robert Rich)
1996 - Strange Attractor / Black Star
1997 - Lustmord vs. Metal Beast (With Shad T. Scott)
2000 - Purifying Fire
2001 - Metavoid (Nextera)
2002 - Law Of The Battle Of Conquest (With Hecate)
2002 - Zoetrope (Nextera)
2004 - Carbon/Core
2004 - Pigs Of The Roman Empire (With Melvins)
2006 - Rising
2007 - Juggernaut (With King Buzzo)

Characteristics

Sludge metal combines the low-tempos, heavy rhythms and dark atmosphere of doom metal with the shouted vocal delivery and high-tempos of hardcore punk. This fusion of a "slow" musical genre with a "fast" musical genre produces songs with contrasting tempos.

The string instruments (electric guitar and bass guitar) are heavily distorted and often use a high level of audio feedback to produce a sludgy sound. Often, guitar solos are not present, although this is not always the case. Drumming bears similarities to the style of drumming present in hardcore punk, although the beats may be slowed considerably. The tempo usually falls somewhere between 50 and 80 beats per minute (bpm). Vocals are usually shouted as in hardcore, and lyrics are generally blue-collar in nature; reflecting on society, generally in a depressive, cynical or downtrodden manner.

Many sludge metal bands from the Southern United States incorporate southern rock influences and imagery, although it should be noted that not all sludge metal bands share this style. Due to the similarities with stoner metal, there is often a crossover between the two genres, but sludge metal generally avoids stoner metal's positive atmosphere and its usage of psychedelia. Sludge metal also bears some musical and lyrical resemblance to crust punk (for example Dystopia).

Subgenres

Sludge metal has several loosely defined subgenres. Traditional sludge metal is the "purest" form of the genre, typified by bands such as Crowbar. Southern Sludgecore is typified by strong blues and southern rock influences, extreme levels of distortion, extremely slow tempos, and generally hateful and controversial lyrics concerning misogyny or drug addiction. Eyehategod is generally regarded as the founder of this genre. Aside from Louisiana, the biggest sludge metal scene is in North Carolina. North Carolina bands usually have a stronger punk influence, which includes bands such as Corrosion of Conformity, Antiseen and Buzzov*en. It is important to note that not all sludge metal is slow. The term Sludge/Doom is usually applied to sludge metal bands that emphasise low-tempos.

Atmospheric sludge metal aims to produce an ambient atmosphere with reduced aggression, more philosophical lyrics and an experimental style. Neurosis, Isis and Cult of Luna are considered the forerunners and the most important bands in this subgenre. Atmospheric sludge bands draws influences from bands such as Earth, Neurosis and Godflesh instead of the earliest sludge metal bands. Mogwai in particular are a strong influence, especially on Isis, Cult of Luna, Pelican and Callisto. Mogwai's influence is particularly demonstrated by the use of single-note delayed guitar riffs which are achieved using a delay pedal. In an interview, Pelican mentioned that the heaviness of their music is no longer their main priority. Their sound is now being referred to as post-metal or

"postcore" by many fans.

Sludge metal is often fused with other genres, such as stoner metal (Electric Wizard), black metal (Unearthly Trance), death metal (Coffins), industrial music (Fudge Tunnel) or grindcore (Soilent Green).

History

Sludge metal is generally regarded to have been invented by Washington band the Melvins, and some cite the second side of Black Flag's My War (1984) as influential. However, the genre was popularized chiefly by a number of New Orleans bands, a scene and sound popularly referred to as "NOLA". From there it travelled to many other areas in the Southern United States.

Sludge metal bands by style

Traditional sludge metal

- Acid Bath
- Black Cobra
- Buzzov*en
- Cavity
- Crowbar
- Down
- Dystopia
- Eyehategod
- Grief
- Iron Monkey
- Noothgrush
- Rwake
- Dusk

Southern Sludgecore

- Acid Bath (Louisiana)
- Alabama Thunderpussy (Virginia)
- Artimus Pyledriver (Georgia)
- Buzzov*en (North Carolina)
- Cavity (Florida)
- Corrosion of Conformity (North Carolina)
- Crowbar (Louisiana)
- Down (Louisiana)
- Eyehategod (Louisiana)
- Weedeater (North Carolina)

Stoner sludge metal

- Alabama Thunderpussy
- Bongzilla
- Boris
- Cavity
- Corrosion of Conformity (later)
- Down
- Eyehategod
- Electric Wizard
- Kylesa
- Kyuss
- Ufomammut
- The Sword

Atmospheric sludge metal

- Callisto (True Nature Unfolds and Noir)
- Cult of Luna
- Giant Squid
- Intronaut
- ISIS
- Lent0
- Minsk
- Mouth of the Architect
- Neurosis
- Pelican (earlier)
- Rosetta
- The Ocean
- Men Eater

Other sludge metal styles

- 3D House of Beef (characteristically slower
-

- sludge metal and doom metal)
- Baroness
- Boris (sludge metal, drone doom, stoner metal)
- Congenital Hell (sludge metal, doom metal, grindcore)
- Corrupted (sludge metal, funeral doom, drone doom, ambient music)
- Fudge Tunnel (sludge metal and industrial music)
- Gojira (sludge metal, death metal, thrash metal, progressive metal)

- Halo (sludge metal and industrial music)
- Lair of the Minotaur (sludge metal and thrash metal)
- Mastodon (sludge metal, groove metal, progressive metal)
- Melvins (proto-sludge metal, grunge music)
- Moss (sludge metal and doom metal)
- No Peace in Silence (sludge metal, thrash hardcore, garage metal)
- Soilent Green (sludge metal and deathgrind)

See also

Stoner Metal
Doom Metal

Blue-collar worker is an idiom referring to a member of the working class who performs manual labor and earns an hourly wage.

Blue-collar workers are distinguished from Tertiary sector of industry service workers and from white-collar workers, whose jobs are not considered manual labor. However, some service workers are also often referred to as blue-collar workers. Traditionally, white-collar workers earn a monthly or annual salary rather than an hourly wage, although paying white-collar workers by the hour is an increasing practice, especially among independent tech contractors. Blue-collar work may be skilled or unskilled, and may involve manufacturing, mining, building and construction trades, law enforcement, mechanical work, maintenance, repair and operations maintenance or technical installations. The white-collar worker, by contrast, performs non-manual labor often in an office; and the service industry worker performs labor involving customer interaction, entertainment, retail and outside sales, and the like. Some service industry workers differ as they perform tasks that are mostly unskilled in the service sector.

The term blue-collar occasionally carries a stereotype based on historical perspective. The blue-collar worker in the United States is an embodiment of the American mythos of a work ethic and the dignity of labor. Blue-collar workers take pride in their jobs. Some blue-collar jobs, such as those of janitors and assembly line workers, may carry negative stereotypes from perceptions that they represent minimal ability, or that the people in those positions were too lazy to obtain a better job or were poorly educated. Most involve levels of specialized skill that carry no stigma, and are contrarily a source of pride.

Origin of the term

The term blue-collar is derived from uniform dress codes of industrial workplaces. Industrial and manual workers wear durable clothing that can be soiled or scrapped at work. A popular element of such “work clothes” has been, and still is, a light or navy blue shirt. Blue is also a popular color for coveralls, and will usually carry a name tag of the company/establishment on one side, and the individual's name on the other. Often these items are bought by the company and laundered by the establishment as well.

The popularity of the color blue among persons who do manual labor is contrasted to the ubiquitous white dress shirt that, historically, has been standard attire in office environments. This obvious color-coding has been used to identify a difference in socio-economic class. This distinction is growing more blurred, however, with the increasing importance of skilled labor, and the growth of non-laboring, but low-paying, service sector jobs.

Blue-collar can also be used as an adjective to describe the environment of the blue-collar worker: e.g. a blue-collar neighborhood, job, restaurant, bar, etc., or a situation describing the use of manual effort and the strength required to do so.

Education requirements

Some distinctive elements of blue-collar work are the lesser requirements for formal academic education which is needed to succeed in other types of work, with many blue-collar jobs requiring only a High School Diploma or GED. Blue-collar work typically is hourly wage-labor. Usually, the pay for such occupation is lower than that of the white-collar worker, although higher than many entry-level service occupations. Sometimes the work conditions can be strenuous or hazardous.

Blue-collar stereotypes in the United States

Blue-collar workers exist in varying proportions throughout the industrial world, though some regions are especially noted for their "blue-collar" ethic. The U.S. state of Pennsylvania, particularly the cities of Pittsburgh and Allentown are considered to epitomize the blue-collar ethic. Pittsburgh's blue-collar image is driven largely by media portrayal which is based on the prevailing "hard working blue-collar" mentality that the majority of Pittsburgh residents tend to value. Both cities have sometimes been highlighted in popular culture because of their blue-collar reputations and with the steady loss of these jobs are in financial distress, but according to a 2005 report from the Bureau of Labor Statistics, only 23% of Pittsburgh's job base is made of blue collar occupations.

Decline of blue-collar jobs in Western countries

With the movement of many Western nations towards service based economy, the number of blue-collar jobs has steadily decreased. Another main reason for the decrease in blue-collar jobs in the United States is due to the technological

revolution. Perhaps the biggest reason is that many low-skill manufacturing jobs have been outsourced to developing nations with lower wages. At the same time, some blue-collar workers, predominantly in the building and health care industries, have seen rapidly rising wages due to their requirement of specialized skills.

See also

Gold-collar worker
Pink-collar worker
Social class
White-collar worker
Grey collar
Working class

Gold-collar worker (GCW) is rarely used compared to its blue-collar and white-collar counterparts. It is used as a marketing term more often than referring to a class of society.

A typical demographic of the gold-collar worker is a person who has attended vocational school, community college or other post-high school education, but didn't graduate or has a high school diploma or less, 18 to 25 years old and is employed either full time or part time. They may have odd jobs such as a waiter or waitress at a restaurant or a bar, a sales clerk at a department store or a specialized apparel store at a shopping mall, cleaning houses or hotel rooms, a barista at a coffeehouse chain like Starbucks or Seattle's Best Coffee, or as a worker (or even a supervisor) at a fast food restaurant like McDonalds, Burger King, or Taco Bell. (These are jobs that college students might take in order to pay for tuition, apartment rent, or just simply for spending money while they attend college, vocational school, beauty school, or graduate school.) This group tends to have more disposable income than college students, who pay high tuitions and manage student loans and other debt. As a result a gold collar worker may have more money to spend on luxuries such as iPods, designer clothes, expensive cocktails at bars/night clubs, game systems and customized cars than a college student of around the same age as them might not be able to afford. The big drawback is however that in the long run the income of college graduates often exceeds that of these typical "gold collar" workers.

“ These people are going to be cash-rich 19-year-olds and cash-poor 30-year-olds... If you're making 22 grand a year and not paying for college, you can earn enough disposable income to have an apartment and a car. But it tops out there. Job security is not good, and you end up in the lower middle class and working poor. -Anthony Carnevale, National Center on Education and the Economy ”

See also

http://www.census.gov Employment data.
White-collar worker
Blue-collar worker
Pink-collar worker
McJob

Because gold-collar workers have more disposable income, their spending can be dictated more by taste and preference rather than utility.

A concern for gold-collar workers is poor job security and the lack of job advancement opportunities due to less education.

Most gold-collar workers tend to live around medium to large urban metropolitan areas or around college towns. Many choose to stay in these areas to stay close to some of the friends they made when they were attending college, or stuck around because their parents were angry at them for dropping out and as such may have been kicked out of their parent's home. Some may have grown up in the city or in the suburbs or exurbs surrounding the city or college town and simply migrated to the city after graduating from high school.

Dropping out means to withdraw from established society, especially because of disillusion with conventional values.

It is a term commonly associated with the 1960s, with the counterculture and with hippies and communes.

More commonly it means a student who quits school before he or she graduates.

See also

Turn on, tune in, drop out

A commune is a kind of intentional community where most resources are shared and there is little or no personal property (as opposed to a community that only shares housing).

Today, the term 'commune' is a bit tainted with the 1960s, but the term 'intentional community' is more often used where 'commune' would have been forty years ago. There are many contemporary intentional communities all over the world, a list of which can be found at the Online Communities Directory (http://directory.ic.org/) .

Categorization of communes

Benjamin Zablocki categorized communes this way:

Egalitarian communities
Eastern religious communes
Christian communes
Psychological communes (based on mystical or gestalt principles)
Rehabilitational communes (see Synanon)
Cooperative communes
Alternative-family communes
Countercultural communes ("hippies")
Political communes
Spiritual communes

Of course, many communal ventures encom-pass more than one of these categorizations.

Some communes, like the ashrams of the Vedanta Society or the Theosophical commune Lomaland, formed around spiritual leaders; while some communes formed around political ideologies. For others, the "glue" is simply the desire for a more shared, sociable lifestyle. Moreover, some people find it is just more economical to live communally. Many con-temporary squatters pool their resources in this way, forming urban communes in unoccupied buildings.

Marxist Commune

The commune is an important element of Marx-ist theory. Within Marxism it is seen as the main body of political organization during the first phase of communist society (socialism). The commune is the rational tool for the proletariat to govern their state, just as the parliament is the tool for the bourgeoisie to govern their state.

Marx explains the purpose and function of the commune during the period that he termed the dictatorship of the proletariat:

“ The Commune, was to be a working, not a parliamentary, body, executive and legislative atthe same time...Instead of deciding once in three or six years which member of the rulingclass was to represent and repress the people in parliament, universal suffrage was to serve the people constituted in communes, as individual suffrage serves every other em-ployer in the search for workers, foremen and accountants for his business. ”

Basing himself on his study of The Civil War in France he details how the commune is to func-tion if it is to serve workers in the governance of their state. He also details how the commune must use its powers to prevent the capitalists from destroying the newly formed workers' state:

“ The Commune was formed of the municipal councillors, chosen by universal suffrage inthe various wards of the town, responsible and revocable at any time. The majority of itsmembers were naturally working men, or acknowledged representatives of the working class.... The police, which until then had been the instrument of the Government, was at once stripped of its political attributes, and turned into the responsible, and at all times revocable, agent of the Commune. So were the officials of all other branches of the administration. From the members of the Commune downwards, the public service had to be done at workmen's wages. The privileges and the representation allowances of the high dignitaries of state disappeared along with the high dignitaries themselves.... Having once got rid of the stand-ing army and the police, the instruments of physical force of the old government, the Com-mune proceeded at once to break the instru-ment of spiritual suppression, the power of the priests.... The judicial functionaries lost that sham independence... they were thenceforward to be elective, responsible, and revocable. ”

Clearly the commune is to have a much higher purpose than the government of each city. Marx again turns to the Paris Commune in his analysis. Here he advocates what would later be known as Soviet democracy:

“ In a brief sketch of national organization which the Commune had no time to develop, itstates explicitly that the Commune was to be the political form of even the smallestvillage.... The communes were to elect the "National Delegation" in Paris. The few but important functions which would still remain for a cen-tral government were not to to be suppressed, as had been deliberately mis-stated, but were to be transferred to communal, i.e., strictly re-sponsible, officials. National unity was not to be broken, but, on the contrary, organized by the communal constitution; it was to become a reality by the destruction of state power which posed as the embodiment of that unity yet wanted to be independent of, and superior to, the nation, on whose body it was but a para-sitic excrescence. While the merely repressive organs of the old governmental power were to be amputated, its legitimate functions were to be wrested from an authority claiming the right to stand above society, and restored to the responsible servants of society.”

Communes in United States

Although communes are most frequently associated with the hippie movement-- the "back-to-the-land" ventures of the 1960s and 1970s-- there is a long history of communes in America.

A few notable examples include:

Nathaniel Hawthorne's novel The Blithedale Romance is a fictionalized portrayal of the Brook Farm commune, existing from 1841 to 1847, where Hawthorne stayed for a while.

Fruitlands was a commune founded in 1843 by Amos Bronson Alcott in Harvard, Massachu-setts. The tempo of life in this Transcendentalist community is recorded by Alcott's daughter, Louisa May Alcott, in her piece "Transcenden-tal Wild Oats."

The Oneida Society was a commune that lasted from 1848 to 1881 in Oneida, New York. Al-though this utopian experiment is better known today for its manufacture of Oneida silverware, it was one of the longest-running communes in American history.

The commune Modern Times was formed in 1851 in Long Island.

The anarchist Home Colony was formed in 1895 across the Puget Sound from Tacoma, Washington on Key Peninsula, and lasted until 1919.

Ganas is a commune currently in existence in the New Brighton neighborhood of Staten Island, New York.

Communes in the world

Beyond the United States, there have been other famous communes, such as the Paris Commune of 1871. (Of course, many cultures naturally practice communal living, and wouldn't desig-nate their way of life as a planned 'commune' per se, though their living situation may have many characteristics of a commune.) One of the examples of communal living is kibbutzim in Israel.

See also

Egalitarian communities
List of intentional communities
Intentional communities
Fellowship for Intentional Community
Hutterite
Kibbutz
Utopian
World Brotherhood Colonies
Hippies



Ultrasound :

A fetus in its mother’s womb, viewed in a sonogram. Lindsay Ljungkull, 17 weeks.

Mount Mihara
The Return of Godzilla
Dr. Pepper
Dr. Thunder
Generic Citrus Sodas

Mount Mihara (三原山 Miharayama) is an active volcano on the Japanese isle of Izu Ōshima.

From a vantage point near the top of the cone it was possible to leap straight into the lava flow. This made it a very popular venue for suicides. Starting in the 1920s, several suicides occurred in the volcano every week, with more than six hundred people jumping in 1936. Authorities eventually erected a fence around the base of the structure to curb the number of suicides. In the realm of fiction, it was the place where the Japanese government imprisoned Godzilla in the movie *Godzilla* 1985. Five years later, in the

sequel Godzilla vs Biollante, bombs placed on Mt. Mihara go off and release Godzilla from his fiery tomb.

Mount Mihara's last eruption in 1986 saw spectacular lava fountains up to 1 kilometer wide. All of the islands 12,000 inhabitants were evacuated by dozens of vessels consisting of both the military and civilian volunteers.

The Return of Godzilla, released as Godzilla (ゴジラ, Gojira?) in Japan and edited into Godzilla 1985 in America, is a 1984 daikaiju eiga (Japanese giant-monster movie).

The sixteenth in Toho Studios' Godzilla series, it was produced by Tomoyuki Tanaka and directed by Koji Hashimoto with special effects by Teruyoshi Nakano. This is the second Godzilla movie to have the same name as the original.

This was the first in the "VS Series" of Godzilla films (sometimes called the "Heisei Series" due to the near-coincidence of its beginning with that of the Heisei era in Japan). It was Tanaka's intent to restore the darker themes and mood of the early films in the series. To this end *The Return of Godzilla* disregards all previous Godzilla films except 1954's *Godzilla*, to which it is a direct sequel. (It is later revealed that the Heisei continuity is an alternate reality to the Showa continuity.) It features the lengthiest debate over the use of nuclear weapons in any Godzilla film (making reference to former Prime Minister Satō's Three Non-Nuclear Principles) and is only the third to depict innocent people being killed by the monster(s).

Plot

This film picks up 30 years after Godzilla's death in 1954. A fishing vessel caught in a terrible storm encounters a volcanic eruption at sea which awakens the hibernating Godzilla. Days later, a reporter, Goro Maki, is sailing in

the oceans and discovers the wrecked fishing vessel. He investigates to find only one survivor, Hiroshi Okumura. The rest were killed by giant sea lice, creatures which presumably fed from Godzilla's body. Japanese Prime Minister Mitamura, confronted with this information, knows that Godzilla has returned. Despite the impending danger, he decides to keep it a secret to avoid nationwide panic and orders a media blackout. Unfortunately, Godzilla destroys a Soviet submarine carrying nuclear missiles. Faced with an escalating situation between the Soviets, who believe their sub was sunk by the Americans, and the Americans, who fear an unwarranted counter strike from the Soviets, the Japanese Government is forced to go public with the news of Godzilla's return. Meanwhile, Godzilla attacks a nuclear power plant, but during the attack, it is discovered that Godzilla uses a homing signal similar to that of birds who fly south for winter. Goro and Co. decide to use this to their advantage by developing a way to lure Godzilla away from major cities utilizing a high frequency homing signal.

Godzilla arrives in Tokyo in the third act. He ends up damaging a missile control system on a Soviet freighter in Tokyo Bay and continues his rampage upon Japan. In another scene shortly afterwards, the last dying crewmember of the Soviet freighter docked in Tokyo Bay

Directed by	<i>Koji Hashimoto</i>
Produced by	<i>Tomoyuki Tanaka</i>
Written by	<i>Shuichi Nagahara</i>
Starring	<i>Ken Tanaka</i> <i>Yusaku Sawaguchi</i> <i>Yusaku Natsuki</i> <i>Keiju Kobayashi</i> <i>Shin Takuma</i> <i>Raymond Burr</i> <i>(USA)</i>
Music	<i>Reiziro Koroku</i>
Cinematography	<i>Kazutami Hara</i>
Editing by	<i>Yoshitami Kuroiwa</i>
Distributed by	<i>Toho</i> <i>New World (USA)</i>
Release date(s)	<i>December 15, 1984</i> <i>August 23, 1985</i> <i>(USA)</i>
Running time	<i>103 min.(JAN)</i> <i>87 min. (USA)</i>
Language	<i>Japanese</i> <i>Russian</i> <i>English</i>
Preceded by	<i>Terror of Mecha-</i> <i>godzilla</i>
Followed by	<i>Godzilla vs. Biollante</i>

tries to abort the failsafe launch of a nuclear missile from a satellite in space in order to kill Godzilla. However, the crewmember is killed in the process (it is interesting to note that in the American edit, the crew member is portrayed as blatantly launching the missile himself). The SDF launches their newest weapon the "Super X" to combat Godzilla. During the initial confrontation, Godzilla is poisoned by cadmium shells fired from the Japanese flying fortress and is knocked out and dying. Meanwhile, the Japanese government finds out about the Soviet nuclear missile and asks the Americans to shoot it down. The Americans agree and are successful but the missile collision in the stratosphere causes a massive EMP, and then a radioactive lighting storm that revives Godzilla, allowing him to destroy the Super X and kill its crew and then continue his rampage. Scientists at Mt. Mihara manage to get their "lure" working, which calls out to Godzilla from across the Japan sea. Attracted by magnetic waves transmitted from their satellite dish on Mt. Mihara on Oshima Island, Godzilla falls for their trap. It is not until he is trapped in the mouth of the volcano that he awakens from his trance and realizes he has been lured into a trap. The SDF detonates a number of powerful exploisons, which cause an artificial eruption. In the end he is trapped in Mt. Mihara, until 1989.

Box Office

The Return of Godzilla was a reasonable success in Japan, with attendance figures at approximately 3,200,000 and the box office gross being approximately \$11 million (the film's

budget was \$6.25 million). In terms of total attendance, it was the most popular Godzilla film since 1966's *Godzilla vs. the Sea Monster*.

Box Office and Business

Given the scathing reviews and the American public's apathy to the genre, *Godzilla 1985* did not perform well in the North American box office. Opening on August 23, 1985, in 235 North American theatres, the film grossed \$509,502 USD (\$2,168 per screen) in its opening weekend, on its way to a lacklustre \$4,116,395 total gross.

New World's budget breakdown for *Godzilla 1985* is as follows: \$500,000 to lease the film from Toho, \$200,000 for filming the new scenes and other revisions, and \$2,500,000 for prints and advertising, adding up to a grand total of approximately \$3,200,000. Taking this in consideration, *Godzilla 1985*, though not a hit, proved to be profitable for New World - a profit that would increase with home video and television revenue (the film debuted on television with a reasonable amount of fanfare on May 16, 1986).

Godzilla 1985 was the last Japanese-made Godzilla film to play in American theatres until Godzilla 2000 fifteen years later.

DVD Releases

There are currently no plans to release Godzilla 1985 or The Return of Godzilla on DVD from Lakeshore Entertainment.

Dr. Pepper is a carbonated soft drink marketed in North America and South America by Cadbury Schweppes Americas Beverages (CSAB), a unit of Cadbury Schweppes.

The headquarters of CSAB are situated in Plano, Texas, a suburb of Dallas. There is also a no-sugar version, Diet Dr Pepper, as well as many other flavors.

Overview and history

The drink was first sold in Waco, Texas, in 1885. It was introduced nationally in the United States at the 1904 Louisiana Purchase Exposition as a new kind of cola, made with 23 flavors. The exact date of Dr Pepper's conception is unknown, but the U.S. Patent Office recognizes December 1, 1885 as the first time Dr Pepper was served. It then became the first carbonated soft drink (Coca-Cola came a year later).

It was formulated by German pharmacist Charles Alderton in Morrison's Old Corner Drug Store in Waco. To test his new drink, he first offered it to store owner Wade Morrison, who also found it to his liking. After repeated

sample testing by the two, Alderton was ready to offer his new drink to some of the fountain customers. Other patrons at Morrison's soda fountain soon learned of Alderton's new drink and began ordering a "Waco". Alderton gave the formula to Morrison. A popular belief is that the drink was named after Morrison's former employer in Texas, but this has been disputed by the Dr Pepper company itself. They state that before moving to Texas, Morrison lived in Wythe County, Virginia near a Dr. Charles T. Pepper, and may have been close to Pepper's daughter at the time.

There is also a Dr Pepper Museum in downtown Waco. It is located in the Artesian Manufacturing and Bottling Company building in downtown Waco, and opened to the public in 1991. The Artesian Manufacturing and Bottling Company building was the first building to be built specifically to bottle Dr Pepper. The building was completed in 1906 and Dr Pepper was bottled there until the 1960s. The museum has

Mount Mihara
The Return of Godzilla

Dr. Pepper
Dr. Thunder
Generic Citrus Sodas

- United Kingdom's version of Dr Pepper has a different taste, very similar to Coca-Cola Cherry and is manufactured with sugar instead of high fructose corn syrup. Along with Sprite and Fanta soft drinks, a 'Zero' version was introduced, meaning no added sugar/low calorie, but maintaining a taste more in line with regular Dr Pepper than its diet variant.

Imitations

Many imitations of Dr Pepper exist and can often be identified by the use of "Dr" or "Mr" in their name. One of the most well-known competitors is Pibb Xtra, formerly called "Mr PiBB". It is made by The Coca-Cola Company. SoBe Beverages took its ginseng-infused approach with "Mr. Green".

Several other imitations or related names include:

"**Country Doctor**" sold in Fareway Stores.
"**Dr. B**" in H-E-B grocery stores
"**Dr. Bash**" distributed by Bashas' stores
"**Dr. Becker**" made by the Blue Sky Beverage Company
"**Dr. Bob**" sold in BiLo Supermarkets.
"**Dr. Bob**" sold in Stop & Shop Supermarkets
"**Dr. Bob**" sold in Giant Food Stores, Inc.
"**Dr. Bold**" and "Dr A+" in Albertsons supermarkets
"**Dr. Chek**" in Winn-Dixie supermarkets
"**Dr. Chill**", distributed by SuperValu
"**Dr. Dazzle**" distributed by ALDI Inc.
"**Dr. Duck**" sold by Duckwall-ALCO Retail Stores
"**Dr. Foots**"
"**Dr. Fresh**" distributed at Marsh supermarkets
"**Dr. Goodguy**" distributed by Kalil
"**Dr. Hy-Top**" marketed by Federated Group
"**Dr. Hy-Vee**" distributed at Hy-Vee grocery stores
"**Dr. IGA**" in IGA supermarkets
"**Dr. K**" distributed at Costco, Kroger and Fred Meyer locations
"**Dr. M**" made by Meijer
"**Dr. Nehi**" sold by Nehi/Royal Crown Crown Cola

"**Dr. Nut**, a local brand in New Orleans
"**Dr. Path**" sold in PathMark Supermarkets.
"**Dr. Perky**" in Food Lion supermarkets
"**Dr.Perky**" sold in Food Lion stores
"**Dr. Phizz**" sold in Schnucks Supermarkets
"**Dr. Pig**" sold by Piggly-Wiggly
"**Dr.Ploots**", distribued by Le Meilleur (Quebec)
"**Dr. Pop**" sold in Save A Lot grocery stores and Morrisons stores in the UK (although this is a different product)
"**Dr. Publix**" made by Publix
"**Dr. Radical**", made by Adirondack Beverage Company
"**Dr. Riffic**", distributed by Eckerd
"**Dr. Rocket**" distributed at K-mart stores
"**Doc Rocket**" (from Trader Joe's)
"**Dr. Salt**" distributed at Albert Heijn
"**Dr. Shasta**" made by Shasta (soft drink)
"**Dr. Shaw's**", made by Shaw's Supermarkets, Inc.
"**Dr. Skipper**" distributed by Safeway grocery stores
"**Dr. Slice**", "**Dr. Faygo**" marketed by Faygo Family Beverages Inc.
"**Dr. Smooth**" marketed by President's Choice
"**Dr. Spice**" distributed in Target Stores
"**Dr. Thunder**" distributed in Wal-Mart stores
"**Dr. Topper**" Rocky Top, Clover Valley, sold in Dollar General stores.
"**Dr. U**" distributed by United Supermarkets
"**Dr. W**" distributed by Wegmans
"**Dr. Weis**" Distributed by Weis Markets, and "**Dr. Celeste**" marketed by The Pantry, Inc.
"**Dr. Wells**"
"**Dr Western**" sold in Oregon
"**Dr. Whatever**" distributed by Journey
"**Dr. Wild**", made by J G Meyer First Choice
"**Dr. Wow**", distributed by Topco.
"**Dr. Zeppa**" previously sold in Store 24 convenience stores (which is now out of business)
"**Dr. Zip**" sold in Sobeys supermarkets
"**Dr. Zip**" sold in Wawa Food Markets
"**Mr. Ahhhh**"
"**Pibb Xtra**" sold by Coca-Cola

The version sold at Safeway Stores was called "The Skipper" throughout the 1980s. Sometime in the 1990s it was renamed "Dr. Skipper", then "Dr. Select", and then "The Dr." After Safeway (UK)'s takeover by Morrisons, its version was renamed "Dr Pop".

say that " You've never been deep, until you've been Dr. Thunder deep."

Dr. Thunder is often considered a "mirror soda" to another Wal-Mart brand, Mountain Lightning.

Other chains have also launched a Dr Pepper-like soda, for example "Dr. Bob" which can be found at Tops Friendly Markets. Also Dr. K at Kroger.

the soda is much the same as Mountain Dew, with a few noticeable differences. Mountain Dew is a bit tangier than its Safeway SELECT counterpart, which focuses more on sweetness. One 12 oz. can of Mountain Breeze contains 190 calories, 65mg of sodium, 48g total Carbohydrate, 48g of sugar, and the following ingredients: carbonated water, high-fructose corn syrup, citric acid, sodium benzoate, orange juice concentrate, sodium citrate, caffeine, natural flavors, artificial flavors, and Yellow 5. The design of a Mountain Breeze soda can also bears a great resemblance to an older Mountain Dew can, more so than many of the generic citrus sodas.

Mountain Frost

Sold exclusively at Aldi stores.

Mountain Fury

Mountain Fury is a Mountain Dew taste-alike produced and distributed by Roundy's, Inc., a Milwaukee-based food retailer. Mountain Fury can be found at Pick n' Save, Rainbow, and Copps supermarkets. Diet Mountain Fury is also available.

Mountain Holler

Mountain Holler is a generic brand soft drink similar to Mountain Dew and is sold exclusively at Save-A-Lot grocery stores. It is also touted as a "radical citrus thirst blaster" and has a small, but cult-like group following around the U.S.

Ingredients of Mountain Holler are: Carbonated water, high fructose corn syrup, citric acid, sodium benzoate, natural flavor, concentrated orange juice, caffeine, gum arabic, sodium citrate, EDTA, brominated vegetable oil, and yellow 5.

Mountain Lightning

Mountain Lightning is a Wal-Mart soft drink brand that resembles Mountain Dew. Another

brand made by Wal-Mart is Dr. Thunder, which resembles Dr Pepper. Wal-Mart's drink goes under the brand Sam's Choice. On the can there is a picture of two mountains and lightning surrounding it and the color scheme exactly resembles that of Mountain Dew's. It's a less expensive alternative to Mountain Dew with less caffeine. One can presume that its name was chosen due to both brand names being alternative for moonshine.

Mountain Lion

Mountain Lion is the Food Lion equivalent to Mountain Dew. It comes in regular and Diet Mountain Lion and is available in cans and PET bottles. Like all Food Lion diet drinks, Diet Mountain Lion is sweetened with Splenda, making it safe for people who cannot tolerate aspartame. Mountain Lion tastes very similar to Mountain Dew and Mello Yello. Diet Mountain Lion is sweeter than Diet Mountain Dew. Mountain lion contains about the same amount of caffeine as Mountain Dew.

Mountain Lion ingredients : carbonated water, high fructose corn syrup, citric acid.

Mountain Maze

Mountain Maze is the Mountain Dew-like soda sold exclusively at Albertson's stores.

Mountain Mist

Mountain Mist Sold exclusively at Jewel-Osco stores. Has made some cameo appearances in Malcolm in the Middle.

Mountain Roar

Mountain Roar is the Harris Teeter equivalent to Mountain Dew.

Rocky Mist

Rocky Mist is a Meijer soft drink brand that also resembles Mountain Dew.

This article covers various store-brand generic citrus sodas.

Heee Haw

Heee Haw is the generic version of Mountain Dew sold at HyVee stores.

Mountain Breeze

Mountain Breeze is the Safeway SELECT generic answer to Mountain Dew. The taste of



Dr Pepper :

Two liter bottles of Cherry Vanilla Dr. Pepper (left), and the new Berries & Cream Dr. Pepper (right). Both were purchased in the United States.



Dr Thunder :

Mmmmm signs.

Fetus in Fetu
Breakin’ All The Rules
Romance Film
Tears
Sadness
Halo Effect
Guilt
The Tell-Tale Heart
Gothic Fiction
Femme Fatale

Fetus in fetu is a developmental abnormality containing entire organ systems, even major body parts such as torso or limbs. The abnormality occurs in 1 in 500,000 live births.

Fetus in fetu is a developmental abnormality containing entire organ systems, even major body parts such as torso or limbs. The abnormality occurs in 1 in 500,000 live births.

Is it alive?

A fetus in fetu is alive in the sense that any healthy organ is alive. Its cells are alive, and its organs have a working blood supply from the host. However, a fetus in fetus is not capable of life outside its host: as a rule, it has no (or no functional) brain, heart, lungs, gastrointestinal tract, or urinary tract. A fetus in fetu looks vaguely like a fetus, but is far from being one. That is why some experts think fetus in fetu is not a parasitic twin but rather a variant of fetiform teratoma.

Theories of development

There are two main theories about the development of fetus in fetu; one simple, the other complex.

Teratoma theory

Fetus in fetu may be a very highly differentiated form of dermoid cyst, itself a highly differentiated form of mature teratoma.

Parasitic twin theory

Fetus in fetu may be a parasitic twin fetus growing within its host twin. Very early in a monozygotic twin pregnancy, in which both fetuses share a common placenta, one fetus wraps around and envelops the other. The enveloped twin becomes a parasite, in that its survival depends on the survival of its host twin, by drawing on the host twin's blood supply. The parasitic twin is anencephalic (without a brain) and lacks some internal organs, and as such is almost always unable to survive on its own.

Sometimes, however, the host twin survives and is delivered. The parasitic twin grows so large that it starts to harm the host, at which point doctors usually intervene. The condition causes the host to look pregnant, and can occur in both males and females.

Examples in the media

Cases of fetus in fetu sometimes attract world-wide media attention. These cases are a small

minority of the known cases and rarely overlap with cases reported in the medical literature, but they are widely accessible.

Alamjan Nematilaev was the surviving host of a fetus in fetu. In 2003, aged 7, his school physician in Kazakhstan referred him to hospital after movements were detected in the boy's enlarged stomach. An operation intended to remove a cyst uncovered the fetus of Alamjan's identical twin brother, which had lived as parasitic growth inside the boy throughout his entire life. The fetus was comparatively highly developed, with hair, arms, fingers, nails, legs, toes, genitals, a head, and a vague approximation of a face.

- In June 1999, Sanju Bhagat, a man from Nagpur, India, was rushed to a hospital due to difficulty breathing. There, a surgical team removed from his bulging belly a teratoma, a kind of tumor. The report described that the surgical team found a living half-formed "creature" inside Mr. Bhagat's belly.

- In November 2006, a Chilean boy in Santiago was diagnosed with fetus in fetu shortly before birth.

- In August 2007, a two month old baby in Baguio from the Philippines named Eljie Millapes was diagnosed with fetus in fetu. The parents of Eljie Millapes were alarmed by the abnormal growth of the stomach of their two-month-old baby. Doctors later discovered that she was suffering from fetus in fetu.

Appearances in Popular Culture

- In Billy Cowie’s novel Passenger a man learns how to communicate with his internal parasitic twin sister.
- In Stephen King's novel The Dark Half, a writer's past fetus in fetu teratoma, which had been found and removed in childhood, is linked to the later appearance of a murderous "evil twin" version of himself that takes on the pseudonymous identity the writer had used for a dark series of novels, and that he had just retired.
- In the X-Files episode "Humbug" a char-

(or foetus in foetu)

acter has a parasitic twin who detaches from his "host" and kills people around the town.

- In season 2, episode 7 of the ABC television program Grey's Anatomy, a man believes he is pregnant; he turns out to have a teratoma.
- In the film My Big Fat Greek Wedding, Aunt Voula tells a story about "a lump on the back of [her] neck" that contained "teeth, and a spinal column" , probably a teratoma.
- The fate and identity of a fetus in fetu is a prominent plot line in the New Zealand drama series The Insider's Guide To Love
- In the film Breakin' All the Rules, Nikki describes a teratoma to Quincy.
- In The Troublesome Offspring of Cardinal Guzman (1992) by Louis de Bernières, Guzman's demons are caused by a teratoma.
- Pinoko, a character in the anime Black Jack, is actually a fetus in fetu extracted by Black Jack from a patient. She was given a plastic exoskeleton, and came to live with Black Jack as his assistant after being rejected by her twin sister. Her name is an obvious reference to Pinocchio, and she even sings a song about him in one episode.

Breakin’ All the Rules is a 2004 American comedy/romance film.

It was directed and written by Daniel Taplitz. This comedy/romance film was financially successful grossing twice it's budget (\$12,544,254). The film was received with positive reviews for both Jamie Foxx and Peter MacNicol.

Main Cast

Jamie Foxx ... as Quincy Watson
Peter MacNicol ... as Philip Gascon
Morris Chestnut ... as Evan Fields
Gabrielle Union ... as Nicky Callas
Jennifer Esposito ... as Rita Monroe

- In Patrick O'Brian's multi-novel Aubrey-Maturin series, Stephen Maturin carries a pre-served teratoma he had removed from a patient along with him as a prized possession.
- In the animated television series Bromwell High, during one of Iqbal's speeches, he appears to be describing the lump removed from himself as having hair in teeth, and revealing it was his twin brother who had been buried inside him all those years.
- On Will and Grace, Grace once expressed utter horror at a teratoma with little hair and teeth. She even said "When they poked it, it said 'Ow'."
- On the animated television series The Venture Bros., main character Dr. Thaddeus Venture engulfs his brother, Jonas Venture Jr., in the womb. Jonas Jr. later escapes from his brother and attempts to kill him.
- Brothers of the Head 2006, is a movie about conjoined twins, one of whom has a third twin, a fetus in fetu, inside his head.

Plot Summary

A man (Foxx) is dumped by his girlfriend and is inspired to write a handbook about breaking up, which becomes a best seller.That consequentially causes his life to become a virtual cesspool of information gaps.

While most films have some aspect of romance between characters (at least as a subplot) a romance film can be loosely defined as any film in which the central plot (the premise of the story) revolves around the romantic involvement of the story’s protagonists.

Another prerequisite is that the film has a happy ending (or at least bittersweet) and many would argue that no film with a sad ending may be correctly defined as "romance;" however, this second prerequisite is admittedly disputable and many screenwriters

and directors will push the boundaries of the genre in this aspect.

Other Names

Weepy film refers to tendency of romance

films to reduce audiences to (willing) tears

Chick flick refers to the popularity of romance films among women despite their often clichéd stories and plot devices.

Examples

A Walk to Remember
An Affair to Remember
Before Sunrise and its sequel, Before Sunset
Bridget Jones’s Diary

Casablanca
City of Angels
Dirty Dancing
Doctor Zhivago
Love Story
Message in a Bottle
Pretty Woman
Pride and Prejudice - 1940, 2003, 2005
Random Harvest
The Holiday (2006)
The Sheik
Sleepless in Seattle
While You Were Sleeping
The Bachelor

See also

AFI's 100 Years... 100 Passions
Romantic comedy film
Romantic drama film

Tears are a liquid process of lacrimation to clean and lubricate the eyes.

The word lacrimation may also be used in a medical or literary sense to refer to crying. Strong emotions, such as sorrow or elation, may lead to crying. Although most land mammals have a lacrimation system to keep their eyes wet, Humans are the only animal generally accepted to cry emotional tears.

Physiology

In humans, the tear film coating the eye has three distinct layers, from the most outer surface:

- The lipid layer contains oils secreted by the meibomian glands. The outer-most layer of the tear film coats the aqueous layer to provide a hydrophobic barrier that retards evaporation and prevents tears spilling onto the cheek.
- The aqueous layer contains water and other substances such as proteins (e.g. tear lipocalin, lactoferrin, lysozyme and lacritin) secreted by the glands and the lacrimal gland. The aqueous layer serves to promote spreading of the tear film, control of infectious agents and osmotic regulation.
- The mucous layer contains mucin secreted by the conjunctival goblet cells. The inner-most layer of the tear film, it coats the cornea to provide a hydrophilic layer that allows for even distribution of the tear film, as well as mucus covering of the cornea.

Having a thin tear film may prevent you from wearing contact lenses as the amount of oxygen need is higher than normal and contact lenses stop oxygen entering your eye. You will find that your eyes will dry out while wearing contact lenses whilst having a thin tear film. Special eye drops are available for contact lense wearers, also certain types of contact lenses are designed to let more oxygen through.

Drainage of tear film

One lacrimal gland is located superiortemporally to each eye, behind the upper eyelid. The lacrimal glands secrete lacrimal fluid which flows through the main excretory ducts into the space between the eyeball and lids. When the eyes blink the lacrimal fluid is spread across the surface of the eye. Lacrimal fluid gathers in the

lacrimal lake, and is drawn into the puncta by capillary action, then flows through the lacrimal canaliculi at the inner corner of the eyelids through the nasolacrimal duct, and finally into the nasal cavity. An excess of tears, as with strong emotion, can thus cause the nose to run.

Types of tears

There are three very basic types of tears:

- Basal tears:** In healthy mammalian eyes, the cornea is continually kept wet and nourished by basal tears. They lubricate the eye and help to keep it clear of dust. Tear fluid contains water, mucin, lipids, lysozyme, lactoferrin, lipocalin, lacritin, immunoglobulins, glucose, urea, sodium, and potassium. Some of the substances in lacrimal fluid fight against bacterial infection as a part of the immune system.
- Reflex tears:** The second type of tears results from irritation of the eye by foreign particles, or from the presence of irritant substances such as onion vapors, tear gas or pepper spray in the eye's environment. These reflex tears attempt to wash out irritants that may have come into contact with the eye.
- Crying or weeping** (psychic tears): The third category, generally referred to as crying or weeping, is increased lacrimation due to strong emotional stress, depression or physical pain. This practice is not restricted to negative emotions; many people have been known to cry when extremely happy or when they are laughing. In humans, emotional tears can be accompanied by reddening of the face and sobbing — cough-like, convulsive breathing, sometimes involving spasms of the whole upper body. Tears brought about by emotions have a different chemical make up than those for lubrication; emotional tears contain more of the protein-based hormones prolactin, adrenocorticotropic hormone, and leucine enkephalin (a natural painkiller) than basal or reflex tears. The limbic system is involved in production of basic emotional drives, such as anger, fear, etc. The limbic system, specifically the hypothalamus, also has a degree of control over the autonomic system. The parasympathetic branch of the autonomic system controls the lacrimal glands via the neurotransmitter acetylcholine through both the nicotinic and muscarinic receptors. When

these receptors are activated that the lacrimal gland is stimulated to produce tears.

Diseases and disorders

Quality of vision is affected by the stability of the tear film.

"Crocodile tears syndrome" is an uncommon consequence of recovery from Bell's palsy where faulty regeneration of the facial nerve causes sufferers to shed tears while eating.

Keratoconjunctivitis sicca, more commonly known as dry eye, is a very common disorder of the tear film. Paradoxically, sufferers can experience watering of the eyes which is in fact a response to irritation caused by the original tear film deficiency.

"Leamy Eye" is a condition whereby there is excessive watering of one eye, seemingly for no apparent reason, in response to environmental stimuli.

Societal aspects

Most mammals will produce tears in response to extreme pain or other stimuli, but crying as an emotional reaction is considered by many to be a uniquely human phenomenon, possibly

Sadness is a mood characterized by feelings of disadvantage and loss.

When sad, people often become quiet, less energetic and withdrawn. Sadness is considered to be the opposite of happiness, and is similar to the emotions of sorrow, grief, misery and melancholy. The philosopher Baruch Spinoza defined sadness as the “transfer of a person from a large perfection to a smaller one.”

Sadness is a temporary lowering of mood ('feeling blue'), whereas clinical depression is characterized by a persistent and intense lowered mood, as well as disruption to one's ability to function in day to day matters.

Sadness and the accuracy of evaluation

Forgas (1992, 1994) has found our mood influences the accuracy of our evaluation of others. Hence, biased evaluations may occur as a result of faulty information processing where a person may take his current mood as a source of information on which to base his evaluation. For instance, happy people are inclined to evaluate others in a positive way, and sad people are inclined to evaluate people negatively.

Sad people have been found to be less accurate than happy people in their evaluations, as well as taking a longer period of time for the evaluation. Several explanations for this have been postulated:

due to humans' advanced self-awareness. Some studies suggest that elephants and gorillas may cry as well.

In nearly all cultures, crying is seen as a specific act associated with tears trickling down the cheeks and accompanied by characteristic sobbing sounds. Emotional triggers are most often anger and grief, but crying can also be triggered by sadness, joy, fear, laughter or humor, frustration, or other strongly-experienced emotions.

In many cultures, crying is associated with babies and children. Some cultures consider crying to be undignified and infantile, casting aspersions on those who cry publicly, except if it is due to the death of a close friend or relative. In most cultures, it is more socially acceptable for women to cry than men, although this is rapidly changing in a more equal society.

Some modern therapy movements such as Re-evaluation Counseling believe that crying is beneficial to health and mental wellbeing, and positively encourage it.

An insincere display of grief or dishonest remorse is called crocodile tears, from the ancient anecdote that crocodiles would pretend to weep while luring or devouring their prey.

- Functional (Forgas, 1998) – Mood indicates a social situation that in turn enables specific behaviors. Therefore, happiness indicates a positive social situation in which the behavior is more relaxed. In contrast, sadness indicates a dangerous social situation that requires more attention and for that reason requires greater information processing.
- Motivational (Isen, 1984) -People in a positive mood avoid deep information processing that may cause them to doubt the positive situation they are in. In contrast, people in a sad mood strive to change the negative situation they are in.

- The ability to process information is influenced by mood (Isen, 1987) - Happy people require less cognitional resources for deep and precise information processing than sad people. One study showed that resource blocking through use of distractions prevented people from deep and precise information processing and raised the comparative effectiveness of people in a sad mood.

Sadness and status

Sadness may affect a person's social standing.

Studies have found that when people recognize an expressed emotion, they tend to attribute

additional characteristics to the person expressing that emotion (Halo effect). A happy person, therefore is perceived warmly whereas a sad person is perceived as weak and lacking ability and an angry person is perceived as powerful and dominant.(Keltner, 1997).

Tiedens's study explored whether people provide power to people they like or rather to people they perceive as powerful. The study, which examined social position in political, business and job interview situations, found that

people prefer to give status position and power to an angry leader rather than to a sad one. People tend to give power to those perceived as powerful instead of to those whom they like. For example, in the business world, a positive statistical correlation was found between sadness and the extent of a person's social contribution, however angry people were perceived more deserving of status and promotion. Similarly, in the job interviews, angry people were perceived as more suitable for promotion and high salary than sad people.

The halo effect refers to a cognitive bias whereby the perception of a particular trait is influenced by the perception of the former traits in a sequence of interpretations.

Edward L. Thorndike was the first to support the halo effect with empirical research. In a psychology study published in 1920, Thorndike asked commanding officers to rate their soldiers; Thorndike found high cross-correlation between all positive and all negative traits. People seem not to think of other individuals in mixed terms; instead we seem to see each person as roughly good or roughly bad across all categories of measurement.

A study by Solomon Asch suggests that attractiveness is a central trait, so we presume all the other traits of an attractive person are just as attractive and sought after.

The halo effect is involved in Harold Kelley's implicit personality theory, where the first traits we recognize in other people then influence the interpretation and perception of latter ones (because of our expectations). Attractive people are often judged as having a more desirable personality and more skills than someone of average appearance. Celebrities are used to endorse products that they have no expertise in evaluating.

Individuals often exhibit their best behavior in the presence of authority figures, presumably to avoid being accosted by said figures.

The halo effect is also a term used in human resources recruitment. While interviewing a

person, you might be influenced by one of their attributes and ignore their other weaknesses.

Devil effect

A corollary to the halo effect is the devil effect, or horns effect, where individuals judged to have a single undesirable trait are subsequently judged to have many poor traits, allowing a single weak point or negative trait to influence others' perception of the person in general. Said another way, if we are told that we are seeing a person that has just returned from psychiatric treatment, we will tend to interpret otherwise neutral behaviors as indicators of mental illness.

As a business model

In brand marketing, a halo effect is one where the perceived positive features of a particular item extend to a broader brand. It has been used to describe how the iPod has had positive effects on perceptions of Apple's other products. The term is also widely used in the automotive industry, where a manufacturer may produce an exceptional halo vehicle in order to promote sales of an entire marque. Modern cars often described as halo vehicles include the Dodge Viper, Ford GT, and Acura NSX.

See also

Confirmation bias
Guilt by association
List of cognitive biases

occurs when a person realizes that he or she has violated a moral standard and is responsible for that violation.

Definitions of guilt

In psychology and ordinary language, guilt is an affective state in which one experiences conflict at having done something that one believes one should not have done (or conversely, having not done something one believes one should have done). It gives rise to a feeling that does not go away easily, driven by conscience. Sigmund Freud described this as the result of a struggle between the ego and the superego parental imprinting. Guilt and its causes, merits, and demerits are common themes in psychology and psychiatry. It is often associated with depression. The philosopher Martin Buber underlined the difference between the Freudian notion of guilt, based on internal conflicts, and existential guilt, based on actual harm done to others.

Causes of guilt

Some thinkers have theorized that guilt is used as a tool of social control. Since guilty people feel they are undeserving, they are less likely to assert their rights and prerogatives. Thus, those in power seek to cultivate a sense of guilt among the populace, in order to make them more tractable.

Some evolutionary psychologists theorize that guilt and shame helped maintain beneficial relationships, such as reciprocal altruism. If a person feels guilty when he harms another or even fails to reciprocate kindness, he is more likely not to harm others or become too selfish; in this way, he reduces the chances of retaliation by members of his tribe and thereby increases his survival prospects, and those of the tribe or group. As with any other emotion, guilt can be manipulated to control or influence others.

Another common notion is that guilt is assigned by social processes such as a jury trial, i.e. that it is a strictly legal concept. Thus the ruling of a jury that O.J. Simpson or Julius Rosenberg was "guilty" or "not guilty" is taken as an actual judgement by the whole society that they must act as if they were so. By corollary, the ruling that such a person is "not guilty" may not be so taken, due to the asymmetry in the assumption that one is assumed innocent until proven guilty and prefers to take the risk of freeing a guilty party over convicting innocents.

Still others -- often, but not always, theists of one type or another -- believe that the origin of guilt comes from violating universal principles of right and wrong. In most instances, people who believe this also acknowledge that, even though there is proper guilt from doing 'wrong' instead of doing 'right,' people endure all sorts of guilty feelings that don't stem from violating universal moral principles.

Collective guilt

Collective guilt, or guilt by association, is the controversial collectivist idea that a group of humans can bear guilt above and beyond the guilt of particular members, and hence an individual holds responsibility for what other members of his group have done, even if he himself hasn't done this. Advanced systems of criminal law accept the principle that guilt shall only be personal. This attitude is not usually shared by other systems of law. Assumption of collective responsibility is common for feud. Such systems tend to judge the guilt of persons by their associations, classifications or organizations, which often gives rise to racial, ethnic, social and religious prejudices. Collective guilt is regarded by some as impossible because it seems to presuppose that collections of humans can have traits, such as intentions and knowledge, that strictly speaking are claimed to be truly possessed only by individuals. The principle of collective guilt is totally denounced in libertarian social thinking. However, there are those who consider such judgements on collective guilt to be overly reductionistic and accept the existence of collective guilt, collective responsibility, etc. Sometimes the idea of collective guilt can be a form of association fallacy. Humans seem to have a natural tendency to attribute collective guilt, usually with tragic results. History is filled with examples of a wronged man who tried to avenge himself, not on the person who has wronged him, but on other members of the wrong-doer's family, or ethnic group, or religion, or nation, or tribe, or army. Likewise collective punishment is often practiced in different settings, including schools (punishing a whole class for the actions of a single unknown pupil) and, more transcendently, in situation of war, economic sanctions, etc, presupposing the existence of collective guilt.

The idea of collective guilt, however, became popular in Western World since the 1960s, as many historical injustices, including e.g. slavery in the United States, has been perceived by intelligentsia as faults of the society requiring retribution on behalf of those who had nothing to do with them (see e.g. Reparations for slavery and White guilt).

Terrorism is commonly rationalized by its practitioners on ideas of collective guilt and responsibility. Many nations have laws holding corporations, but not the individual decision-makers within them, responsible for certain kinds of acts. For example, in the United States corporations can be fined for violating pollution laws, but the individuals who actually ordered and directed the polluting activity may not themselves be regarded as having broken any laws, since they act as corporate officers on behalf of the shareholders. This is generally

known as the "corporate veil".

Lack of guilt

Psychopaths typically lack a sense of guilt or remorse for any harm they may have caused others, instead rationalizing the behavior,

blaming someone else, or denying it altogether. This is seen by psychologists as part of a lack of moral reasoning in comparison with the majority of humans, an inability to evaluate situations in a moral framework and an inability to develop emotional bonds with other people.

“The Tell-Tale Heart” is a short story by Edgar Allan Poe written in 1843.

It follows an unnamed narrator who insists on his sanity after murdering an old man with a vulture eye. The murder is carefully calculated, and the murderer hides the body by cutting it into pieces and hiding it under the floorboards. Ultimately the narrator's guilt manifests itself in the hallucination that the man's heart is still beating under the floorboards.

It is unclear what relationship, if any, the old man and his murderer share. It has been suggested that the old man is a father figure or, perhaps, that his vulture eye represents some sort of veiled secret. The ambiguity and lack of details about the two main characters stand in stark contrast to the specific plot details leading up to the murder.

The story was first published in James Russell Lowell's The Pioneer in January 1843. "The Tell-Tale Heart" is widely considered a classic of the Gothic fiction genre and one of Poe's most famous short stories. It has been adapted or served as an inspiration for a variety of media.

Plot Summary

Note: Due to the ambiguity surrounding the identity of the story's narrator, that character's gender cannot be known for certain. However, for ease of description masculine pronouns are used in this article.

"The Tell-Tale Heart" is a first-person narrative of an unnamed narrator who insists he is sane but suffering from a disease which causes "over-acuteness of the senses." The old man with whom he lives has a clouded, pale, blue "vulture-like" eye which so distresses the narrator that he plots to murder the old man. The narrator insists that his careful precision in committing the murder shows that he cannot possibly be insane. For seven nights, the narrator opens the door of the old man's room, a process which takes him a full hour. However, the old man's vulture eye is always closed, making it impossible to do the deed.

On the eighth night, the old man awakens and sits up in his bed while the narrator performs his nightly ritual. The narrator does not draw back and, after some time, decides to open his lantern. A single ray of light shines out and lands precisely on the old man's eye, revealing that it is wide open. Thinking he hears the old man's heartbeat beating unusually loudly from

terror, the narrator decides to strike, smothering the old man with his own bed. The narrator proceeds to chop up the body and conceal the pieces under the floorboards. The narrator makes certain to hide all signs of the crime. Even so, the old man's scream during the night causes a neighbor to call the police. The narrator invites the three officers to look around, confident that they will not find any evidence of the murder. The narrator brings chairs for them and they sit in the old man's room, right on the very spot where the body was concealed, yet they suspect nothing, as the narrator has a pleasant and easy manner about him.

The narrator, however, begins to hear a faint noise. As the noise grows louder, the narrator comes to the conclusion that it is the heartbeat of the old man coming from under the floorboards. The sound increases, though the officers seem to pay no attention to it. Shocked by the constant beating of the heart and a feeling that the officers must be aware of the sound, the narrator confesses to killing the old man and tells them to tear up the floorboards to reveal the body.

Publication history

"The Tell-Tale Heart" was first published in the Boston-based magazine The Pioneer in January 1843, edited by James Russell Lowell. Poe was likely paid only \$10. It was slightly revised when republished in the August 23, 1845 edition of the Broadway Journal. It was reprinted multiple times during Poe's lifetime.

Adaptations

- Television and film adaptations of "The Tell-Tale Heart" date as far back as the 1950s and continue through 2007, ranging from short television adaptations to full-length feature films. One version, a 1953 animated film by UPA read by James Mason, is included among the films preserved in the United States National Film Registry. Other versions are greatly expanded from the original work, including a 1960 version, The Tell-Tale Heart, which adds a love triangle to the story.

- A reading of the story was performed by Winifred Phillips, with music composed by her, as part of the NPR "Tales by American Masters" series in 1998 and released on DH Audio.

General	
	
Author	<i>Edgar Allan Poe</i>
Country	<i>United States</i>
Language	<i>English</i>
Genre(s)	<i>Horror Short</i>
Publisher	<i>The Pioneer</i>
Publication Date	<i>January 1843</i>
Media Type	<i>Print (periodical)</i>

- The Canadian radio program Nightfall presented an adaptation on August 1, 1980.

Works Inspired

Music

- The great French harpist and composer Henriette Renié (1875-1956) wrote a "Ballade Fantastique d'après «Le Coeur Révélateur» d'Edgard Poë" ("Fantastic Ballad Based on 'The Tell-Tale Heart' by Edgar Poe") for harp solo, which reflects the madness of the murderer. The haunting heart beat is one of the constructing elements.
- "The Tell-Tale Heart" is one of several songs inspired by Poe stories on the album Tales of Mystery and Imagination (original version 1976, CD remix 1987) by The Alan Parsons Project. It is sung by Arthur Brown.
- In 2003, Lou Reed released his concept album The Raven comprised of several works inspired by Poe, including "The Tell-Tale Heart."
- In Insane Clown Posse's 1995 album The Riddlebox, the track "Ol' Evil Eye" was inspired by this story.
- Buddy Morrow recorded a Ray Martin song, "The Tell-Tale Heart," for his big-band album Poe for Moderns (1960).
- The christian metal band Tourniquet also recorded a song inspired by the story the same title as, the song was featured on their album Crawl to China.

Gothic fiction is an important genre of literature that combines elements of both horror and romance.

As a genre, it is generally believed to have been invented by the English author Horace Walpole, with his 1764 novel The Castle of Otranto. The effect of Gothic fiction depends on a pleasing sort of terror, an extension of essentially Romantic literary pleasures that were relatively new at the time of Walpole's novel.

Prominent features of Gothic fiction include terror (both psychological and physical), mystery, the supernatural, ghosts, haunted houses and Gothic architecture, castles, darkness, death, decay, doubles, madness, secrets and hereditary curses.

The stock characters of Gothic fiction include tyrants, villains, bandits, maniacs, Byronic heroes, persecuted maidens, femmes fatale, madwomen, magicians, vampires, werewolves, monsters, demons, revenants, ghosts, perambulating skeletons, the Wandering Jew and the Devil himself.

Important ideas concerning and regarding the Gothic include: Anti-Catholicism, especially criticism of Roman Catholic excesses such as the Inquisition (in southern European countries such as Italy and Spain); romanticism of an

Television

- An episode of The Simpsons ("Lisa's Rival", first aired September 11, 1994) featured a "Tell-Tale Heart"-inspired act of revenge between Lisa and a new student. In the episode, Lisa hides the competing student's diorama of the story and replaces it with an actual animal heart. As her guilt rises, she thinks she hears the diorama's heart beating beneath the floor boards.
- An episode of Even Stevens ("Family Picnic") also features a similar "Tell-Tale Heart" scenario. In this case, Louis cheats in a picnic competition by drilling a hole in his opponent's canoe. However, he is soon haunted by (imaginary) accusations. Tawny, suspicious, mentions the story of "The Tell-Tale Heart" so that Louis would admit his guilt and confess.
- A season 1 episode of SpongeBob SquarePants, ("Squeaky Boots", first aired September 4, 1999) has Mr. Krabs selling a pair of rubber boots to Spongebob, which turn out to be incredibly irritating because of the constant squeaking they cause and Mr. Krabs decides to steal them from Spongebob and buries them underneath the floorboards of the Krusty Krab, only to begin hearing the squeaking noise more and more before snapping and digging them up, saying, "It is the squeakin' of the hideous boots!" and admitting that he stole them. He then proceeds to eat the boots instead because he still cannot stand the incessant squeaking.

ancient Medieval past; melodrama; and parody (including self-parody).

Origins

In a way similar to the gothic revivalists' rejection of the clarity and rationalism of the neoclassical style of the Enlightened Establishment, the term "gothic" became linked with an appreciation of the joys of extreme emotion, the thrill of fearfulness and awe inherent in the sublime, and a quest for atmosphere. The ruins of gothic buildings gave rise to multiple linked emotions by representing the inevitable decay and collapse of human creations— thus the urge to add fake ruins as eyecatchers in English landscape parks. English Protestants often associated medieval buildings with what they saw as a dark and terrifying period, characterized by harsh laws enforced by torture, and with mysterious, fantastic and superstitious rituals.

The first gothic romances

The term "Gothic" came to be applied to the literary genre precisely because the genre dealt with such emotional extremes and very dark themes, and because it found its most natural

settings in the buildings of this style — castles, mansions, and monasteries, often remote, crumbling, and ruined. It was a fascination with this architecture and its related art, poetry (see Graveyard Poets), and even landscape gardening that inspired the first wave of gothic novelists. For example, Horace Walpole, whose The Castle of Otranto (1764) is often regarded as the first true gothic romance, was obsessed with medieval gothic architecture, and built his own house, Strawberry Hill, in that form, sparking a fashion for gothic revival. Indeed Margaret Drabble suggests in the The Oxford Companion to English Literature (ed.; 5th & 6th edns) (1985, 2000), that the term 'Gothic' originally meant medieval, as in Castle of Otranto, a Gothic Tale.

Walpole's novel arose out of this obsession with the medieval. He originally claimed that the book was a real medieval romance he had discovered and republished. Thus was born the gothic novel's association with fake documenta-tion to increase its effect. Indeed, The Castle of Otranto was originally subtitled "A Romance" — a literary form held by educated taste to be tawdry and unfit even for children, due to its superstitious elements — but Walpole revived some of the elements of the medieval romance in a new form. The basic plot created many other gothic staples, including a threatening mystery and an ancestral curse, as well as countless trappings such as hidden passages and oft-fainting heroines.

A femme fatale is an alluring and seduc-tive woman whose charms ensnare her lovers in bonds of irresistible desire, often leading them into compromising, danger-ous, and deadly situations.

She is an archetypal character of literature and art. The phrase is French for "fatal (or "deadly") woman." A femme fatale tries to achieve her hidden purpose by using feminine wiles such as beauty, charm, and sexual allure. Typically, she is exceptionally well-endowed with these qualities. In some situations, she uses lying or coercion rather than charm. She may also be (or imply to be) a victim, caught in a situation from which she cannot escape; the Lady from Shanghai (a 1948 film noir) giving one such example. Her characteristic weapon, if needed, is frequently poison, which also serves as a metaphor for her charms.

Her ability to entrance and hypnotise her male victim was in the earliest stories seen as being literally supernatural, hence the most prosaic femme fatale today is still described as having a power akin to an enchantress, vampire, female monster or demon. The ideas involved are closely tied to fears of the female witch. Although typically villainous, femmes fatales have also appeared as antiheroines in some sto-

It was however Ann Radcliffe who created the gothic novel in its now-standard form. Among other elements, Radcliffe introduced the brood-ing figure of the gothic villain, which developed into the Byronic hero. Unlike Walpole's, her novels, beginning with The Mysteries of Udol-pho (1794), were best-sellers, although along with all novels they were looked down upon by well-educated people as sensationalist women's entertainment (despite some men's enjoyment of them).

"The person, be it gentleman or lady, who has not pleasure in a good novel, must be intol-erably stupid. I have read all Mrs. Radcliffe's works, and most of them with great pleasure. The Mysteries of Udolpho, when I had once be-gun it, I could not lay down again; I remember finishing it in two days – my hair standing on end the whole time." [said Henry]

...
"I am very glad to hear it indeed, and now I shall never be ashamed of liking Udolpho myself." [replied Catharine]

— Jane Austen, Northanger Abbey (written 1798)

Radcliffe also provided an aesthetic for the bur-geoning genre courtesy of her influential article "On the Supernatural in Poetry" in The New Monthly Magazine 7, 1826, pp 145-52, examin-ing the distinction and correlation between horror and terror in Gothic fiction.

See also

Southern Gothic
Southern Ontario Gothic
Dark romanticism
Suburban Gothic

(plural: femmes fatales)

ries, and some even repent and become heroines by the end of the tale (see, for example, Bell, Book and Candle).

In social life, the femme fatale tortures her lover in an asymmetrical relationship, denying confirmation of her affection. She usually drives him to the point of obsession and exhaus-tion so that he is incapable of making rational decisions.

History

The femme fatale archetype exists, in one form or another, in the folklore and myth of nearly every culture in every century. The early examples are Ishtar, the Sumerian goddess, and Lilith, Delilah, and Salome from the Judaeo-Christian Bible. In ancient Greek literature, the femme fatale is incarnated by the Siren, the Sphinx, Scylla, Circe, Lamia (mythology), Helen of Troy, and Clytemnestra. Beside them is the historical figure Cleopatra, Queen of Egypt, with her ability to seduce the powerful

The Tell-Tale Heart

Gothic Fiction

Femme Fatale

men of Rome. Roman propaganda attacked Cleopatra as a femme fatale; resultingly, she became the legendary archetype of the attrac-tions and the dangers inherent to the powerful, exotic woman.

In the Middle Ages, the idea of the dangers of female sexuality, typified by Eve, was common-ly expressed in medieval romances as a wicked, seductive enchantress, the prime example being Morgan la Fay.

The femme fatale flourished in the Romantic period in the works of John Keats, notably La Belle Dame sans Merci and Lamia. Along with them, there rose the gothic novel, The Monk featuring Matilda, a very potent femme fatale. This led to her appearing in the work of Edgar Allan Poe, and as the vampiress, notably in Carmilla and Brides of Dracula. The Monk was greatly admired by the Marquis de Sade, for whom the femme fatale symbolised not evil, but all the best qualities of Women, with Juliette being perhaps the earliest novel wherein the femme fatale triumphs. Pre-Raphaelite painters frequently used the classic personifications of the femme fatale as a subject.

In the Western Culture of the late nineteenth and early twentieth centuries, the femme fatale became a more fashionable trope, and is found in the paintings of the artists Edvard Munch, Gustav Klimt, Gustave Moreau, and the novels of the Frenchman Joris-Karl Huysmans. In À rebours are these fevered imaginings about an image of Salome in a Moreau painting:

No longer was she merely the dancing-girl who extorts a cry of lust and concupiscence from an old man by the lascivious contortions of her body; who breaks the will, masters the mind of a King by the spectacle of her quiver-ing bosoms, heaving belly and tossing thighs; she was now revealed in a sense as the sym-bolic incarnation of world-old Vice, the goddess of immortal Hysteria, the Curse of Beauty su-preme above all other beauties by the cataleptic spasm that stirs her flesh and steels her muscles, - a monstrous Beast of the Apocalypse, indiffer-ent, irresponsible, insensible, poisoning.

In fin-de-siecle decadence, Oscar Wilde re-invented the femme fatale in the play 'Salome': she manipulates her lust-crazed uncle, King Herod, with her enticing Dance of the Seven Veils (Wilde's invention) to agree to her imperi-ous demand: bring me the head of John the Baptist. Later, Salome was the subject of an opera by Strauss, was popularized on stage, screen, and peep-show booth in countless reincarnations.

Femme Fatale have also existed in the east. In Chinese myths, stories and history, certain concubines have been accused as being respon-sible in part for the weakening and downfall of dynasties, by seducing her lover into neglecting their duties or twisting him to her will.

Another enduring icon of womanly glamour, seduction, and the presumed moral turpitude of the early twentieth century, was Mata Hari, an alluring oriental dancer, accused of German

espionage and put to death by a French firing squad. As such, she realised the femme fatale archetype, and, after her death, became the subject of much fantastical imagining and many sensational films and books.

The femme fatale has been portrayed as a sexual vampiress; her charms leach the virility and independence of lovers, leaving them shells of themselves. Rudyard Kipling was inspired by a vampiress painted by Philip Burne-Jones, an image typical of the era in 1897, to write his poem 'The Vampire'. Like much of Kipling's verse it was incredibly popular, and its refrain: A fool there was . . . , describing a seduced man, became the title of the popular film A Fool There Was that made Theda Bara a star, the poem was used in its publicity. On this account, in early American slang the femme fatale was called vamps, short for vampiress.

Jules et Jim fall in love with the same woman Jeanne Moreau in a classic French film by François Truffaut from 1962.

From the American film audience perspective, the femme fatale often was foreign, usually either of an indeterminate Eastern European or Asian ancestry. She was the sexual counterpart to wholesome actresses such as Lillian Gish and Mary Pickford. Notable silent cinema vamps were Theda Bara (who started the vamp craze), Louise Glaum, Musidora, Nita Naldi, Pola Ne-gri, and in her early appearances, Myrna Loy.

During the film noir era of the 1940s and 1950s, the femme fatale flourished in American cinema. One of the most famous is the cabaret singer portrayed by Rita Hayworth in Gilda (1946), who sexually manipulates her husband and his best friend. Another quintessential noir femme fatale is Phyllis Dietrichson (played by Barbara Stanwyck), who seduces a hapless insurance salesman and persuades him to kill her husband in Double Indemnity (1944). Other American cultural examples of such a deadly woman are in espionage thrillers and juvenile adventure comic strips, such as The Spirit, by Will Eisner, and Terry and the Pirates, by Milton Caniff. Today, she remains the key character in films such as Fatal Attraction and Basic Instinct

A classically portrayed literary femme fatale is the "Justine" heroine of Lawrence Durrell's Alexandria Quartet. In opera, the femme fatale is usually played by a dramatic mezzo-soprano. More often in musical theater, the femme fatale is played by an alto. The femme fatale is some-times the foil or the enemy of the ingenue or the damsel in distress.

Despite usually being portrayed in religion as symbolic of corruption and moral turpitude to justify societal misogyny, in contemporary times the femme fatale is symbolic of women of free will and unrestrained passion. She survives as heroine and anti-heroine, in Nikita and Moulin Rouge!, and video games and comic books. Elektra, a character from Marvel Comics, Catwoman from the Batman stories, and EVA from Metal Gear Solid 3. The woman ninja (the Kunoichi) is legendary for

being a trained seductress and a martial artist. The protagonists of the American television program Desperate Housewives use sexual allure to get what and whom they want. A modern example of the archetypal femme fatale is Xenia Onatopp, the character from Goldeneye who seduced men and then murdered them by crushing them between her thighs.

The Velvet Underground band sing a song titled "Femme Fatale" in the The Velvet Underground and Nico album.

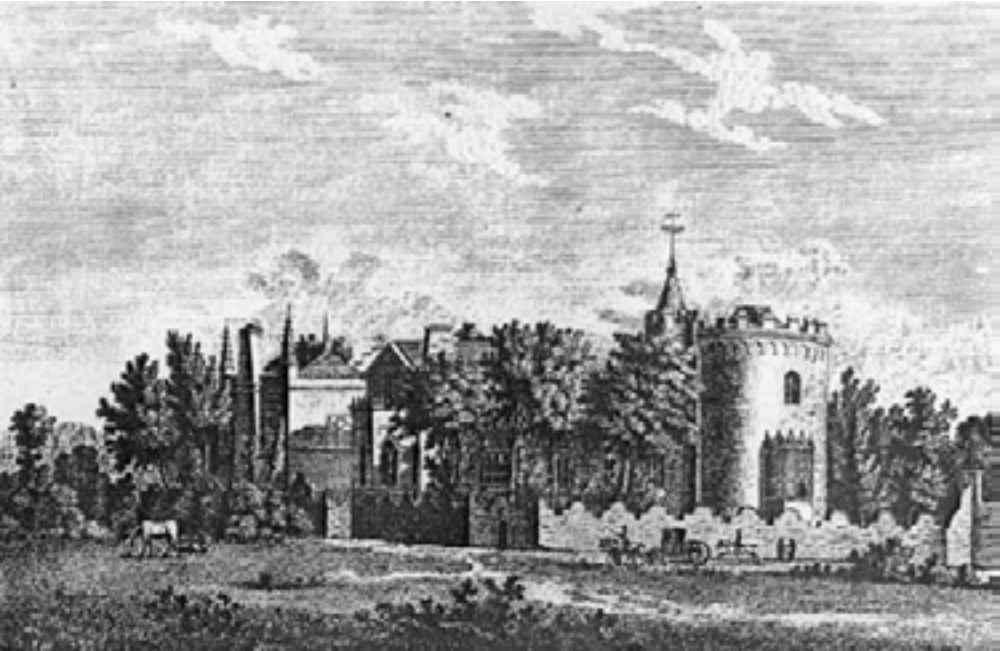
L'homme fatal

Men who are fatal include Don Juan, Heathcliff from Wuthering Heights, most of the heroes in Lord Byron's books (termed the "Byronic hero"), as well as such diverse characters as Billy Budd, Count Dracula, Tadzio in Death in Venice, Harthouse in Charles Dickens' Hard Times, Georges Querelle in Jean Genet's Querelle

See also
Archetypal literary criticism
Feminist film theory
List of female supervillains
Male gaze
Succubus
Warrior princess
Gun moll
Girls with guns
Femme Fatales (magazine)



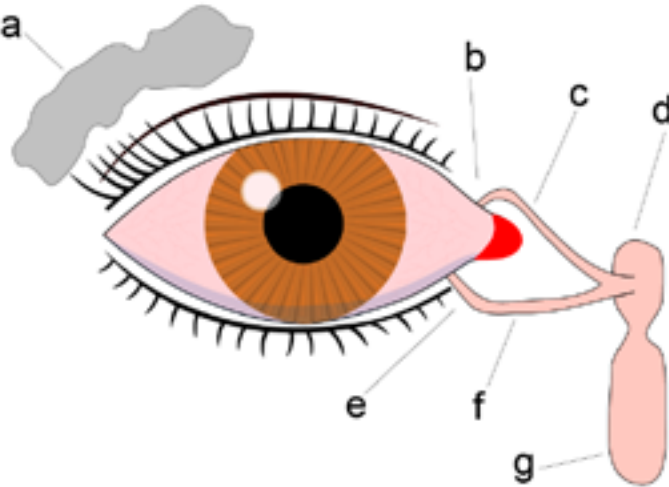
Femme Fatale :
Convicted spy Mata Hari made her name synonymous with femme fatale during WWI.



Gothic Fiction :
Strawberry Hill, an English villa in the “Gothic revival” style, built by seminal Gothic writer Horace Walpole



The Tell-Tale Heart :
Illustration by Harry Clarke, 1919.



Tears :

The tear system. A) Tear gland / Lacrimal gland B) Superior lacrimal punctum C) Superior lacrimal canal D) Tear sac / Lacrimal sac E) Inferior lacrimal punctum F) Inferior lacrimal canal G) Nasolacrimal canal



Tears :

A Frenchman weeps as the French Army remaining troops leave metropolitan France at Toulon harbour, to reach the French colonies in Africa, 1940.

- Nothing
- Vacuum
- Thought Experiment
- Chinese Room
- Hard Problem of Consciousness
- Philosophical Zombie
- Mary's Room
- Qualia
- Synesthesia
- Stroke
- Wernicke's Area
- Aphasia

182 **Nothing** is commonly understood as the lack or absence of anything at all.

Colloquially, the term is often used to indicate the lack of anything relevant or significant, or to describe a particularly unimpressive thing, event, or object.

Language and logic

Grammatically, the word "nothing" is a noun, which suggests that it refers to something. This can lead to confusion and forms the basis for a number of jokes. Its basic uses can often be restated to avoid this appearance: "There is nothing in the basement" can be restated as "There is not anything in the basement" or "Everything is not in the basement" (which can technically imply that there is any quantity short of 'everything' in the basement.) "Nothing is missing" can be restated as "everything is present". Conversely, many fallacious conclusions follow from treating "nothing" as a noun.

Modern logic made it possible to articulate these points coherently as intended, and many philosophers hold that the word "nothing" does not function as a noun: there is not any object it refers to. There are still various opposing views, though: that, for example, our understanding of the world rests essentially on noticing absences and lacks as well as presences, and that "nothing" and related words serve to indicate these.

One theory goes as this: Nothing is a noun therefore making it something, however, the word nothing is supposed to mean exactly nothing or the absence of something. Also, the word nothing is a something making it nothing as well. Everything is nothing in one way of speaking. If we all figured that this theory was correct, we would not exist. As goes the famous sayings of the hitchhiker's guide to the galaxy: Don't Panic, works in a way that shows that nothing really does but doesn't exist. If for one second, everyone on the earth thought that nothing actually does exist, we would disappear in a puff of nothing. However the same goes for the exact opposite for everything.

Philosophy

The concept of 'nothing' has been studied throughout history by philosophers and theologians; many have found that careful consideration of the notion can easily lead to the logical fallacy of reification. (If one does not believe that nothing is no thing.) However, many of the existentialist and postmodern philosophers and writers would argue that Nothing is actually the lack or absence of something, rather than of anything.

The understanding of 'nothing' varies widely between cultures, especially between Western and Eastern cultures and philosophical traditions. For instance, Shunyata (emptiness), unlike "nothingness", is considered a state of mind in some forms of Buddhism (see Nirvana, mu, and Bodhi). Achieving 'nothing' as a state of mind in this tradition allows someone to be totally 'focused' (in the Western sense of the word) on a thought or activity at a level of intensity they would not be able to achieve if they were 'consciously' thinking. The classic example of this is an archer drawing a bow, attempting to erase their mind as a way to better focus on the shot. Existentialism and Martin Heidegger have brought these two understandings closer together.

Science

In mathematics, nothing does not have a technical meaning. It could be said that a set contains "nothing" if and only if it is the empty set, in which case its cardinality (or size) is zero. In other words, the word "nothing" is an informal term for an empty set. However, since two subtraction minus two is also called nothing, it could also refer to the number zero.

In physics, the word nothing is not used in any technical sense. A region of space is called a vacuum if it does not contain any matter. But it can contain physical fields. In fact, it is practically impossible to construct a region of space which contains no matter or fields, since gravity cannot be blocked and all objects at a non-zero temperature radiate electromagnetically. However, supposing such a region existed, it would still not be "nothing", since it has properties and a measurable existence as part of the quantum-mechanical vacuum.

In computing, "Nothing" (VB.Net), or "null" (Java, C#, others), can be a keyword used to represent an unassigned variable, or a pointer that does not point to any particular memory address, or a reference that does not refer to an extant object. Similarly, Null is used in SQL as a symbolic representation of the absence of data. This meta-data usage of "null" is different from the unprintable ASCII and unicode null character, which has a numerical value of zero — although it is different from the ASCII character for zero ("0"). The ASCII blank character (" ") is not the same as an empty string (""), which is itself sometimes confused with the null pointer in languages such as C. Most forms of assembly language have a no-operation (nop) instruction

See also

- Blank*
- Empty set*
- Existentialism*
- Negative theology*
- Nihilism*
- No*
- Nobody*
- NOP*
- Nowhere*
- Null*
- Null graph*
- Shunyata*
- Vacuuous truth*
- Vacuum*
- Void*
- Zero*

(often with a numerical value of zero) — that is, a command to do nothing, which can prove

useful for blanking out areas of problem code.

A vacuum is a volume of space that is essentially empty of matter, such that its gaseous pressure is much less than standard atmospheric pressure.

The Latin term in vacuo is used to describe an object as being in what would otherwise be a vacuum. The root of the word vacuum is the Latin adjective vacuus which means "empty," but space can never be perfectly empty. A perfect vacuum with a gaseous pressure of absolute zero is a philosophical concept that is never observed in practice, not least because quantum theory predicts that no volume of space can be perfectly empty in this way. Physicists often use the term "vacuum" slightly differently. They discuss ideal test results that would occur in a perfect vacuum, which they simply call "vacuum" or "free space" in this context, and use the term partial vacuum to refer to the imperfect vacua realized in practice.

The quality of a vacuum is measured in relation to how closely it approaches a perfect vacuum. The residual gas pressure is the primary indicator of quality, and is most commonly measured in units called torr, even in metric contexts. Lower pressures indicate higher quality, although other variables must also be taken into account. Quantum mechanics sets limits on the best possible quality of vacuum. Outer space is a natural high quality vacuum, mostly of much higher quality than what can be created artificially with current technology. Low quality artificial vacuums have been used for suction for millennia.

Vacuum has been a frequent topic of philosophical debate since Ancient Greek times, but was not studied empirically until the 17th century. Evangelista Torricelli produced the first artifical vacuum in 1643, and other experimental techniques were developed as a result of his theories of atmospheric pressure. Vacuum became a valuable industrial tool in the 20th century with the introduction of incandescent light bulbs and vacuum tubes, and a wide array of vacuum technology has since become available. The recent development of human spaceflight has raised interest in the impact of vacuum on human health, and on life forms in general.

Uses

Vacuum is useful in a variety of processes and devices. Its first common use was in incandescent light bulbs to protect the tungsten filament from chemical degradation. Its chemical inertness is also useful for electron beam welding, chemical vapor deposition and dry etching in the fabrication of semiconductors and optical coatings, cold welding, vacuum packing,

Achtumn Vacuuming and vacuum frying. The reduction of convection improves the thermal insulation of thermos bottles and double-paned windows. Deep vacuum promotes outgassing which is used in freeze drying, adhesive preparation, distillation, metallurgy, and process purging. The electrical properties of vacuum make electron microscopes and vacuum tubes possible, including cathode ray tubes. The elimination of air friction is useful for flywheel energy storage and ultracentrifuges.

High to ultra-high vacuum is used in thin film deposition and surface science. High vacuum allows for contamination-free material deposition. Ultra-high vacuum is used in the study of atomically clean substrates, as only a very good vacuum preserves atomic-scale clean surfaces for a reasonably long time (on the order of minutes to days).

Suction is used in a wide variety of applications. The Newcomen steam engine used vacuum instead of pressure to drive a piston. In the 19th century, vacuum was used for traction on Isambard Kingdom Brunel's experimental atmospheric railway.

Outer space

Much of outer space has the density and pressure of an almost perfect vacuum. It has effectively no friction, which allows stars, planets and moons to move freely along ideal gravitational trajectories. But no vacuum is perfect, not even in interstellar space, where there are only a few hydrogen atoms per cubic centimeter at 10 fPa (10–16 Torr). The deep vacuum of space could make it an attractive environment for certain processes, for instance those that require ultraclean surfaces; for small-scale applications, however, it is much more cost-effective to create an equivalent vacuum on Earth than to leave the Earth's gravity well.

Stars, planets and moons keep their atmospheres by gravitational attraction, and as such, atmospheres have no clearly delineated boundary: the density of atmospheric gas simply decreases with distance from the object. In low earth orbit (about 300 km or 185 miles altitude) the atmospheric density is about 100 nPa (10-9 Torr), still sufficient to produce significant drag on satellites. Most artificial satellites operate in this region, and must fire their engines every few days to maintain orbit.

Beyond planetary atmospheres, the pressure of photons and other particles from the sun becomes significant. Spacecraft can be buffeted by solar winds, but planets are too massive to be affected. The idea of using this wind with a solar sail has been proposed for interplanetary travel.

All of the observable universe is filled with large numbers of photons, the so-called cosmic background radiation, and quite likely a correspondingly large number of neutrinos. The current temperature of this radiation is about 3 K, or -270 degrees Celsius or -454 degrees Fahrenheit.

Effects on humans and animals

Vacuum is primarily an asphyxiant. Humans exposed to vacuum will lose consciousness after a few seconds and die within minutes, but the symptoms are not nearly as graphic as commonly shown in pop culture. Robert Boyle was the first to show that vacuum is lethal to small animals. Blood and other body fluids do boil (the medical term for this condition is ebullism), and the vapour pressure may bloat the body to twice its normal size and slow circulation, but tissues are elastic and porous enough to prevent rupture. Ebullism is slowed by the pressure containment of blood vessels, so some blood remains liquid. Swelling and ebullism can be reduced by containment in a flight suit. Shuttle astronauts wear a fitted elastic garment containment in a flight suit. Shuttle astronauts wear a fitted elastic garment called the Crew Altitude Protection Suit (CAPS) which prevents ebullism at pressures as low as 15 Torr (2 kPa). However, even if ebullism is prevented, simple evaporation of blood can cause decompression sickness and gas embolisms. Rapid evaporative cooling of the skin will create frost, particularly in the mouth, but this is not a significant hazard.

Animal experiments show that rapid and complete recovery is the norm for exposures of fewer than 90 seconds, while longer full-body exposures are fatal and resuscitation has never been successful. There is only a limited amount of data available from human accidents, but it is consistent with animal data. Limbs may be exposed for much longer if breathing is not impaired. Rapid decompression can be much more dangerous than vacuum exposure itself. If the victim holds his breath during decompression, the delicate internal structures of the lungs can be ruptured, causing death. Eardrums may be ruptured by rapid decompression, soft tissues may bruise and seep blood, and the stress of shock will accelerate oxygen consumption leading to asphyxiation.

In 1942, in one of a series of experiments on human subjects for the Luftwaffe, the Nazi regime tortured Dachau concentration camp prisoners by exposing them to vacuum in order to determine the human body's capacity to survive high-altitude conditions. Some extremophile microorganisms, such as Tardigrades, can survive vacuum for a period of years.

Historical interpretation

Historically, there has been much dispute over whether such a thing as a vacuum can exist. Ancient Greek philosophers did not like to admit the existence of a vacuum, asking themselves "how can 'nothing' be something?". Plato found the idea of a vacuum inconceivable. He believed that all physical things were instantiations of an abstract Platonic ideal, and he could not conceive of an "ideal" form of a vacuum. Similarly, Aristotle considered the creation of a vacuum impossible — nothing could not be something. Later Greek philosophers thought that a vacuum could exist outside the cosmos, but not within it.

The philosopher Al-Farabi (850 - 970 CE) appears to have carried out the first recorded experiments concerning the existence of vacuum, in which he investigated handheld plungers in water. He concluded that air's volume can expand to fill available space, and he suggested that the concept of perfect vacuum was incoherent.

In the Middle Ages, the catholic church held the idea of a vacuum to be immoral or even heretical. The absence of anything implied the absence of God, and harkened back to the void prior to the creation story in the book of Genesis. Medieval thought experiments into the idea of a vacuum considered whether a vacuum was present, if only for an instant, between two flat plates when they were rapidly separated. There was much discussion of whether the air moved in quickly enough as the plates were separated, or, as Walter Burley postulated, whether a 'celestial agent' prevented the vacuum arising — that is, whether nature abhorred a vacuum. This speculation was shut down by the 1277 Paris condemnations of Bishop Etienne Tempier, which required there to be no restrictions on condemnations of Bishop Etienne Tempier, which required there to be no restrictions on the powers of God, which led to the conclusion that God could create a vacuum if he so wished.

Opposition to the idea of a vacuum existing in nature continued into the Scientific Revolution, with scholars such as Paolo Casati taking an anti-vacuist position. Building upon work by Galileo, Evangelista Torricelli argued in 1643 that there was a vacuum at the top of a mercury barometer. Some people believe that, although Torricelli produced the first sustained vacuum in a laboratory, it was Blaise Pascal who recognized it for what it was. In 1654, Otto von Guericke invented the first vacuum pump and conducted his famous Magdeburg hemispheres experiment, showing that teams of horses could not separate two hemispheres from which the air had been evacuated. Robert Boyle improved Guericke's design and conducted experiments on the properties of vacuum. The study of vacuum then lapsed until 1855, when Heinrich Geissler invented the mercury displacement pump and achieved a record vacuum of about 10 Pa (0.1 Torr). A number of electrical properties become observable at this vacuum level, and this renewed interest in vacuum. This, in turn, led to the development of the vacuum tube.

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Witt-Hansen established that Hans Christian Ørsted was the first to use the Latin-German mixed term Gedankenexperiment (lit. experiment conducted in the thoughts) circa 1812. Ørsted was also the first to use its entirely German equivalent, Gedankenversuch, in 1820.

Much later, Ernst Mach used the term Gedankenexperiment to exclusively denote the imaginary conduct of a real experiment that would be subsequently performed as a real physical experiment by his students — thus the contrast between physical and mental experimentation — with Mach asking his students to provide him with explanations whenever it happened that the results from their subsequent, real, physical experiment had differed from those of their prior, imaginary experiment.

The English term thought experiment was coined (as a calque) from Mach’s Gedankenexperiment, and it first appeared in the 1897 English translation of one of Mach’s papers. Prior to its emergence, the activity of posing hypothetical questions that employed subjunctive reasoning had existed for a very long time (for both scientists and philosophers). However, people had no way of categorizing it or speaking about it. This helps to explain the extremely wide and diverse range of the application of the term "thought experiment" once it had been introduced into English.

Thought Experimentation In General

In its broadest usage, thought experimentation is the process of employing imaginary situations to help us understand the way things really are (or, in the case of Herman Kahn’s "scenarios", understand something about something in the future). The understanding comes through reflection upon this imaginary situation. Thought experimentation is an a priori, rather than an empirical process, in that the experiments are conducted within the imagination (i.e., Brown’s (1993) "laboratory of the mind"), and never in fact.

Thought experiments, which are well-structured, well-defined hypothetical questions that employ subjunctive reasoning (irrealis moods) -- "What might happen (or, what might have happened) if . . . " -- have been used to pose questions in philosophy at least since Greek antiquity, some pre-dating Socrates (see Rescher). In physics and other sciences many famous thought experiments date from the 19th and especially the 20th Century, but examples can be found at least as early as Galileo.

Thought experiments have been used in philosophy, physics, and other fields (such as cognitive psychology, history, political science, economics, social psychology, law, organizational studies, marketing, and epidemiology). In law, the synonym "hypothetical" is frequently used for such experiments.

Regardless of their intended goal, all thought experiments display a patterned way of thinking that is designed to allow us to explain, predict and control events in a better and more productive way.

The theoretical consequences of thought experimentation

In terms of their theoretical consequences, thought experiments generally:

challenge (or, even, refute) a prevailing theory, often involving the device known as reductio ad absurdum, confirm a prevailing theory, establish a new theory, or simultaneously refute a prevailing theory and establish a new theory through a process of mutual exclusion.

The practical application of thought experimentation

Thought experiments often introduce interesting, important and valuable new perspectives on old mysteries and old questions; yet, although they may make old questions irrelevant, they may also create new questions that are not easy to answer.

In terms of their practical application, thought experiments are generally created in order to:

challenge the prevailing status quo (which includes activities such as correcting misinformation (or misapprehension), identify flaws in the argument(s) presented, to preserve (for the long-term) objectively established fact, and to refute specific assertions that some particular thing is permissible, forbidden, known, believed, possible, or necessary); extrapolate beyond (or interpolate within) the boundaries of already established fact; predict and forecast the (otherwise) indefinite and unknowable future; explain the past; the retrodiction, postdiction and postcasting of the (otherwise) indefinite and unknowable past; facilitate decision making, choice and strategy selection; solve problems, and generate ideas; move current (often insoluble) problems into another, more helpful and more productive problem space (e.g., see functional fixedness); attribute causation, preventability, blame and responsibility for specific outcomes; assess culpability and compensatory damages in social and legal contexts; ensure the repeat of past success; or examine the extent to which past events might have occurred differently. ensure the (future) avoidance of past failures.

See also

Alternate history (fiction)
Counterfactual conditional
Forecast
Futures studies
Futures techniques
Hindcast
Hypothesis
Irrealis moods
Mapping
Nearly possible worlds
Nowcasting
Possible world
Post hoc ergo propter hoc
Postdiction
Prediction
Prognosis
Retrodiction
Scenario planning
Scenario test
Subjunctive mood

The Chinese Room argument is a thought experiment and associated arguments designed by John Searle as a counter-argument to claims made by supporters of what Searle called strong artificial intelligence: the claim that, if a machine acts intelligently then it has a “mind”, “understanding” and “conscious experience”.

The thought experiment is intended to also raise doubts about the philosophical positions of functionalism and the computational theory of mind, as well as the usefulness of the Turing test as a measure of intelligence. It is closely related to the philosophical questions known as the problem of other minds and the hard problem of consciousness.

Searle's Philosophical Argument

Searle laid out the Chinese Room argument in his paper "Minds, Brains, and Programs," published in 1980. Since then, it has been a recurring trope in the debate over whether computers can truly think and understand. Searle argues as follows:

Suppose that, many years from now, we have constructed a computer that behaves as if it understands Chinese. In other words, the computer takes Chinese characters as input and, following a set of rules (as all computers can be described as doing), produces other Chinese characters, which it presents as output. Suppose that this computer performs this task so convincingly that it easily passes the Turing test. In other words, it convinces a human Chinese speaker that the program is itself a human Chinese speaker. All the questions the human asks are responded to appropriately, such that the Chinese speaker is convinced that he or she is talking to another Chinese-speaking human. The conclusion that proponents of strong AI would like to draw is that the computer understands Chinese, just as the person does.

Now, Searle asks us to suppose that he is sitting inside the computer. In other words, he is in an enormous room in which he receives Chinese characters, consults a rule book, and processes the Chinese characters according to the rules. Searle notes that he doesn't, of course, understand a word of Chinese. He simply manipulates what to him are meaningless squiggles, using the rules and whatever other equipment is provided in the room, such as paper, pencils, erasers, and millions of meticulously cross referenced filing cabinets.

After countless eons in which Searle is manipulating symbols, Searle will produce the answer in Chinese. During all this time, he has never learned Chinese. So Searle argues that his lack of understanding goes to show that computers don't understand Chinese either, because they

are in the same situation as he is. They are mindless manipulators of symbols, just as he is — and they don't understand what they're 'saying', just as he doesn't.

History

In 1980, John Searle published "Minds, Brains and Programs" in the journal Behavioral and Brain Sciences. In this article, Searle sets out the argument, and then replies to the half-dozen main objections that had been raised during his presentations at various university campuses (see next section). In addition, Searle's article in BBS was published along with comments and criticisms by 27 cognitive science researchers. These 27 comments were followed by Searle's replies to his critics.

Over the last two decades of the 20th century, the Chinese Room argument was the subject of many discussions. By 1984, Searle presented the Chinese Room argument in a book, Minds, Brains and Science. In January 1990, Scientific American took the debate to a general scientific audience. Searle included the Chinese Room Argument in his contribution, "Is the Brain's Mind a Computer Program?" His piece was followed by a responding article, "Could a Machine Think?," written by Paul and Patricia Churchland. Soon thereafter Searle had a published exchange about the Chinese Room with another leading philosopher, Jerry Fodor (in Rosenthal (ed.) 1991).

The heart of the argument is an imagined human simulation of a computer, similar to Turing's Paper Machine (<http://www.rutherford-journal.org/article010113.html>) . The human in the Chinese Room follows English instructions for manipulating Chinese characters, where a computer "follows" a program written in a computing language. The human produces the appearance of understanding Chinese by following the symbol manipulating instructions, but does not thereby come to understand Chinese. Since a computer just does what the human does — manipulate symbols on the basis of their syntax alone — no computer, merely by following a program, comes to genuinely understand Chinese.

This argument, based closely on the Chinese Room scenario, is directed at a position Searle calls "Strong AI". Strong AI is the view that suitably programmed computers (or the

(Searle 1980)

programs themselves) can understand natural language and actually have other mental capabilities similar to the humans whose abilities they mimic. According to Strong AI, a computer may play chess intelligently, make a clever move, or understand language. By contrast, "weak AI" is the view that computers are merely useful in psychology, linguistics, and other areas, in part because they can simulate mental abilities. But weak AI makes no claim that computers can actually understand or be intelligent. The Chinese Room argument is not directed at weak AI, nor does it purport to show that machines cannot think — Searle says that brains are machines, and brains think. It is directed at the view that formal computations on symbols can produce thought.

We might summarize the narrow argument as a reductio ad absurdum against Strong AI as follows. Let L be a natural language, and let us say that a "program for L" is a program for conversing fluently in L. A computing system is any system, human or otherwise, that can run a program.

1. If Strong AI is true, then there is a program for L such that if any computing system runs that program, that system thereby comes to understand L.
2. I could run a program for L without thereby coming to understand L.
3. Therefore Strong AI is false.

The second premise is supported by the Chinese Room thought experiment. The conclusion of this argument is that running a program cannot create understanding. The wider argument includes the claim that the thought experiment shows more generally that one cannot get semantics (meaning) from syntax (formal symbol manipulation).

The core of Searle's argument is the distinction between syntax and semantics. The room is able to shuffle characters according to the rule book. That is, the room's behaviour can be described as following syntactical rules. But in Searle's account it does not know the meaning of what

it has done; that is, it has no semantic content. The characters do not even count as symbols because they are not interpreted at any stage of the process.

Formal arguments

In 1984 Searle produced a more formal version of the argument of which the Chinese Room forms a part. He listed four premises:

1. Brains cause minds.
2. Syntax is not sufficient for semantics.
3. Computer programs are entirely defined by their formal, or syntactical, structure.
4. Minds have mental contents; specifically, they have semantic contents.

The second premise is supposedly supported by the Chinese Room argument, since Searle holds that the room follows only formal syntactical rules, and does not “understand” Chinese. Searle posits that these lead directly to four conclusions:

1. No computer program by itself is sufficient to give a system a mind. Programs, in short, are not minds, and they are not by themselves sufficient for having minds.
2. The way that brain functions cause minds cannot be solely in virtue of running a computer program.
3. Anything else that caused minds would have to have causal powers at least equivalent to those of the brain.
4. The procedures of a computer program would not by themselves be sufficient to grant an artifact possession of mental states equivalent to those of a human; the artifact would require the capabilities and powers of a brain.

Searle describes this version as "excessively crude." There has been considerable debate about whether this argument is indeed valid. These discussions center on the various ways in which the premises can be parsed. One can read premise 3 as saying that computer programs have syntactic but not semantic content, and so premises 2, 3 and 4 validly lead to conclusion 1. This leads to debate as to the origin of the semantic content of a computer program.

The term hard problem of consciousness, coined by David Chalmers, refers to the “hard problem” of explaining why we have qualitative phenomenal experiences.

It is contrasted with the “easy problems” of explaining the ability to discriminate, integrate information, report mental states, focus attention, etc. Easy problems are easy because all that is required for their solution is to specify a mechanism that can perform the function. Hard problems are distinct from this set because they “persist even when the performance of all the relevant functions is explained”.

Various formulations of the “hard problem”:

“Why should physical processing give rise to a rich inner life at all?”

“How is it that some organisms are subjects of experience?”
“Why does awareness of sensory information exist at all?”
“Why do qualia exist?”
“Why is there a subjective component to experience?”
“Why aren't we philosophical zombies?”

It has been argued that the Hard Problem has had other scholarly inquiries considerably earlier than Chalmers. For instance, Leibniz wrote:

“Moreover, it must be confessed that perception and that which depends upon it are inexplicable on mechanical grounds, that is to say, by means

of figures and motions. And supposing there were a machine, so constructed as to think, feel, and have perception, it might be conceived as increased in size, while keeping the same proportions, so that one might go into it as into a mill. That being so, (we should, on examining its interior, find only parts which work one upon another, and never anything by which to explain a perception.

And as Isaac Newton wrote in a letter to Henry Oldenburg: “to determine by what modes or actions light produceth in our minds the phantasm of colour is not so easie”.

Some philosophers, such as Daniel Dennett, oppose the idea that there is a Hard problem.

A philosophical zombie or p-zombie is a hypothetical being that is indistinguishable from a normal human being except that it lacks conscious experience, qualia, sentience, or sapience.

When a zombie is poked with a sharp object, for example, it does not feel any pain. It behaves exactly as if it does feel pain (it may say "Ouch!" and so forth), but it does not actually have the experience of pain as a person normally does.

The notion of a philosophical zombie is mainly used in arguments (often called zombie arguments) in the philosophy of mind, particularly arguments against forms of physicalism, such as materialism and behaviorism.

Types of zombies

Philosophical zombies are widely used in thought experiments, though the detailed articulation of the concept is not always the same. There are, in effect, different types of p-zombies. What differs is how much exactly they have in common with normal human beings. P-zombies were introduced primarily to argue against specific types of physicalism, such as behaviorism. According to behaviorism, mental states exist solely in terms of behavior: belief, desire, thought, consciousness, and so on, are simply certain kinds of behavior or tendencies towards behaviors. One might invoke the notion of a p-zombie that is behaviorally indistinguishable from a normal human being, but that lacks conscious experiences. According to the behaviorist, such a being is not logically possible, since consciousness is defined in terms of behavior. So an appeal to the intuition that a p-zombie so described is possible furnishes an argument that behaviorism is false.

One might distinguish between various types of zombies, as they are used in different thought experiments, as follows:

A behavioral zombie is behaviorally indistinguishable from a human and yet has no conscious experience.

A neurological zombie has a human brain and is otherwise physically indistinguishable from a human; nevertheless, it has no conscious ex-

perience. A soulless zombie lacks a soul but is otherwise indistinguishable from a human; this concept is used to inquire into what, if anything, the soul might amount to.

However, philosophical zombies are primarily discussed in the context of arguments against physicalism (or functionalism) in general. Thus, a p-zombie is typically understood as a being that is physically indistinguishable from a normal human being but that lacks conscious experience.

Zombie arguments

According to physicalism, the physical facts determine all the facts; it follows that, since all the facts about a p-zombie are fixed by the physical facts, and these facts are the same for the p-zombie and for the normal conscious human from which it cannot be physically distinguished, physicalism must hold that p-zombies are not possible. Therefore, zombie arguments support lines of reasoning that aim to show that zombies are possible.

Most arguments ultimately lend support to some form of dualism – the view that the world includes two kinds of substance (or perhaps two kinds of property): the mental and the physical.

The zombie argument against physicalism is, therefore, a version of a general modal argument against physicalism, such as that of Saul Kripke's in "Naming and Necessity" (1972). The notion of a p-zombie, as used to argue against physicalism, was notably advanced in the 1970s by Thomas Nagel (1970; 1974) and Robert Kirk (1974).

However, the zombie argument against physicalism in general was most famously developed in detail by David Chalmers in The Conscious Mind (1996). According to Chalmers, one can coherently conceive of an entire zombie world: a world physically indiscernible from our world, but entirely lacking conscious experience. In such a world, the counterpart of every

See also
David Chalmers
Mind-body dichotomy
Philosophy of mind
Qualia
Two dimensionalism
Consciousness causes collapse

being that is conscious in our world would be a p- zombie. The structure of Chalmers' version of the zombie argument can be outlined as follows:

1. If physicalism is true, then it is not possible for there to be a world in which all the physical facts are the same as those of the actual world but in which there are additional facts. (This is because, according to physicalism, all the facts are fully determined by the physical facts; so any world that is physically indistinguishable from our world is entirely indistinguishable from our world.)
2. But there is a possible world in which all the physical facts are the same as those of our world but in which there are additional facts. (For example, it is possible that there is a world exactly like ours in every physical respect, but in it everyone lacks certain mental states, namely any phenomenal experiences or qualia. The people there look and act just like people in the actual world, but they don't feel anything; when one gets shot, for example, he yells out as if he is in pain, but he doesn't feel any pain.)
3. Therefore, physicalism is false. (The conclusion follows by modus tollens.)

The argument is logically valid, in that if its premises are true, then the conclusion must be true. However, whether its premises are true is what philosophers dispute. For example, concerning premise 2: Is such a zombie world really possible? Chalmers states that "it certainly seems that a coherent situation is described; I can discern no contradiction in the description." Since such a world is conceivable, Chalmers claims, it iscan discern no contradiction in the description." Since such a world is conceivable, Chalmers claims, it is possible; and if such a world is possible, then physicalism is false. Chalmers is arguing only for logical possibility, and he maintains that this is all that his argument requires. He states: "Zombies are probably not naturally possible: they probably cannot exist in our world, with its laws of nature."

One is led to the following questions: What is the relevant notion of possibility here? Is the scenario in premise 2 possible in the sense that is suggested in premise 1? Some philosophers maintain that the relevant kind of possibility is not so weak as logical possibility. They argue that, while a zombie world is logically possible (that is, there is no logical contradiction in any full description the scenario), such a weak notion is not relevant in the analysis of a metaphysical thesis such as physicalism. Most philosophers agree that the relevant notion of possibility is some sort of metaphysical possibility. What the proponent of the zombie argument claims is that one can tell from the armchair, just by the power of reason, that such a zombie scenario is metaphysically possible. Chalmers states: "From the conceivability of zombies, proponents of the argument infer their metaphysical possibility." Chalmers claims that this inference from conceivability to metaphysical possibility is not generally legitimate, but it is legitimate for phenomenal concepts such as consciousness. Indeed, according to Chalmers whatever is logically possible is also, in

the sense relevant here, also metaphysically possible.

Criticism

A physicalist might respond to the zombie argument in several ways. Most responses deny premise 2 (of Chalmers' version above); that is, they deny that a zombie scenario is possible.

One response is to claim that the idea of qualia and related phenomenal notions of the mind are not coherent concepts, and the zombie scenario is therefore incoherent. Daniel Dennett and others take this line. They argue that while consciousness, subjective experiences, and so forth exist in some sense, they are not as the zombie argument proponent claims they are; pain, for example, is not something that you can just strip off a person's mental life without bringing about any behavioral or physiological differences. Dennett coined the term zimboes (philosophical zombies that have second-order beliefs) to argue that the idea of a philosophical zombie is incoherent. He states: "Philosophers ought to have dropped the zombie like a hot potato, but since they persist in their embrace, this gives me a golden opportunity to focus attention on the most seductive error in current thinking."

Another physicalist response is to provide an error theory to account for intuition that zombies are possible. Philosophers such as Stephen Yablo (1998) have taken this line and argued that notions of what counts as physical, and what counts as physically possible, change over time; so while conceptual analysis is reliable in some areas of philosophy, it is not reliable here. Yablo says he is "braced for the information that is going to make zombies inconceivable, even though I have no real idea what form the information is going to take."

The zombie argument is difficult to assess, because it brings to light fundamental disagreements that philosophers have about the method and scope of philosophy itself. It gets to the core of disagreements about the nature and abilities of conceptual analysis. Proponents of the zombie argument, such as Chalmers, think that conceptual analysis is a central part of (if not the only part of) philosophy, and that it certainly can do a

that conceptual analysis is a central part of (if not the only part of) philosophy, and that it certainly can do a great deal of philosophical work. However, others, such as Dennett, Paul Churchland, W.V.O. Quine, and so on, have fundamentally different views from Chalmers about the nature and scope of philosophical analysis. For this reason discussion of the zombie argument remains vigorous in philosophy.

Mary’s room is a philosophical thought experiment proposed by Frank Jackson in his article “Epiphenomenal Qualia” (1982) and extended in “What Mary Didn’t Know” (1986).

(also known as Mary the super-scientist)

The argument it is intended to motivate is often called the Knowledge Argument against physicalism—the view that the universe, including all that is mental, is entirely physical. The debate that emerged following its publication recently became the subject of an edited volume—There's Something About Mary (2004)—which includes replies from such philosophers as Daniel Dennett, David Lewis, and Paul Churchland.

The thought experiment

The thought experiment was originally proposed by Frank Jackson as follows:

“ Mary is a brilliant scientist who is, for whatever reason, forced to investigate the world from a black and white room via a black and white television monitor. She specializes in the neurophysiology of vision and acquires, let us suppose, all the physical information there is to obtain about what goes on when we see ripe tomatoes, or the sky, and use terms like ‘red’, ‘blue’, and so on. She discovers, for example, just which wavelength combinations from the sky stimulate the retina, and exactly how this produces via the central nervous system the contraction of the vocal chords and expulsion of air from the lungs that results in the uttering of ”

the sentence ‘The sky is blue’. [...] What will happen when Mary is released from her black and white room or is given a color television monitor? Will she learn anything or not? ”

In other words, we are to imagine a scientist who knows everything there is to know about the science of color, but has never experienced color. The interesting question that Jackson raises is: Once she experiences color, does she learn anything new?

Implications

Whether Mary learns something new upon experiencing color has two major implications: the existence of qualia and the knowledge argument against physicalism.

Qualia

First, if Mary does learn something new, it shows that qualia (the subjective, qualitative properties of experiences), exist. If we agree with the thought experiment, we believe that Mary gains something after she leaves the room—that she acquires knowledge of a particular thing that she did not possess before. That knowledge, Jackson argues, is knowledge of the qualia of seeing red. Therefore, it must be

conceded that qualia are real properties, since there is a difference between a person who has access to a particular quale and one who does not.

The knowledge argument

Second, if Mary does learn something new upon experiencing color, physicalism is false. Specifically, the Knowledge Argument is an attack on the physicalist claim about the completeness of physical explanations of mental states. Mary may know everything about the science of color perception, but can she know what the experience of red is like if she has never seen red? Jackson contends that, yes, she has learned something new, via experience, and hence, physicalism is false. Jackson states:

“ It seems just obvious that she will learn something about the world and our visual experience of it. But then is it inescapable that her previous knowledge was incomplete. But she had all the physical information. Ergo there is more to have than that, and Physicalism is false. ”

It is important to note that in Jackson's article, physicalism refers to the epistemological doctrine that all knowledge is knowledge of physical facts, and not the metaphysical doctrine that all things are physical things.

Responses

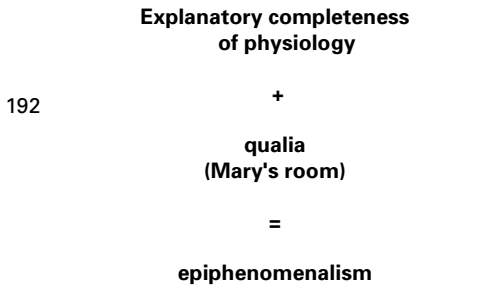
Daniel Dennett

Daniel Dennett argues that Mary would not, in fact, learn something new if she stepped out of her black and white room to see the color red. Dennett asserts that if she already truly knew "everything about color", that knowledge would include a deep understanding of why and how human neurology causes us to sense the "qualia" of color. Mary would therefore already know exactly what to expect of seeing red, before ever leaving the room. Dennett argues that although we cannot conceive of such a deep knowledge, if a premise of the thought experiment is that Mary knows all there is to know about color, we cannot assume that we can fathom or even describe such knowledge—or that such knowledge doesn't exist.

Frank Jackson

Frank Jackson initially supported the anti-physicalist implications of the Mary's room thought experiment. Jackson believed in the explanatory completeness of physiology, that all behaviour is caused by physical forces of some kind. And the thought experiment seems to prove the existence of qualia, a non-physical part of

the mind. Thus, Jackson argued, that if both of these theses are true, then epiphenomenalism is true—the view that mental states are caused by physical states, but have no causal effects on the physical world.



Thus, at the conception of the thought experiment, Jackson was an epiphenomenalist. Later, however, he rejected epiphenomenalism. This, he argues, is due to the fact that when Mary first sees red, she says "wow", so it must be Mary's qualia that causes her to say "wow". This contradicts epiphenomenalism. Since the Mary's room thought experiment seems to create this contradiction, there must be something wrong with it. This is often referred to as the "there must be a reply, reply".

Ramachandran and Hubbard

V.S. Ramachandran and Edward Hubbard of the Center for Brain and Cognition at UCSD argue that Mary might do one of three things upon seeing a red apple for the first time:

- Mary says she sees nothing but gray.
- She has the "Wow!" response from subjectively experiencing the color for the first time.
- She experiences a form of blindsight for color, in which she reports seeing no difference between a red apple and an apple painted gray, but when asked to point to the red apple, she correctly does.

They explain further: "Which of these three possible outcomes will actually occur? We believe we've learned the answer from a color-blind synesthete subject. Much like the theoretical Mary, our colorblind synesthete volunteer can not see certain hues, because of deficient color receptors. However, when he looks at numbers, his synesthesia enables him to experience colors in his mind that he has never seen in the real world. He calls these "Martian colors." The fact that color cells (and corresponding colors) can activate in his brain helps us answer the philosophical question: we suggest that the same thing will happen to Mary."

The Masked Man Fallacy

The masked man fallacy may apply to this argument. If it is phrased in the form:

- Mary knows everything about the physical science of colour
- Mary does not know everything about colour,
- The physical science of colour differs somehow from colour

The said fallacy is involved in inferring 3 as the conclusion. This was addressed by Stephen Law in The Philosophy Gym.

See also

Dualism (philosophy of mind)
Inverted spectrum
Functionalism
The map is not the territory
Philosophy of mind
Philosophy of perception
Physicalism
Qualia
Subjective character of experience
Philosophical zombies

“Qualia” is “an unfamiliar term for something that could not be more familiar to each of us: the ways things seem to us.”

They can be defined as qualities or feelings, like redness or pain, as considered independently of their effects on behavior and from whatever physical circumstances give rise to them. In more philosophical terms, qualia are properties of sensory experiences.

The importance of qualia in philosophy of mind comes largely from the fact that they are often seen as posing a fundamental problem for physicalism. Much of the debate over their existence, however, hinges on the debate over the precise definition of the term, as various philosophers emphasize or deny the existence of certain properties.

The word "qualia" comes from the Latin, meaning "what sort" or "what kind"; The Latin and English singular is "quale" (roughly KWAH-leh) Believers in qualia are known as qualophiles; skeptics as qualophobes.

Definitions of qualia

Broad definitions

Frank Jackson (1982) later defined qualia as

Mary’s Room

Qualia

"...certain features of the bodily sensations especially, but also of certain perceptual experiences, which no amount of purely physical information includes" (p. 273).

Under definitions like these, which are quite broad, there can be little doubt that qualia exist. However, definitions this broad make it difficult to discuss the precise nature of qualia, and their interaction with the mind and the environment. Some philosophers have made attempts at more precise, possibly narrower, definitions of qualia, describing things whose existence is more controversial.

Narrower definitions

Daniel Dennett identifies four properties that are commonly ascribed to qualia. According to these, qualia are:

- . 1 ineffable; that is, they cannot be communicated, or apprehended by any other means than direct experience.
- . 2 intrinsic; that is, they are non-relational properties, which do not change depending on the experience's relation to other things.
- . 3 private; that is, all interpersonal comparisons of qualia are systematically impossible.
- . 4 directly or immediately apprehensible in consciousness; that is, to experience a quale is to know one experiences a quale, and to know all there is to know about that quale.

If qualia of this sort exist, then a normally-sighted person who sees red would be unable to describe the experience of this perception in such a way that a listener who has never experienced color will be able to know everything there is to know about that experience. Though it is possible to make an analogy, such as "red looks hot", or to provide a description of the conditions under which the experience occurs, such as "it's the color you see when light of 700 nm wavelength is directed at you," supporters of this kind of qualia contend that such a description is incapable of providing a complete description of the experience.

Another way of defining qualia is as "raw feels". A raw feel is a perception in and of itself, considered entirely in isolation from any effect it might have on behavior and behavioral disposition. In contrast, a "cooked feel" is that perception seen as existing in terms of its effects.

According to an argument put forth by Saul Kripke in "Identity and Necessity" (1971), one key consequence of the claim that such things as raw feels can be meaningfully discussed — that qualia exist — is that it leads to the logical possibility of two entities exhibiting identical behavior in all ways despite one of them entirely lacking qualia. While very few ever claim that such an entity, called a philosophical zombie, actually exists, the mere possibility is claimed to be sufficient to refute physicalism. Those who dispute the existence of qualia would therefore necessarily dispute the existence of philosophical zombies.

There is an ancient Sufi parable about coffee

that nicely expresses the concept: "He who tastes, knows; he who tastes not, knows not." John Searle has rejected the notion that the problem of qualia is different from the problem of consciousness itself, arguing that consciousness and qualia are one and the same phenomenon.

Arguments for the existence of qualia

Since it is by definition difficult or impossible to convey qualia verbally, it is difficult to demonstrate them directly in an argument; a more tangential approach is needed. Arguments for qualia generally come in the form of thought experiments designed to lead one to the conclusion that qualia exist.

The Bat argument

Although it does not actually mention the word "qualia", Thomas Nagel's paper What Is it Like to Be a Bat? is often cited in debates over qualia. Nagel argues that consciousness has an essentially subjective character, a what-it-is-like aspect. He states that "an organism has conscious mental states if and only if there is something that it is to be that organism — something it is like for the organism." Nagel also suggests that the subjective aspect of the mind may not ever be sufficiently accounted for by the objective methods of reductionistic science. He claims that "[i]f we acknowledge that a physical theory of mind must account for the subjective character of experience, we must admit that no presently available conception gives us a clue how this could be done." Furthermore, he states that "it seems unlikely that any physical theory of mind can be contemplated until more thought has been given to the general problem of subjective and objective."

The Inverted Spectrum Argument

The inverted spectrum thought experiment invites us to imagine that we wake up one morning, and find that for some unknown reason all the colors in the world have been inverted. Furthermore, we discover that no physical changes have occurred in our brains or bodies that would explain this phenomenon. Supporters of the existence of qualia argue that, since we can imagine this happening without contradiction, it follows that we are imagining a change in a property that determines the way things look to us, but that has no physical basis. In more detail:

- Metaphysical identity holds of necessity
- If something is possibly false, it is not necessary
- It is conceivable that qualia could have a different relationship to physical brain-states
- If it is conceivable, then it is possible
- Since it is possible for qualia to have a different relationship with physical brain-states, they cannot be identical to brain states (by 1).
- Therefore, qualia are non-physical.

The argument thus claims that if we find the inverted spectrum plausible, we must admit that qualia exist (and are non-physical). Some philosophers find it absurd that an armchair argument can prove something to exist, and the

detailed argument does involve a lot of assumptions about conceivability and possibility, which are open to criticism. Perhaps it is not possible for a given brain state to produce anything other than a given quale in our universe, and that is all that matters.

The idea that an inverted spectrum would be undetectable in practice is also open to criticism on more scientific grounds.

The Zombie Argument

A similar argument holds that it is conceivable that there could be physical duplicates of people, called "Zombies", without any qualia at all. Similar criticisms about conceivability versus possibility can be made.

See also

David Chalmers
Consciousness
Hard problem of consciousness
Vassily Kandinsky
Mind body problem
Philosophy of mind
TAP
Synesthesia (coupling of two senses)
Pataphysics

Synesthesia is omitted because it was already printed in the book. Please see Ken Ehrlich’s section (pg 16).

Stroke is the clinical designation for a rapidly developing loss of brain function due to an interruption in the blood supply to all or part of the brain.

This phenomenon can be caused by thrombosis, embolism, or hemorrhage. In medicine the process of being struck down by a stroke, fit or faint is sometimes called an ictus [cerebri], from the Latin icere ("to strike"), especially prior to the definitive diagnosis being made.

Stroke is a medical emergency and can cause permanent neurological damage or even death if not promptly diagnosed and treated. It is the third leading cause of death and the leading cause of adult disability in the United States and industrialized European nations. It is predicted that stroke will soon become the leading cause of death worldwide.

The symptoms of stroke can be quite heterogeneous, and patients with the same cause of stroke can havewidely differing handicaps. Conversely, patients with the same clinical handicap can in fact have different underlying causes.

The cause of stroke is an interruption in the blood supply, with a resulting depletion of oxygen and glucose in the affected area. This immediately reduces or abolishes neuronal function, and also initiates an ischemic cascade which causes neurons to die or be seriously damaged, further impairing brain function.

Risk factors for stroke include advanced age, hypertension (high blood pressure), previous stroke or TIA (transient ischaemic attack), diabetes mellitus, high cholesterol, cigarette smoking, atrial fibrillation, migraine with aura, and thrombophilia. In clinical practice, blood pressure is the most important modifiable risk factor of stroke; however many other risk factors, such as cigarette smoking cessation and

treatment of atrial fibrillation with anticoagulant drugs, are important.

The traditional definition of stroke, devised by the World Health Organisation in the 1970s, is of a 'neurological deficit of cerebrovascular cause that persists beyond 24 hours or is interrupted by death within 24 hours'. This definition was largely devised for the purpose of research and the time frame of 24 hours appears purely arbitrarily chosen as a cut-off point. It divides stroke from TIA (or 'mini-stroke'), which is the same as above but completely resolves clinically within 24 hours. The division of stroke and TIA into separate clinical entities is considered impractical and even unhelpful in practice by many stroke doctors. The main reason for this is the fact that stroke and TIA are caused by the same disease process, and both persons with a stroke or a TIA are at a higher risk of a subsequent stroke.

In recognition of this, and improved methods for the treatment of stroke, the term "brain attack" is being promoted in the Western World as a substitute for stroke or TIA. The new term makes an analogy with "heart attack" (myocardial infarction), because in both conditions, an interruption of blood supply causes death of tissue that is highly time dependent ('time is brain') and potentially life-threatening. Many hospitals have "brain attack" teams within their neurology departments specifically for swift treatment of stroke.

Types of stroke

Strokes can be classified into two major categories: ischemic and hemorrhagic. Ischemia can

Or cerebrovascular accident (CVA)

be due to thrombosis, embolism, or systemic hypoperfusion. Hemorrhage can be due to intracerebral hemorrhage, subarachnoid hemorrhage, subdural hemorrhage, or epidural hemorrhage. ~80% of strokes are due to ischemia.

Epidemiology

Stroke will soon be the most common cause of death worldwide. Stroke is the third leading cause of death in the Western world, after heart disease and cancer, and causes 10% of world-wide deaths. The incidence of stroke increases exponentially from 30 years of age, and etiology varies by age.

History

Hippocrates (460 to 370 BC) was first to describe the phenomenon of sudden paraly-

sis. Apoplexy, from the Greek word meaning "struck down with violence," first appeared in Hippocratic writings to describe this phenomenon.

In 1658, in his Apoplexia, Johann Jacob Wepfer (1620–1695) identified the cause of hemorrhagic stroke when he suggested that people who had died of apoplexy had bleeding in their brains. Wepfer also identified the main arteries supplying the brain, the vertebral and carotid arteries, and identified the cause of ischemic stroke when he suggested that apoplexy might be caused by a blockage to those vessels.

The word stroke was used as a synonym for apoplectic seizure as early as 1599, and is a fairly literal translation of the Greek term.

Wernicke’s area is a part of the human brain that forms part of the cortex, on the left posterior section of the superior temporal gyrus, encircling the auditory cortex, on the Sylvian fissure.

(part of the brain where the temporal lobe and parietal lobe meet)

It can also be described as the posterior part of Brodmann area 22 and is usually located in the left hemisphere, as that is where the specialized language skill areas can be found for the majority of people. Occlusion of the middle cerebral artery in a stoke can effect the proper functioning of this area.

Wernicke's area is named after Karl Wernicke, a German neurologist and psychiatrist who, in 1874, discovered that damage to this area could cause a type of aphasia that is now called Wernicke's aphasia or receptive aphasia.

This condition results in an impairment of language comprehension and in speech that has

a natural-sounding rhythm and a relatively normal syntax, but otherwise has no recognisable meaning (a condition sometimes called fluent or jargon aphasia).

Wernicke's work initiated the study of this brain area and its role in language. It is particularly known to be involved in the understanding and comprehension of spoken language.

It is connected to Broca's area by a neural pathway called the arcuate fasciculus. It also has connections to the primary auditory cortex, evidence for its role in the comprehension of the spoken word.

Aphasia is a loss of the ability to produce and/or comprehend language, due to injury to brain areas specialized for these functions.

It is not a result of deficits in sensory, intellect, or psychiatric functioning. It is also not muscle weakness or a cognitive disorder.

Depending on the area and extent of the damage, someone suffering from aphasia may be able to speak but not write, or vice versa, or

display any of a wide variety of other deficiencies in language comprehension and production, such as being able to sing but not speak. Aphasia may co-occur with speech disorders such as dysarthria or apraxia of speech, which also result from brain damage.

Causes

Usually, aphasias are a result of damage (le-sions) to the language centres of the brain (like Broca's area). These areas are almost always located in the left hemisphere, and in most people this is where the ability to produce and comprehend language is found. However, in a very small number of people language ability is found in the right hemisphere. In either case, damage to these language areas can be caused by a stroke, traumatic brain injury, or other head injury. Aphasia may also develop slowly, as in the case of a brain tumor or progressive neurological disease. It may also be caused by a sudden hemorrhagic event within the brain.

Prognosis

The prognosis of those with aphasia varies widely, and is dependent upon age of the patient, site and size of esion, and type of aphasia.

Diagnosis

Aphasia can be assessed in a variety of ways, from quick clinical screening at the bedside to several-hour- long batteries of tasks that examine the key components of language and communication.

Symptoms

Any of the following can be considered symptoms of aphasia:

- inability to comprehend language
- inability to pronounce, not due to muscle paralysis or weakness
- inability to speak spontaneously
- inability to form words
- inability to name objects
- poor enunciation
- excessive creation and use of personal neologisms
- inability to repeat a phrase
- persistent repetition of phrases
- paraphasia (substituting letters, syllables or words)
- agrammatism (inability to speak in a grammatically correct fashion)
- dysprosody (alterations in inflexion, stress, and rhythm)
- uncompleted sentences
- inability to read
- inability to write

Famous individuals who suffer(ed) from aphasia

- Maurice Ravel
- Jan Berry of Jan and Dean
- Sven Nykvist
- Ralph Waldo Emerson
- Robert E. Lee
- Joseph Chaikin
- Sir John Hale

See also

- Speech disorder
- Dysnomia disorder

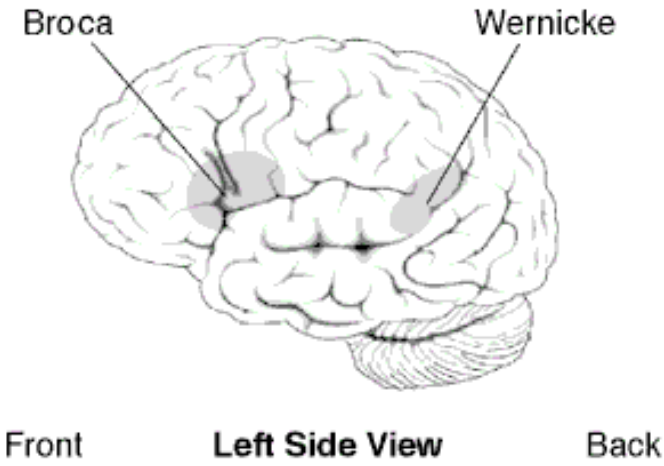


Vacuum :

An Experiment on a Bird in an Air Pump by Joseph Wright of Derby, 1768. Original in the National Gallery, London.



Mary's Room :
Image of thought experiment, Mary's room, in philisophy of mind; Source: Image:Flowers delhi.jpg, Image:Mohnwiese2.jpg, Image:TakakkawFalls2.jpg, Image:YoungHallamTennyson.png. Date: 18 November 2006.



Wernicke's Area & Aphasia :
Taken from NIH publication 97-4257, <http://www.nidcd.nih.gov/health/voice/aphasia.asp>

Aphasia	195	Fugue State	19	201
Attractive Nuisance	23	Fugue State Press	20	
Bad Faith	20	Gift Economy	128	
Balloon Mail	136	Generic Citrus Sodas	160	
Birdhouse Skateboards	96	Gold-Collar Worker	151	
Blue-Collar Worker	150	Golden Age	76	
Boredom	122	Golden Spiral	112	
Breakin' All The Rules	167	Gothic Fiction	173	
Capitalism	125	Guilt	170	
Chinese Room	187	Great Year	77	
Commune	152	Gyroscope	32	
Crystal System	70	Halo Effect	170	
Crystal Twinning	70	Hard Problem of	188	
Cunanan, Andrew	106	Consciousness		
Dawn	8	Hawk, Tony	95	
Daydream	123	Hearts	109	
Dérive	131	Hertz	142	
Diamond	68	Infrasound	146	
Dropping Out	151	Jackass	95	
Dr. Pepper	157	Lustmord	148	
Dr. Thunder	160	Lysergic Acid	52	
Dusk	8	Diethylamide		
Eddy Current	34	Mary's Room	191	
Eggshell Skull	24	McGraw, Tim	84	
Electromagnet	36	Midnight Sun	10	
End, The (Movie)	96	Missing Person	18	
Epistemology	60	Mount Mihara	156	
Escapism	124	MTV	94	
Esperanto	102	Muscle Memory	48	
FBI Ten Most Wanted	107	NBC	87	
Fugitives		Negative and Non-Negative	109	
Femme Fatale	174	Numbers		
Fetus in Fetu	166	Nothing	182	
Fibonacci	110	OSCAR	28	
Fibonacci Number	111	Philosophical Zombie	189	
Flâneur	132	Polar Night	11	
France	134	Potlatch	129	
Franco-Prussian War	135	Principality of Sealand	105	
Friday Night Lights	85	Prisoner's Dilemma	73	
Foucault, Léon	34	Proprioception	46	

Qualia	192
Reality Television	92
Reciprocity	72
Replevin	22
Republic of Rose Island	104
The Return of Godzilla	156
Romance Film	167
Romanticism	59
Sadness	169
Searching	18
Serotonin	49
Siege of Paris	135
Situationist International	130
Slippery Slope	60
Sludge Metal	148
Social Change	62
Sonic Weaponry	145
Space Race	31
Spatial Disorientation	44
Specific Performance	21
Sputnik 1	29
Spiral Galaxy	112
Start, Louisiana	84
Stroke	194
Sun	114
Surface	37
Survivor	91
Symbols	77
Symmetry	71
Synesthesia	56, 194
Tears	168
The Tell-Tale Heart	172
Torus	137
Tourism	133
Thought Experiment	185
Twilight	8
Ultrasound	143
Utopia	74
Vacuum	183

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