NATIONAL SECURITY AGENCY
CENTRAL SECURITY SERVICE
FORT GEORGE G. MEADE, MARYLAND 20755-6000

FOIA Case: 101328A
6 September 2017

JOHN GREENEWALD
27305 W LIVE OAK RD
SUITE 1203
CASTAIC CA 91384

Dear Mr. Greenewald:

This responds to your Freedom of Information Act (FOIA) request, dated 11 April 2017, for Intellipedia pages on "...Extraterrestrial, Extraterrestrial Life, Alien, Aliens, Alien Life. Please also include any Intellipedia entries that contain the above mentioned keywords/phrases." We interpreted this as a request for pages related to non-human and non-Earth based life forms. A copy of your request is enclosed. As stated in our initial response to you, dated 17 April 2017, your request was assigned Case Number 101328. For purposes of this request and based on the information you provided in your letter, you are considered an "all other" requester. As such, you are allowed 2 hours of search and the duplication of 100 pages at no cost. Your request has been processed under the FOIA. There are no assessable fees. Your request has been processed under the provisions of the FOIA.

For your information, NSA provides a service of common concern for the Intelligence Community (IC) by serving as the executive agent for Intelink. As such, NSA provides technical services that enable users to access and share information with peers and stakeholders across the IC and DoD. Intellipedia pages are living documents that may be originated by any user organization, and any user organization may contribute to or edit pages after their origination. Intellipedia pages should not be considered the final, coordinated position of the IC on any particular subject. The views and opinions of authors do not necessarily state or reflect those of the U.S. Government.

We conducted a search of all three levels of Intellipedia for the requested material, and located four documents responsive to your request; these documents are enclosed. Certain information, however, has been deleted from the enclosures.

FOIA Case: 101328A

This Agency is authorized by statute to protect certain information concerning its activities (in this case, internal URLs) as well as the names of its employees. Such information is exempt from disclosure pursuant to the third exemption of the FOIA, which provides for the withholding of information specifically protected from disclosure by statute. The specific statute applicable in this case is Section 6, Public Law 86-36 (50 U.S. Code 3605). We have determined that such information exists in this record, and we have excised it accordingly.

In addition, personal information regarding individuals has been deleted from the enclosures in accordance with 5 U.S.C. 552 (b)(6). This exemption protects from disclosure information that would constitute a clearly unwarranted invasion of personal privacy. In balancing the public interest for the information you request against the privacy interests involved, we have determined that the privacy interests sufficiently satisfy the requirements for the application of the (b)(6) exemption.

Since these deletions may be construed as a partial denial of your request, you are hereby advised of this Agency's appeal procedures. You may appeal this decision. If you decide to appeal, you should do so in the manner outlined below.

- The appeal must be in sent via U.S. postal mail, fax, or electronic delivery (e-mail) and addressed to:

  NSA/CSS FOIA/PA Appeal Authority (P132),
  National Security Agency
  9800 Savage Road STE 6932
  Fort George G. Meade, MD 20755-6932

  The facsimile number is (443)479-3612.
  The appropriate email address to submit an appeal is FOIARSC@nsa.gov.
- It must be postmarked or delivered electronically no later than 90 calendar days from the date of this letter. Decisions appealed after 90 days will not be addressed.
- Please include the case number provided above.
- Please describe with sufficient detail why you believe the denial of requested information was unwarranted.
- NSA will endeavor to respond within 20 working days of receiving your appeal, absent any unusual circumstances.

For further assistance and to discuss any aspect of your request, you may contact our FOIA Public Liaison at foialo@nsa.gov. You may also contact

the Office of Government Information Services (OGIS) at the National Archives and Records Administration to inquire about the FOIA mediation services they offer. OGIS contact information is: Office of Information Services, National Archives and Records Administration, 8601 Adelphi Road-OGIS, College Park, MD 20740-6001; e-mail: ogis@nara.gov; main: 202-741-5770; toll free: 1-877-684-6448; or fax: 202-741-5769.

Sincerely,

Paul K
for

JOHN R. CHAPMAN
Chief, FOIA/PA Office
NSA Initial Denial Authority

Encls:
a/s

To whom it may concern,

This is a non-commercial request made under the provisions of the Freedom of Information Act 5 U.S.C. S 552. My FOIA requester status as a "representative of the news media" however due to your agency's denial of this status, I hereby submit this request as an "All other" requester.

I prefer electronic delivery of the requested material either via email to john@greenewald.com, FAX 1-818-659-7688 or via CD-ROM or DVD via postal mail. Please contact me should this FOIA request should incur a charge.

I respectfully request a copy of the Intellipedia entry (from all three Wikis that make up the Intellipedia) for the following entry(s) (Or whatever similar topic may pertain if it is slightly worded differently):

EXTRATERRESTRIAL

And/or

EXTRATERRESTRIAL LIFE

And/or

ALIEN

And/or

ALIENS

And/or

ALIEN LIFE

Please also include any Intellipedia entries that contain the above mentioned keywords/phrases. I agree to accept only those articles that

come up as a result of using the Intellipedia search engine as responsive to this portion of my request.

Thank you so much for your time, and I am very much looking forward to your response.

Sincerely,

John Greenewald, Jr.
[redacted]
[redacted]
FAX 1-818-659-7688

(U//~~FOUO~~) False memory

UNCLASSIFIED

From Intellipedia

You have new messages (last change).

A **false memory** is a memory of an event that did not happen or is a distortion of an event that did occur as determined by externally corroborated facts.

Contents

- 1 Background
- 2 Discussion
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Background

It is common experience that human memory may be unreliable to some degree, whether by failing to remember at all or by remembering incorrectly.

Our sense of identity, of who we are and what we have done, is tied to our memories, and it can be disturbing to have those challenged. Amnesia, Alzheimer's disease, and post traumatic stress disorder (also known as "shell-shock") provide examples of dramatic loss of memory, with devastating effects on the sufferer and those around them.

Memory is a complicated process, only partly understood; but research suggests that the qualities of a memory do not in and of themselves provide a reliable way to determine accuracy. For example, a vivid and detailed memory may be based upon inaccurate reconstruction of facts, or largely self-created impressions that appear to have actually occurred. Likewise, continuity of memory is no guarantee of truth, and disruption of memory is no guarantee of falsity. Finally, memory is believed to be a reconstructed phenomenon, and so it can often be strongly influenced by expectation (one's own or other people's), emotions, the implied beliefs of others, inappropriate interpretation, or desired outcome.

Discussion

If a person remembers an event that lacks another witness or corroborative physical evidence, the validity of the memory may be questioned—but not dismissed. It might be said that absence of evidence does not in fact constitute the non-existence of evidence, but validation has the highest priority. For instance, one might say that they have witnessed scores of an enemy army over the hillside. As difficult as it may be to disprove such a statement outright, the statement cannot be *validated* until the enemy army is actually validated by corroborating witnesses.

Complications arise when a memory involves trauma inflicted by another. If it is in a reputedly involved third party's interest to deny an incriminating memory, the memory cannot be dismissed merely on the strength of such a denial. Likewise, the memory alone does not warrant an accusation of the third party—hence need for external corroborative evidence.

The origin of false memories is controversial. Hypnosis can be used to suggest false memories because some techniques may lead to fantasizing and could increase the subjective certainty of fantasy. The successful integration of hypnotic suggestions, however, is contingent upon the susceptibility and willingness of the subject to incorporate those suggestions into his or her consciousness as real. Research suggests that at least some false memories are formed through *rehearsal,* or repetition, of an event that has been confirmed as fantastic: after repeatedly thinking about and visualizing an event, a person may begin to "remember" it as if it had actually occurred. Upon questioning, such a person might confidently recall the event when in fact it is merely *previous visualizations* that make it seem familiar. Rehearsal is the strongest mechanism of moving short-term memory into long-term memory. Naturally, the rehearsal of incorrect information leads to the formation of an incorrect long-term memory. This applies to both implanted and real memories. For example, many people have experienced the phenomenon of learning that a childhood memory actually happened to a sibling.

Research suggests that memory involves reconstruction, not just recall. For example, a child remembers standing beside a fence overlooking an eerie looking valley. As an adult, the real eerieness of the valley may be falsely remembered as containing a dead body, when in fact the child witnessed a homeless man sleeping under the trees. This particular memory would represent an inaccurate reconstruction.

Many proponents of recovered memories emphasize the importance of distinguishing between *ordinary* and *traumatic* memory. Studies show that memories can be implanted, but we lack studies on implanted traumatic memories and their related effects—such as post-traumatic stress disorder and dissociative identity disorder —because such studies would be unethical.

False memory syndrome

False memory syndrome (FMS) is the term for the hypothesis describing a state of mind wherein sufferers have a high number of highly vivid but false memories, often of abusive events during their childhood. This condition has been studied, and sufferers have confessed to "entirely made up stories." However, the Diagnostic and Statistical Manual of Mental Disorders (DSM) does not recognize FMS, although the forgetting of traumatic events constitutes several of the manual's diagnostic criteria for PTSD. The debate over FMS centers largely around the topic of child abuse, wherein alleged victims are said to experience dissociation, which causes repression of the traumatic memory until later in life, when the memory resurfaces either naturally or with the aid of a professional. Many advocates of FMS argue against both methods of memory recovery, claiming that such professionals as therapists and psychiatrists accidentally implant false memories. Specific therapies considered by some to be pseudoscientific, such as past lives therapies have been explained with reference to false memory syndrome. The term and concept were popularized, though not invented, by the False Memory Syndrome Foundation (FMSF).

The Courage to Heal is a book that has received much controversy over the years, as some believe it encourages the recovery of repressed memories as a healing technique. Some retractors have blamed the book for encouraging them into memory confabulation.[1] (http://www.stopbadtherapy.com/courage/retract.shtml)

Ultimately, it is undeniable that true memories are often forgotten. The difficulty comes in deciding whether a memory which has been recovered or spontaneously recollected, is accurate and correctly interpreted, or not.

Prominent examples

Sexual abuse

False memory has figured prominently in many investigations and court cases, including cases of alleged sexual abuse. There is no scientific way to prove that any of these recollections are completely accurate.

In the 1980s, day care sexual abuse hysteria based on recovered memories resulted in the imprisonment of some of the accused parents. Most of these convictions were reversed in the 1990s, and there are cases in which recovered-memory therapists have been successfully sued by former clients for implanting false memories. [2] (http://www.psychiatrictimes.com/p991201a.html)

Many individuals who were led to believe in things that they later were able to show did not happen have retracted allegations of such abuse (for instance, [3] (http://www.findarticles.com/p/articles/mi_m2843/is_3_24/ai_62102232)). Known as "retractors" they are sometimes vilified as being "in denial" about the "real abuse they suffered and want to forget about" by advocates of recovered memory therapy (see below), a suggestion which many find offensive.[4] (http://www.stopbadtherapy.com/retracts/macdonald.shtml)

Alien abduction and reincarnation

Other reputed instances of therapist-implanted false memory involve alien abductions and reincarnation therapy. These cases are cited as proof that certain methods can induce false memories. Psychologist Stephen Jay Lynn conducted a simulated hypnosis experiment in 1994, asking patients to imagine they had seen bright lights and experienced lost time. 91% of subjects who had been primed with questions about UFOs stated that they had interacted with aliens. [5] (http://www.psychologytoday.com/articles/PTO-20030527-000002.html)

Harvard University professor Richard McNally has found that many Americans who believe they have been abducted by aliens share personality traits such as New Age beliefs and episodes of sleep paralysis accompanied by hypnopompic hallucinations. These experiences prompted the individuals to visit therapists, who would frequently suggest alien abduction as a cause. The individuals readily accepted the explanation and in laboratory experiments exhibited stress symptoms similar to those of Vietnam veterans suffering from post-traumatic stress disorder.[6] (http://news.bbc.co.uk/1/hi/in_depth/sci_tech/2003/denver_2003/2769875.stm) The experiment led McNally to conclude, "Emotion does not prove the veracity of the interpretation."[7] (http://www.psychologytoday.com/articles/PTO-20030527-000002.html)

Satanic ritual abuse

In the United States, in the 1980s, a wave of false allegations erupted as a result of the use of recovered memory techniques in cases of satanic ritual abuse. Hundreds of psychotherapists began teaching that adult stress was a sign that a person was sexually abused by their parents and neighbors. Using putative techniques to "recover" these lost memories, hundreds of people eventually were convinced by their therapists that they were abused by Satanic priests, these Satanists being their own family or kindergarten teachers. Hundreds of people were

convicted of these "crimes" and put in jail. From the late 1990s onward a skeptical reappraisal of these recovered memory techniques has shown that these were not recovered memories at all, but rather created memories. Most of the people convicted on such charges have since been freed.

Criticisms of recovered memory therapy

Although there is genuine concern that important memories may be buried and need uncovering, there is concern that the goal of neutral truth may be forgotten, compared to the belief that they must exist and be found, and that lives are therefore devastated by the pressure to find such memories when such events often may not have happened, or may be misinterpreted.

Critics, such as FMS advocates, claim that recovered memory therapists often have a non-neutral interest in proving that such experiences happened, and use techniques similar to those used by cults and interrogators which are known to produce mental confusion such as:

- keeping information from their clients that could place their recovered memories in doubt
- assuming by default that repressed memories exist in the client
- relying upon techniques based upon suggestibility rather than ones which neutrally explore the client's experience
- mentally isolating people from their previous social support (families and so on)
- viciously attacking opponents, insinuating that they are practitioners of Satanic ritual abuse or that they endorse the sexual abuse of children

References

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- Pendergrast, Mark. *Victims of Memory: Incest Accusations and Shattered Lives,* Upper Access,Inc, 1995. ISBN 0-942679-16-4.
- Perina, Kaja, "Alien Abductions: The Real Deal? (http://www.psychologytoday.com/articles /PTO-20030527-000002.html) ", *Psychology Today*, March/April 2003. URL accessed on 2005-12-26.
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See also

- Confabulation
- Lost in the mall technique

- Memory bias

External links and references

- Memory distortion in decision making (http://psych.ucsc.edu/matherlab/summary_choices.html)
- American Psychological Association: Study of false memory (http://www.apa.org/monitor/mar00/memory.html)
- New methods in police lineups (http://www.nwitimes.com/articles/2004/03/08/news/local_illinois/af5b65140b0b193386256c5100037ac9.txt)
- Whitfield, Charles L. (1995) Memory and abuse: remembering and healing the effects of trauma.
- Skeptic's Dictionary on false memories (http://skepdic.com/falsememory.html)
- False Memory Syndrome Foundation (http://www.fmsfonline.com/)
- British False Memory Society (http://www.bfms.org.uk)
- Demonstration of a "false memory" test (http://www.mmlc.northwestern.edu/external/paller/memory-demo_content.html) at Northwestern (uses Macromedia Flash, requires audio)
- Jim Hopper's scientific research and scholarly resources page (http://www.jimhopper.com/memory/)
- Article about Marcia Johnson's research on memory distortion (http://www.yale.edu/opa/v30.n21/story7.html)

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Categories: Psychology | Analytic Pitfalls | Analysis | Methodologies

- This page has been accessed 797 times.
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- This page was last modified 17:21, 5 April 2013 by [redacted] Most recent editors: [redacted] and others.

Doc ID: 6591919

(U) Nicolaus Copernicus

UNCLASSIFIED

From Intellipedia

You have new messages (last change).

(U) *This article describes an individual nominated as a Revolutionary by the CIA Intellipedia Sabbatical. Its intelligence value lies in its instructional or inspirational nature.*

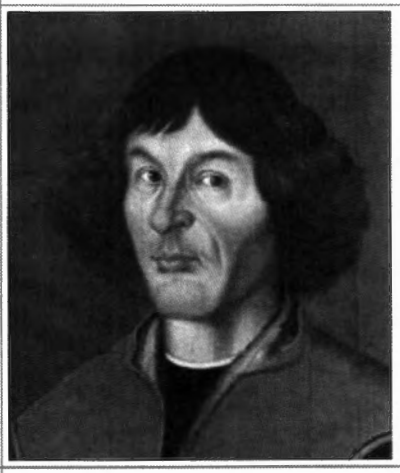
Intelligence History Portal

(U) **Nicolaus Copernicus** (February 19, 1473 – May 24, 1543) was the astronomer who formulated the first modern heliocentric theory of the solar system. His epochal book, *De revolutionibus orbium coelestium* (On the Revolutions of the Celestial Spheres), is often conceived as the starting point of modern astronomy, as well as a central and defining epiphany in all the history of science. However, it was not published until after his death and it would be nearly 200 years before its central thesis could be scientifically established. Little is known of Copernicus's personal life. Highly educated, he spoke and read several languages, probably never married and his writings suggest he had a serious nature. He was an excellent physician and practiced medicine all his life. He died in 1543 of a stroke.

(U) Among the great polymaths of the Scientific Revolution, Copernicus was a mathematician, astronomer, jurist, physician, classical scholar, Catholic cleric, governor, administrator, military leader, diplomat and economist. Amid Copernicus' extensive responsibilities, astronomy figured as little more than an avocation.

(U) While the heliocentric theory had been formulated by Indian, Greek, and Muslim savants centuries before Copernicus, his reiteration that the sun (rather than the Earth) is at the center of the solar system is considered among the most

Scientist

Name	Nicolaus Copernicus
Photo	
Date of Birth	19 February 1473
Place of Birth	Toruń (*Thorn*), Royal Prussia (autonomous province of the Kingdom of Poland (1385–1569)
Date of Death	24 May 1543
Place of Death	Frombork (*Frauenburg*), Warmia (Ermeland) (autonomous part of Royal Prussia)
Field	Catholic cleric, mathematician, astronomer
Alma Mater	Jagiellonian University, Kraków Academy
Known for	The first modern formulation of a heliocentric theory of the solar system.

important landmarks in the history of western science.

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(U) Life

(U) Copernicus was born in 1473 in the city of Toruń (Thorn) in Royal Prussia, an autonomous province of the Kingdom of Poland (1385–1569). (Toruń is located about 110 miles south of Gdansk, Poland.) He was educated at Kraków, Bologna and Padua, and spent most of his working life within the bishopric of Ermeland, in the town of Frombork (Frauenburg), where he died in 1543. He had a younger brother and two sisters. After his father, a financially comfortable copper merchant and banker, died early, Copernicus was raised by his uncle. The uncle had social status and enough wealth to provide the young man with a quality education. Copernicus earned degrees in mathematics and art at the University of Kracow. During his student years, he developed an interest in astronomy. Telescopes had not been invented and astronomers observed the sky with unaided eyes. They generated complicated tables and drawings in an attempt to prove that the earth was the center of the universe. Copernicus's fascination with astronomy was mostly a hobby, and he began thinking about options to the current wisdom. He thought that an earth-centered system required unreasonable motions by the six visible planets.[1]

(U) Education

(U) In 1491 Copernicus enrolled at the Kraków Academy (now Jagiellonian University), where he probably first encountered astronomy. This science soon fascinated him, as shown by his books, which would later be carried off as war booty by the Swedes, during "The Deluge," to the Uppsala University Library. After four years at Kraków, followed by a brief stay back home at Toruń, he went to Italy - at his uncle's suggestion -, where he studied law and medicine at the universities of Bologna and Padua. His bishop-uncle financed his education and wished for him to become a bishop as well. Italy was then one of the most scientifically advanced countries in Europe, and his journey there included a walk over the Alps. However, while studying canon law and civil law at Ferrara, Copernicus met the famous astronomer, Domenico Maria Novara da Ferrara. Copernicus attended Novara's lectures and became his disciple and assistant. The first observations that Copernicus made in 1497, together with Novara, are recorded in Copernicus' epochal book, *De revolutionibus*

orbium coelestium.

(U) Copernicus remained in Italy for about 10 years. He compiled some astronomical tables in his spare time but had no particular aspirations to be an astronomer. He earned a doctoral degree in church law, and then returned to Poland, moving to his uncle's home in Ermland.

Work

(U) Having left Italy at the end of his studies, he came to live and work at Frombork (Frauenburg). Some time before his return to Warmia, he had received a position at the Collegiate Church of the Holy Cross in Breslaw, Silesia, which he would hold for many years and only resign for health reasons shortly before his death. Through the rest of his life, he performed astronomical observations and calculations, but only as time permitted and never in a professional capacity.

Monetary reformer

(U) Copernicus worked for years with the Royal Prussia Diet on monetary reform and wrote studies on the value of money; as governor of Warmia, he administered taxes and dealt out justice. Beginning in 1519, the year of Thomas Gresham's birth, Copernicus formulated an early iteration of the theory, now called "Gresham's Law," that "bad" (debased) coinage drives "good" (un-debased) coinage out of circulation. During these years, he also traveled extensively on government business and as a diplomat, on behalf of the Prince-Bishop of Warmia.

Heliocentric model

(U) Following his return to Poland in 1506, in order to accommodate his growing astronomical interest he had a roofless tower built so he could make observations. He used three measuring devices to determine planetary positions. Copernicus became so convinced that the sun was at the center of the solar system that he wrote a book on the subject. He was a mathematician and could work out the full details of planetary motion. All scientific books at the time were written in Latin and he titled his (relatively, short) manuscript ***Commentariolus***, which meant "small commentary." In the 1512 manuscript he wrote, "All the spheres revolve about the sun as the midpoint, and therefore the sun is at the center of the universe." The bulk of the publication discussed planetary motion. His ideas were in conflict with church law. But Copernicus experienced little of the backlash that would later affect Galileo Galilei (1564-1642) when he made similar comments based on telescopic observations. That may have happened because Copernicus was an important church official. Also, his book was not widely distributed and information did not travel quickly. This short manuscript became the basis for a more complete book that was published the year he died.[2]

(U) In 1514 Copernicus made available to friends his *Commentariolus* (Little Commentary) — a short handwritten text describing his ideas about the heliocentric hypothesis . Thereafter he continued gathering data for a more detailed work.

(U) During the war between the Teutonic Order and the Kingdom of Poland (1519-24), Copernicus at the head of royal troops successfully defended Olsztyn|Allenstein (Olsztyn), besieged by the forces of Albert of Brandenburg.

(U) By 1536 Copernicus' work was nearing its definitive form, and rumors about his theory had reached educated people all over Europe. From many parts of the continent, Copernicus was urged to publish. He did so,

but only as he was dying (aged 70). ***De revolutionibus orbium coelestium*** ("On the Revolutions of the Heavenly Spheres") came out in 1543, in which Copernicus proposed that the Sun, and not the Earth, was the center of our system of planets. But the detailed model suggested by Copernicus was really a convoluted half-way house. Since ancient times astronomers had believed that the planets must move in perfect circles. To account for their sometimes wayward behavior (the name "planet" means "wandering star") they compounded circles on circles to produce trajectories called **epicycles** that behaved like complex sets of gears. Copernicus retained epicycles and many other features of these earlier cosmologies and this gave his system a grotesque and baroque architecture.[3]

- The importance of *De revolutionibus* on his contemporaries can not be over-stated: it was widely read and circulated, and, as of 2011, nearly **600 copies** of editions published in the 16th century exist. Historian Owen Gingerich has made a study of all 600-odd copies, looking for marginal annotations to establish whether the book had serious readers.[4]

(U) The Case Against Copernicus

- The following is taken from a 6-page article, "**The Case Against Copernicus**", by Dennis Danielson and Christopher M. Graney, published in the **January 2014** issue of the presitigious science monthly ***Scientific American*** (Vol. 310, issue 1; pp. 72-77). Danielson is a professor of English at Canada's University of British Columbia who studies the cultural meaning of the Copernican revolution; Graney is a professor of physics and astronomy at Jefferson Community and Technical College in Louisville, Kentucky, who also translates 17th-century astronomical texts from Latin.

Copernicus's revolutionary theory that Earth travels around the sun upended more than a millennium's worth of scientific and religious wisdom. Most scientists refused to accept this theory for many decades -- even after Galileo made his epochal observations with his telescope. Their objections were not only theological. Observational evidence supported a competing cosmology -- the "geoheliocentrism" of Tycho Brahe. Copernicus proposed his revolutionary ideas in 1543 in his book *De Revolutionibus Orbium Coelestium*, which many scientists then read, admired, annotated and used for improving their astronomical predictions. Yet even by 1600, 57 years later, no more than a dozen serious astronomers had given up belief in an unmoving Earth. Most scientists continued to prefer the more commonsense **geocentrism** we ourselves still appear to endorse when we talk, for example, about the sun rising and setting.

- **Ancient Cosmologies:** Seventeenth-century astronomers had three models for the universe. The geocentric model featured an unmoving Earth circled by the sun, moon, planets and stars. Astronomers accounted for the retrograde motion of the planets with "**epicycles**," smaller loops added to the main orbits. Nicolaus Copemicus's heliocentric universe appeared simpler, but it presented new conceptual problems -- stars had to be unthinkably distant, for example. Tycho Brahe's geoheliocentric model split the difference -- the sun, moon and stars orbited Earth, the planets orbited the sun, and the stars came back close.

This cosmological logjam (against Copernicus's heliocentric model) is sometimes presented as having been held together by prejudice and broken by Galileo (1564-1642) when he assembled a telescope in 1609 and started using it to observe the stars, moon and planets. Neither is true. For a long time after 1609, astronomers still had compelling scientific reasons to doubt Copernicus. Their tale offers a particularly striking illustration of the good reasons that researchers can have for resisting revolutionary ideas -- even ones that turn out, in the end, to be spectacularly correct.

The most devastating argument against the Copernican universe was the star size problem. When we look at a star in the sky, it appears to have a small, fixed width. Knowing this width and the distance to the star, simple geometry reveals how big the star is (right). In geocentric models of the universe, the stars lie just beyond the planets, implying that star sizes are comparable to that of the sun (below). But Copernicus's heliocentric theory demands that the stars be extremely far away. This in turn implies that they should be absurdly large -- hundreds of times bigger than the sun (bottom). Copernicans could not explain away the anomalous data without appeals to divine intervention. In reality, the stars are far away, but their apparent width is an illusion, an artifact of the way light behaves as it enters a pupil or telescope -- behavior that scientists would not understand for another 200 years.

(U) Brahe's New Cosmology (*The Case Against*, continued)

A particularly powerful wellspring of doubt came (40 years later) courtesy of Danish astronomer Tycho Brahe, who in 1588 proposed a different kind of geocentric system. This new "geoheliocentric" cosmology had two major advantages going for it: it squared with deep intuitions about how the world appeared to behave, and it fit the available data better than Copernicus's system did. Brahe was a towering figure. He ran a huge research program with a castlelike observatory, a NASA-like budget, and the finest instruments and best assistants money could buy. It was Brahe's data on Mars that Johannes Kepler, an assistant of Brahe's, would eventually use to work out the elliptical nature of planetary motion. Harvard University historian Owen Gingerich often illustrates Brahe's importance with a mid-17th-century compilation by Albert Curtius of all astronomical data gathered since antiquity: the great bulk of two millennia's worth of data came from Brahe.

This supremely accomplished astronomer had been impressed by the elegance of the Copernican system. Yet he was bothered by certain aspects of it. One thing that unsettled him was the lack of a physical explanation for what could make Earth move. (Brahe lived more than a century before the invention of Newtonian physics [in the late 17th century] provided just such an explanation.) The size of Earth was known reasonably well, and the weight of a sphere of rock and dirt thousands of kilometers in diameter was clearly huge. What could power such a body around the sun, when it was difficult just to pull a loaded wagon down the street?

In contrast, the motion of celestial bodies such as stars and planets was easy to explain -- astronomers since the time of Aristotle had postulated that celestial bodies were made of a special aethereal substance that was not found on Earth. This substance had a natural tendency toward rapid circular motion, just as a wagon had a natural tendency to come to a halt if not pulled vigorously. Brahe said that the Copernican system "expertly and completely circumvents all that is superfluous or discordant in the system of Ptolemy. Yet it ascribes to the earth, that hulking, lazy body, unfit for motion, a motion as quick as that of the aethereal torches." In this regard, ancient astronomers had something in common with modern astronomers, who, to explain what they see, postulate that much of the universe is composed of "dark matter" or "dark energy" that is unlike anything we know.

Another thing that bothered Brahe were the stars in the Copernican system. Ptolemy said the sphere of the stars is "immeasurably large" because we can detect no diurnal parallax in them -- no noticeable alterations in their positions or appearances caused by the changing angles and distances between an Earth-bound observer and those stars as they pass from the horizon, to overhead, to the horizon. The corollary of this observation is that the diameter of Earth is as nothing compared with stellar distances; Earth is "as a point," Ptolemy wrote.

Copernicus knew, however, that we could not even detect annual parallax -- changes in the relative positions of stars caused by the movement of Earth in its orbit. If Earth really was revolving around the sun, the absence of annual parallax would imply that the diameter of its orbit (Copernicus called it the *orbis magnus*) was itself as nothing, "as a point," compared with stellar distances. The size of the universe then became a whole new -- and almost impossible to believe -- kind of "immeasurably large."

Moreover, as Brahe well knew, the Copernican proposal had big implications not only for the size of the universe but also for the size of individual stars. When we look up at the night sky, individual stars appear to have fixed widths, which both Ptolemy and Brahe measured. We now know that the distant stars are effectively point sources of light, and these apparent widths are an artifact of the passage of light waves through a circular aperture such as a telescope or an iris.

Yet at the time, astronomers knew nothing of the wave nature of light. Brahe used simple geometry to calculate that if the stars were to lie at Copernican distances, then they would have to have a width comparable to that of the orbis magnus. Even the smallest star would utterly dwarf the sun, just as a grapefruit dwarfs the period at the end of this sentence. That, too, was hugely hard to believe -- Brahe said such titanic stars were absurd. As historian Albert Van Helden puts it, Brahe's "logic was impeccable; his measurements above reproach. A Copernican simply had to accept the results of this argument."

Rather than give up their theory in the face of seemingly incontrovertible physical evidence, Copemicans were forced to appeal to divine omnipotence. "These things that vulgar sorts see as absurd at first glance are not easily charged with absurdity, for in fact divine Sapience and Majesty are far greater than they understand," wrote Copernican Christoph Rothmann in a letter to Brahe. "Grant the vastness of the Universe and the sizes of the stars to be as great as you like -- these will still bear no proportion to the infinite Creator. It reckons that the greater the king, so much greater and larger the palace befitting his majesty. So how great a palace do you reckon is fitting to GOD?"

Unswayed by arguments such as this, Brahe proposed his own system: the sun, moon and stars circle an immobile Earth, as in the Ptolemaic system, while the planets circle the sun, as in the Copernican system. This "Tychonic" system retained the advantages of geocentrism. With it there was no motion of the hulking, lazy Earth to explain. Neither was there any missing annual parallax demanding vastly distant, and giant, stars -- the stars in Brahe's system lay just beyond the planets and were quite reasonably sized. Yet so far as the planets were concerned, the Tychonic system and the Copernican system were mathematically identical. Thus, Brahe's system also retained the Copernican mathematical elegance that Brahe thought circumvented all that was superfluous or discordant in Ptolemy's system.

When Galileo began to view the heavens with his telescope (in 1609), he made a number of findings that directly contradicted Ptolemy's ancient cosmology. He saw that Jupiter had moons, proving that the universe could harbor more than one center of motion. He also observed the phases of Venus, showing that it circled the sun. These findings were not, however, understood as proof that Earth revolves around the sun because they were fully compatible with the Tychonic system.

(U) The 200-Year Argument (*The Case Against*, continued)

In the middle of the 1600s, well after the deaths of pioneers such as Copernicus, Brahe and Galileo, Italian astronomer Giovanni Battista Riccioli published an encyclopedic assessment of cosmological options that he called (after Ptolemy's great work) the ***AlmagestumNovum***. Riccioli weighed many arguments for and against the Copernican system, arguments dealing with matters of astronomy, physics and religion. But Riccioli judged that two main arguments tipped the balance decisively against Copernicus. Both were based on scientific objections. Both were rooted in Brahe's ideas. Neither would be answered decisively until some hundreds of years later.

One argument was based on the inability to detect certain effects that Riccioli said a rotating planet should produce in projectiles and falling bodies. Brahe had felt that a rotating Earth should deflect a projectile away from a straight path. Yet these deflections would not be observed until the 19th century, when French scientist Gaspard-Gustave de Coriolis worked out a full mathematical description of such effects.

The other argument was the one Brahe had made about star size, which Riccioli updated with telescopic observations. (Brahe had worked without a telescope.) Having designed a repeatable procedure for measuring the diameters of stars, he found that stars looked smaller than Brahe thought. Yet the telescope also increased the sensitivity to annual parallax, which still had not been detected, implying that the stars had to be even farther away than Brahe had assumed. The net effect was that stars still had to be every bit as titanic as Brahe had said.

Riccioli complained about the Copernicans appealing to divine omnipotence to get around this scientific problem. A Jesuit priest, Riccioli could hardly deny the power of God. But still he rejected this approach, saying, "Even if this falsehood cannot be refuted, nevertheless it cannot satisfy the more prudent men."

The acceptance of Copernicanism was thus held back by a lack of hard scientific evidence to confirm its almost incredible claims about cosmic and stellar magnitudes. In 1674 Robert Hooke, curator of experiments for the British Royal Society, admitted, "Whether the Earth move or stand still hath been a problem, that since Copernicus revived it, hath much exercised the wits of our best modern astronomers and philosophers, amongst which notwithstanding there hath not been any one who hath found out a certain manifestation either of the one or the other."

By Hooke's time a growing majority of scientists accepted Copernicanism, although, to a degree, they still did so in the face of scientific difficulties. Nobody convincingly recorded the annual stellar parallax until Friedrich Bessel did it in 1838. Around that same time, George Airy produced the first full theoretical explanation for why stars appear to be wider than they are, and Ferdinand Reich first successfully detected the deflection of falling bodies induced by Earth's rotation. Also, of course, Isaac Newton's physics -- which did not work with Brahe's system -- had long since provided an explanation of how Brahe's "hulking, lazy" Earth could move.

- In 1687, Englishman Isaac Newton (1642-1727) published his masterwork, ***Principia***, which laid out the laws of motion and of universal gravitation. It gave convincing proof that the planets orbited the Sun and, when researchers analyzed binary star systems in detail during the 19th century, that physical laws hold throughout the cosmos.

- In 1838, German astronomer Friedrich Bessel measured the apparent shift of the star 61 Cygni relative to more distant stars as Earth orbited the Sun. The star's "parallax" yielded the first accurate determination of the distance to an object beyond the solar system. For 61 Cygni, it lies about 11 light-years from Earth.

Back in Galileo's and Riccioli's day, however, those opposed to Copernicanism had some quite respectable, coherent, observationally based science on their side. They were eventually proved wrong, but that did not make them bad scientists. In fact, rigorously disproving the strong arguments of others was and is part of the challenge, as well as part of the fun, of doing science.
[5]

(U) Copernicus, the Solar System and The Church

(U) Though he never took holy orders, Copernicus was appointed canon of the Frauenburg Cathedral in 1497 by his uncle, the bishop of Ermeland. After a leave of absence to pursue studies in Italy and teach mathematics at Rome, he returned to become his uncle's physician and secretary from 1506 to 1512. Resuming his duties as canon at Frauenburg, Copernicus served principally as an adviser on legal and political affairs, publishing a work on currency reform in 1522.

(U) Beginning with his studies at Padua in 1497, Copernicus took up an interest in astronomy. At least partly in

response to issues of calendar reform raised at the (Catholic Church's) Lateran Council of 1512-17, he began to think about a reform of cosmology. He produced an initial sketch, ***Commentariolus*** in 1512-14, suggesting the need to reject Ptolemy's Earth-centered theory with a new, Sun-centered system. Urged by friends to develop and publish his ideas, Copernicus completed his iconoclastic work *De revolutionibus orbium coelestium* ("On the Revolutions of the Heavenly Spheres") in 1543, shortly before his death.

(U) Though Copernicus clearly believed in the reality of a Sun-centered solar system, he was careful to follow astronomical conventions in emphasizing that this model was merely a hypothetical construct. His friend Andreas Osiander added a prefatory note reinforcing its claim as a hypothetical proposition, to protect the work from hostile criticisms stemming from its apparent inconsistency with both Aristotelian natural philosophy and a literalist interpretation of scripture. The Gregorian calendar reform of 1582 was based on astronomical tables derived from Copernican theory. Nonetheless, as a result of Galileo's aggressive insistence on the physical reality of the Copernican system, *De revolutionibus* was **placed on the Church's index of prohibited books in 1616.**[6]

(U) If the Earth is Not the Center, Is Man Unique?

(U) It is a curious fact that the person who in the period after the Middle Ages did more than any other to open the door to the idea of extraterrestrial life was a canon in a Polish cathedral whose passion was mathematics and who never in his published writing mentioned the question of life elsewhere in the universe. What this isolated sixteenth-century figure did was to publish in 1543 a book advocating the heliocentric theory. This was Nicholas Copernicus (1473–1543), who thereby changed our earth into a planet and inevitably, if gradually, transformed stars into other suns, which many later authors assumed are surrounded by inhabited planets. Although no evidence indicates that Copernicus recognized the ramifications that his hypothesis would have for belief in extraterrestrial intelligences, others soon saw such implications. As early as 1550, the Lutheran reformer Philip Melanchthon (1497–1560) warned against the Copernican cosmology and the idea that Christ's incarnation and redemption could have occurred on another planet:

[T]he Son of God is One; our master Jesus Christ was born, died, and resurrected in this world. Nor does he manifest Himself elsewhere, nor elsewhere has He died or resurrected. Therefore it must not be imagined that Christ died and was resurrected more often, nor must it be thought that in any other world without the knowledge of the Son of God, that men would be restored to eternal life.

(U) The sixteenth-century author who most enthusiastically rushed through the door opened by Copernicus and who carried millions of extraterrestrials with him was Giordano Bruno (1548–1600). In a number of his books, Bruno championed the Copernican system and embellished it with an abundance of extraterrestrials.[7]

(U) Finding Copernicus in 2005

(U) Copernicus is said to have died of a stroke on 24 May 1543, on the very day the last of the printed sheets of his opus, *De Revolutionibus*, reached his hands. [In those days books were printed as sheets, and it was up to the buyer to have them bound into a book: the buyer paid a set price for the manuscript, then decided on how fancy he wanted the cover "plates" and the quality of the leather.] Copernicus was buried as a relatively unknown churchman, for the distribution of his book had only just begun. Sometime after the year 2000, the bishop of the Frombork Cathedral, in the remote northeastern corner of Poland where Copernicus had worked and lived, was distressed that there was no monument for the cathedral's most illustrious staff member. Consequently, he invited Jerzy Gąssowski, a distinguished Polish archaeologist on the faculty of the Pultusk Academy, to find the astronomer's grave. The problem was that no one knew precisely where Copernicus was buried. Because there were more than a hundred skeletons under the floor of the cathedral, Gąssowski initially concluded that the

search would be a Sisyphean task not worth the trouble. But Bishop Jacek Jezierski did not give up so easily. Copernicus had been one of 16 canons administering the cathedral, and the bishop knew that each canon was assigned the maintenance of one of the altars flanking the nave, each attached to one of the pillars in the large brick Gothic edifice. Archival records revealed that Copernicus had had charge of the Holy Cross altar and had read the holy liturgy there. By tradition the canons were buried in graves in the vicinity of their altars, which reduced the area to be searched, so Gąssowski was persuaded to excavate after all.[8]

(U) A team of Polish archaelogists led by Jerzy Gassowski (Pultusk School of Humanities) claimed, in 2005, to have found a grave believed to be that of Nicholas Copernicus. Gassowski and his colleagues excavated a site at a cathedral in Frombork, a town 180 miles (290 km) north of Warsaw. The excavations of just over a dozen tombs near the Holy Cross altar in the cathedral had, at the lowest level, encountered the scattered bones of a 70-year-old man, the only possible candidate for Copernicus' relicts. The cranium -- no mandible was found -- had been sent to the Police Forensics Laboratory in Warsaw for a facial reconstruction in late summer 2005. The Central Forensic Labroratory of the Polish Police used the skull to create an artist depiction of the face, which - to some extent - agrees with earlier (younger) portraits of the great astronomer. The archaeologists were searching for living relatives of Copernicus to make genetic comparisons.[9]

(U) Although no living relatives could be positively identified, researchers encountered some luck. Copernicus' library had been captured by the Swedes in the Thirty Years' War and was still preserved in Uppsala. A careful search of those books in 2006 turned up in the gutters of one of the books that Copernicus had annotated. In a copy of Johann Stoeffler's *Calendarium Romanum magnum* (1518), where Copernicus had recorded his observations of eclipses, there were nine hairs, four of which were well enough preserved for DNA amplification. Analysis revealed that the mitochondrial DNA of two hairs matched each other and the DNA from a tooth in the cranium. In a funeral service held at Frombork Cathedral on 22 May 2010 (nearly on the day he died), one filled with pagentry befitting a national hero, Copernicus's remains were re-interred under a tombstone that bears a representation of his model of the solar system.

(U) Further reading

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(b)(3) - P.L. 86-36

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(U) Green

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From Intellipedia

You have new messages (last change).

Green is considered one of the additive primary colors.

The perception of green is evoked by light having a spectrum dominated by energy with a wavelength of roughly 520–570 nm. The complement of green is a purple, such as magenta; that is, a color corresponding to a mixture of red and blue light. On a traditional color wheel, based on subtractive color, the complementary color to green is considered to be red.[1]

Mossy, green fountain in Wattens, Austria.

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Shades of Green

Electric Green (Web Color Lime): *Electric green* (web color or X11 color *lime*) is the brightest possible pure green that can be represented in a 24-bit-per-pixel RGB color space. This pure green represents one of the three additive primaries, along with red and blue, is used in computer monitors, and is reproduced as a good approximation to a pure spectral green. When approximated (with less brightness) in pigments, this color is called *bright green*.

Kelly Green: *Kelly green*, also known as *grass green* or *pigment green*, is achieved by mixing cyan and yellow pigments in equal proportions.

Shamrock Green (Irish Green): *Shamrock green* is the color of green used in the flag of Ireland, and therefore it is also called *Irish green*. It represents the color of Shamrocks in what is poetically called the "Emerald Isle" for its emerald-colored vegetation. This green is legally defined as Pantone 347,[2] a proprietary color system which does not have a direct equivalent in sRGB. It is customary in both Ireland and the United States to wear this shade of green, or any shade of green that one prefers, on St. Patrick's Day, March 17, even if one is not of Irish descent.

Green in Islam: The color in this form is the shade of green used in the Flag of the Organization of the Islamic Conference. Islam used/uses this shade of green symbolically because the tribe of the prophet Muhammad had a green banner and because to them green represented paradise (the Persian word for garden) to desert-dwelling Bedouin tribes when they gathered at an oasis.

Office Green (Web Color "Green"): *Office green*, was the original color designated as "green" for

computer displays in the 1980s. It was apparently chosen because it is the color of the green-colored pencils used by accountants and the color of green office file cabinets.

Green in Nature

- Green is common in nature, especially in plants. Many plants are green mainly because of a complex chemical known as chlorophyll which is involved in photosynthesis.
- Some animals are green: these include some frogs, toads, some turtles some lizards and amphibians, some snakes, some birds such as parrots, caterpillars and some insects such as praying mantids.
- Green algae and green plankton are important food sources at the bottom of the food chain.

Chlorophyll is responsible for the green color in plants. This lemon will gradually turn yellow as it ripens.

	is a comic-book crime fighter perhaps better known for his appearances on radio serials and a 1960s TV series.	
Cultural Expressions	**Environmentalism**	**Film and Television**
▪ Envy is called the *green-eyed monster* (after a phrase in Shakespeare's *Othello*). ▪ An inexperienced person is sometimes known as *green*, probably by analogy to unripe (i.e. unready, immature) fruit. The word *greenhorn* also refers to an inexperienced person. Synonym, "greenhorn". ▪ Someone who works well with plants is said to have a *green thumb*. ▪ A physically-ill person is said to look *green around the gills*.	▪ Green is used to mean environmentally friendly. ▪ *Green cars* are vehicles that have extremely low emissions that are not harmful to the environment. The different types of green cars include hybrid, electric, ethanol, biodiesel, natural gas, and high MPG gasoline cars. ▪ *Green computing* could mean lower information technology power usage, reusing/recycling old hardware, fewer hazardous materials used in hardware, or other efficiencies.	▪ *Soylent Green* is a 1973 horror/science fiction film, named for the green-colored food that is its central plot element. ▪ In the TV series *Power Rangers* and its Japanese counterpart, *Super Sentai*, green is a color worn by Power Rangers or Super Sentai members. They're interchangeable with black, and it, along with black are seen to be the macho ones and are always male.
Finance	**Firefighting**	**Flags**
▪ In the United States, green symbolizes money the color on the back of U.S. currency, giving rise to the slang term greenback for cash. Therefore, in areas that use the	▪ Fire escape exit signs are green in Puerto Rico, but red in Mexico. In America, they can be either green or red.	▪ The flag of Libya is plain green (the traditional color of Islam), the only current national flag of a single color.

U.S. Dollar as currency, green carries a connotation of money, wealth, and capitalism. This is especially true in the U.S., but the use of the dollar worldwide makes green a worldwide symbol of wealth, along with the color gold.

- In North American stock markets, green is used to denote a rise in stock prices. In East Asian stock markets, however, green is used to denote a drop in stock prices.

Folklore	Heraldry	History
▪ Green is thought to be an unlucky color in British and British-derived cultures [3], where green cars, wedding dresses, and theatre costumes are all the objects of superstition.[4]	▪ In heraldry, green is called vert.	▪ A *Green Party* (or Faction) existed in the Byzantine Empire for a while, but of course it had nothing to do with modern Greens. Rather, it developed out of a kind of chariot racing fan club whose drivers used the color green to distinguish themselves from the opposing *Blue Party*. The *Green Party* represented the "liberals" (artisans, workmen, and small shopkeepers),

		whereas the *Blue Party* represented the "conservatives" (the military, the wealthy merchants, and the Imperial bureaucracy).[5]
Holidays	**Linguistics**	**Literature**
▪ Green is one of the Christmas colors, usually with red and sometimes also with white and gold and/or silver. ▪ Green represents St. Patrick's Day.	▪ Green is the symbol of the Esperanto language. The color is particularly associated with the green star, and is seen too on the Esperanto flag.	▪ The Middle English poem Sir Gawain and the Green Knight has a character who is entirely green. ▪ In The Wizard of Oz, Dorothy and her friends must travel to the Emerald City to meet the famous wizard. ▪ In Dante Alighieri's *Divine Comedy*, green is the color used to symbolize hope. ▪ In the science fiction novels of Robert A. Heinlein, the *planetary anthem* of Earth is called "The Green Hills of Earth". ▪ Aliens (of the extraterrestrial variety) are sometimes referred to metaphorically in general as *little green men* (even though, of course, they are visualized as being many different colors in stories, comic books, films, video games, or TV shows depicting them).

Medicine	Military	Music
▪ In Western culture the color green is often used as a symbol of sickness and/or nausea. Cartoons often show a character as being sick with a green face. However in many Latin cultures green portrays health and growth and illness is associated more with red. ▪ For patients being treated with Medical marijuana, *Green* is a slang term for cannabis, due to the color of the plant material. ▪ Substances that may impart a greenish hue to one's skin include biliverdin, the green pigment in bile, and ceruloplasmin, a protein that carries copper ions in chelation.	▪ In the United States Army, green is the color of the Military Police, whereas jungle green is the color of the United States Army Special Forces or "Green Berets". ▪ Because of its camouflage properties, green is typically used for the field uniforms for many military services. It is also used as the dress uniform for many land forces and marines. ▪ In many countries, especially those in the former Soviet bloc, green is the color of the border guard. ▪ "Being Green" can either mean someone who is new or someone who is overwhelmed and prone to desertion. ▪ The Green Zone is a 10 km² (4 mile²) area in central Baghdad that was the center of the Coalition Provisional Authority and remains the center of United States	▪ Green Day is a band that was part of the early 90's punk resurgence. ▪ *Green Green Grass of Home* (Claude "Curly" Putman Jr.) is a country song originally made popular by Tom Jones in 1966 . ▪ *Bein' Green* — a popular song by Kermit the Frog. ▪ *The Green Album* is an album by the rock band Weezer, released in 2001. ▪ *Little Green* is a song by Joni Mitchell.

	and other international military presence in the city. ▪ Night vision goggles use electro-optical tubes that amplify very low levels of light several thousand times using an image intensifier. They tint the picture green. The color green is chosen because the human eye is most sensitive and able to discern the most shades in green.	
National Colors	**New Age Philosophy**	**Philosophy**
▪ Green is a symbol of Ireland, which is often referred to as "the Emerald Isle". The color is particularly identified with the republican and nationalist traditions in modern times. It is used this way on the flag of the Republic of Ireland, in balance with white and the Protestant orange. This pattern of green, white, and orange is also seen in Niger and Côte d'Ivoire. ▪ Green, white, and red are the colors of Mexico, Bulgaria, Italy, Hungary, Wales,	▪ In the metaphysics of the *New Age Prophetess*, Alice A. Bailey, in her system called the Seven Rays which classifies humans into seven different metaphysical personality types, the *third ray* of *creative intelligence* is represented by the color *green*. ▪ Green is used to symbolically represent the fourth, heart chakra (Anahata) . ▪ Psychics who claim to be able to observe the aura with their	▪ Green is the color symbolizing earth, nature, and in a broader sense, life. ▪ In Ancient China, green was the symbol of East and Wood, one of the main five colors. ▪ The emotion of envy is traditionally symbolized by the color green.

and Iran. ▪ Green and yellow are colors of Brazil, Jamaica, South Africa, Ghana, Lithuania, Australia, Senegal, Mali, Ethiopia, Togo, Guinea, Benin, and Zimbabwe.	third eye report that someone with a green aura is typically someone who is in an occupation related to health, such as a doctor or nurse, as well as people who are lovers of nature and the outdoors. [6]	
Politics	**Religion**	**Sexuality**
▪ The Green Party is any of various political parties emphasizing environmental issues, grassroots democracy, pacifism, and social justice. The environmental lobby or ecology movement uses green because of its common occurrence in nature. Greenpeace, an ecological group, uses green because of its association with life and verdancy. Europeans who carry this into the political realm are called Greens: There are political parties known as "Green Parties" in over one hundred countries throughout the world (beginning primarily in Europe, though similar parties	▪ Green is considered the traditional color of Islam, likewise because of its association with nature. ▪ Muhammad is reliably quoted in a hadith as saying that "water, greenery, and a beautiful face" were three universally good things. ▪ In the Qur'an, sura Al-Insan, believers in Allah in Jannah wear fine green silk. [7][8] ▪ Al-Khidr (*The Green One*) is a Muslim	▪ In high schools in the United States during the 1960s, it was widely believed that if someone wore green on Thursdays, it meant that they were homosexual.[9] ▪ In modern-day United States high schools, to wear green on a Thursday is believed to mean that the wearer is horny.

have taken root around the world). The more generic term "green party" is used for parties that emphasize environmentalism, but it is increasingly out of favour as the Global Greens have succeeded in uniting almost all such parties under a Global Green Charter. In the UK the ecology party became the Green Party.

- In the United States, especially in the state of Minnesota, green has been used by many Democratic candidates (blue, white, gold and green colors show up frequently in official state imagery in Minnesota), though it does not necessarily symbolize adherence to Green principles. Minnesota Democratic-Farmer-Labor Party Politicians to use green symbolically include U.S. Senator Amy Klobuchar, U.S. Representative Keith Ellison and late U.S. Senator Paul Wellstone. Wellstone was

Saint, who, it is believed, appeared to Moses.

- Bartholomew I of Constantinople is often referred to as "the Green Patriarch" because of the support he has caused the Ecumenical Patriarchate to place for maintenance and protection of the environment.
- In the Roman Catholic church, green is a traditional color of the sacred science of canon law. Also, Roman Catholic clergy wear green vestments at liturgical celebrations during Ordinary Time.
- In the Eastern Catholic Church, green is the color of Pentecost.

frequently and famously sympathetic to green causes. ▪ The Pan-Green Coalition in Taiwan. ▪ Green is the color generally associated with Plaid Cymru, the Welsh political party — but not for reasons of its political ideology. ▪ The flag of Hamas is green, symbolising their Islamist ideology.		
Sports	**Theatre**	**Transportation**
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(actually, it would be more accurate to call it a *cyan tube.*)[10] ▪ Green is the color of the Saskatchewan Roughriders		upward direction on elevators.
Green Pigments	**Food Colorings**	
▪ Charleston green ▪ Chartreuse ▪ Cobalt green ▪ Emerald green ▪ Malachite ▪ Sap green ▪ Terre verte (Glauconite) ▪ Verdigris ▪ Viridian	▪ Chlorophyll (E140 and E141) ▪ Quinoline (E104) ▪ Green S (E142), in countries where it is permitted	

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- Sensational Color: All About the Color Green.

Shades of Green

Shades of Green

Asparagus	**Bright**	**Camouflage**	**Celadon**	**Chartreuse**	**Emerald**	**Fern**	**Gray Asparagus**	**Green**	**Green-yellow**
Jade	**Jungle**	**Lime**	**Moss**	**Myrtle**	**Olive**	**Olive Drab**	**Pear**	**Pine**	**Sea**
Spring	**Swamp**	**Tea**	**Forest**	**Chartreuse Yellow**	**Harlequin**	**Office**	**Lime Pulp**	**Hunter**	**Kelly**

Shamrock **In Islam** **Lime** **Persian** **British Racing** **Spring Bud**

Visible (Optical) Spectrum					
Violet	Blue	**Green**	Yellow	Orange	Red

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(U) Green (color)

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From Intellipedia

Green is considered one of the additive primary colors.

The perception of green is evoked by light having a spectrum dominated by energy with a wavelength of roughly 520–570 nm. The complement of green is a purple, such as magenta; that is, a color corresponding to a mixture of red and blue light. On a traditional color wheel, based on subtractive color, the complementary color to green is considered to be red.[1]

Mossy, green fountain in Wattens, Austria.

Contents

- 1 Shades of Green
- 2 Green in Nature
- 3 References and External Links
- 4 Shades of Green

Shades of Green

Electric Green (Web Color Lime): *Electric green* (web color or X11 color *lime*) is the brightest possible pure green that can be represented in a 24-bit-per-pixel RGB color space. This pure green represents one of the three additive primaries, along with red and blue, is used in computer monitors, and is reproduced as a good approximation to a pure spectral green. When approximated (with less brightness) in pigments, this color is called *bright green*.

Kelly Green: *Kelly green*, also known as *grass green* or *pigment green*, is achieved by mixing cyan and yellow pigments in equal proportions.

Shamrock Green (Irish Green): *Shamrock green* is the color of green used in the flag of Ireland, and therefore it is also called *Irish green*. It represents the color of Shamrocks in what is poetically called the "Emerald Isle" for its emerald-colored vegetation. This green is legally defined as Pantone 347,[2] a proprietary color system which does not have a direct equivalent in sRGB. It is customary in both Ireland and the United States to wear this shade of green, or any shade of green that one prefers, on St. Patrick's Day, March 17, even if one is not of Irish descent.

Chlorophyll is responsible for the

Green in Islam: The color in this form is the shade of green used in the Flag of the Organization of the Islamic Conference. Islam used/uses this shade of green symbolically because the tribe of the prophet Muhammad had a green banner and because to them green represented paradise (the Persian word for garden) to desert-dwelling Bedouin tribes when they gathered at an oasis.

Office Green (Web Color "Green"): *Office green*, was the original color designated as "green" for computer displays in the 1980s. It was apparently chosen because it is the color of the green-colored pencils used by accountants and the color of green office file cabinets.

green color in plants. This lemon will gradually turn yellow as it ripens.

Green in Nature

- Green is common in nature, especially in plants. Many plants are green mainly because of a complex chemical known as chlorophyll which is involved in photosynthesis.
- Some animals are green: these include some frogs, toads, some turtles some lizards and amphibians, some snakes, some birds such as parrots, caterpillars and some insects such as praying mantids.
- Green algae and green plankton are important food sources at the bottom of the food chain.

Green in Human Culture		
Advertising	**Agriculture**	**Architecture**
▪ In advertising, the Jolly Green Giant is a character used to advertise vegetables.	▪ The Green Revolution is a term used to describe the transformation of agriculture in many developing nations that led to significant increases in agricultural production between the 1940s and 1960s.	▪ Green architecture is designing buildings in accordance with ecological principles.
City Planning	**Comic Books**	**Computers**
▪ In City Planning, parks are called *green space*. A greenbelt is a zone encircling a metropolitan area reserved for nature preserves.	▪ The Green Lantern is a popular DC Comics superhero character. ▪ Green Arrow is a DC character as well. ▪ The Marvel Comics hero The Incredible Hulk is green-skinned. ▪ The Green Goblin is a Spider-Man villain. ▪ The Green Hornet is a comic-book crime fighter perhaps better known for his appearances on radio serials and a 1960s TV series.	▪ In computers, the *Green Screen* was the common name for a monochrome CRT computer display using a green P1 Phosphor screen.
Cultural Expressions	**Environmentalism**	**Film and Television**
▪ Envy is called the *green-eyed monster* (after a phrase in Shakespeare's *Othello*). ▪ An inexperienced person is	▪ Green is used to mean environmentally friendly. For example, green cars are vehicles that have extremely low emissions	▪ *Soylent Green* is a 1973 horror/science fiction film, named for the green-colored food that is its central plot element.

sometimes known as *green*, probably by analogy to unripe (i.e. unready, immature) fruit. The word *greenhorn* also refers to an inexperienced person. Synonym, "greenhorn". ▪ Someone who works well with plants is said to have a *green thumb*. ▪ A physically-ill person is said to look *green around the gills*.	that are not harmful to the environment. The different types of green cars include hybrid, electric, ethanol, biodiesel, natural gas, and high MPG gasoline cars.	▪ In the TV series *Power Rangers* and its Japanese counterpart, *Super Sentai*, green is a color worn by Power Rangers or Super Sentai members. They're interchangeable with black, and it, along with black are seen to be the macho ones and are always male.
Finance	**Firefighting**	**Flags**
▪ In the United States, green symbolizes money the color on the back of U.S. currency, giving rise to the slang term greenback for cash. Therefore, in areas that use the U.S. Dollar as currency, green carries a connotation of money, wealth, and capitalism. This is especially true in the U.S., but the use of the dollar worldwide makes green a worldwide symbol of wealth, along with the color gold. ▪ In North American stock markets, green is used to denote a rise in stock prices. In East Asian stock markets, however, green is used to denote a drop in stock prices.	▪ Fire escape exit signs are green in Puerto Rico, but red in Mexico. In America, they can be either green or red.	▪ The flag of Libya is plain green (the traditional color of Islam), the only current national flag of a single color.
Folklore	**Heraldry**	**History**
▪ Green is thought to be an unlucky color in British and British-derived cultures[3], where green cars, wedding dresses, and theatre costumes are all the objects of superstition.[4]	▪ In heraldry, green is called vert.	▪ A *Green Party* (or Faction) existed in the Byzantine Empire for a while, but of course it had nothing to do with modern Greens. Rather, it developed out of a kind of chariot racing fan club whose drivers used the color green to distinguish themselves

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		from the opposing *Blue Party*. The *Green Party* represented the "liberals" (artisans, workmen, and small shopkeepers), whereas the *Blue Party* represented the "conservatives" (the military, the wealthy merchants, and the Imperial bureaucracy).[5]
Holidays	**Linguistics**	**Literature**
▪ Green is one of the Christmas colors, usually with red and sometimes also with white and gold and/or silver. ▪ Green represents St. Patrick's Day.	▪ Green is the symbol of the Esperanto language. The color is particularly associated with the green star, and is seen too on the Esperanto flag.	▪ The Middle English poem Sir Gawain and the Green Knight has a character who is entirely green. ▪ In The Wizard of Oz, Dorothy and her friends must travel to the Emerald City to meet the famous wizard. ▪ In Dante Alighieri's *Divine Comedy*, green is the color used to symbolize hope. ▪ In the science fiction novels of Robert A. Heinlein, the *planetary anthem* of Earth is called "The Green Hills of Earth". ▪ Aliens (of the extraterrestrial variety) are sometimes referred to metaphorically in general as *little green men* (even though, of course, they are visualized as being many different colors in stories, comic books, films, video games, or TV shows depicting them).
Medicine	**Military**	**Music**
▪ In Western culture the color green is often used as a symbol of sickness and/or nausea. Cartoons often show a character as being sick with a green face. However in many	▪ In the United States Army, green is the color of the Military Police, whereas jungle green is the color of the United States Army Special Forces or "Green Berets".	▪ Green Day is a band that was part of the early 90's punk resurgence. ▪ *Green Green Grass of Home* (Claude "Curly" Putman Jr.) is a country song originally made

Latin cultures green portrays health and growth and illness is associated more with red. ▪ For patients being treated with Medical marijuana, *Green* is a slang term for cannabis, due to the color of the plant material. ▪ Substances that may impart a greenish hue to one's skin include biliverdin, the green pigment in bile, and ceruloplasmin, a protein that carries copper ions in chelation.	▪ Because of its camouflage properties, green is typically used for the field uniforms for many military services. It is also used as the dress uniform for many land forces and marines. ▪ In many countries, especially those in the former Soviet bloc, green is the color of the border guard. ▪ "Being Green" can either mean someone who is new or someone who is overwhelmed and prone to desertion. ▪ The Green Zone is a 10 km² (4 mile²) area in central Baghdad that was the center of the Coalition Provisional Authority and remains the center of United States and other international military presence in the city. ▪ Night vision goggles use electro-optical tubes that amplify very low levels of light several thousand times using an image intensifier. They tint the picture green. The color green is chosen because the human eye is most sensitive and able to discern the most shades in green.	popular by Tom Jones in 1966 . ▪ *Bein' Green* — a popular song by Kermit the Frog. ▪ *The Green Album* is an album by the rock band Weezer, released in 2001. ▪ *Little Green* is a song by Joni Mitchell.
National Colors	**New Age Philosophy**	**Philosophy**
▪ Green is a symbol of Ireland, which is often referred to as "the Emerald Isle". The color is particularly identified with the republican and nationalist traditions in modern times. It is used this way on the flag of the Republic of Ireland, in balance with white and the	▪ In the metaphysics of the *New Age Prophetess*, Alice A. Bailey, in her system called the Seven Rays which classifies humans into seven different metaphysical personality types, the *third ray* of *creative intelligence* is represented by the color *green*.	▪ Green is the color symbolizing earth, nature, and in a broader sense, life. ▪ In Ancient China, green was the symbol of East and Wood, one of the main five colors. ▪ The emotion of envy is traditionally symbolized by the color green.

Protestant orange. This pattern of green, white, and orange is also seen in Niger and Côte d'Ivoire. ▪ Green, white, and red are the colors of Mexico, Bulgaria, Italy, Hungary, Wales, and Iran. ▪ Green and yellow are colors of Brazil, Jamaica, South Africa, Ghana, Lithuania, Australia, Senegal, Mali, Ethiopia, Togo, Guinea, Benin, and Zimbabwe.	▪ Green is used to symbolically represent the fourth, heart chakra (Anahata) . ▪ Psychics who claim to be able to observe the aura with their third eye report that someone with a green aura is typically someone who is in an occupation related to health, such as a doctor or nurse, as well as people who are lovers of nature and the outdoors. [6]	
Politics	**Religion**	**Sexuality**
▪ The Green Party is any of various political parties emphasizing environmental issues, grassroots democracy, pacifism, and social justice. The environmental lobby or ecology movement uses green because of its common occurrence in nature. Greenpeace, an ecological group, uses green because of its association with life and verdancy. Europeans who carry this into the political realm are called Greens: There are political parties known as "Green Parties" in over one hundred countries throughout the world (beginning primarily in Europe, though similar parties have taken root around the world). The more generic term "green party" is used for parties that emphasize environmentalism, but it is increasingly out of favour as the Global Greens have succeeded in uniting almost all such parties	▪ Green is considered the traditional color of Islam, likewise because of its association with nature. ▪ Muhammad is reliably quoted in a hadith as saying that "water, greenery, and a beautiful face" were three universally good things. ▪ In the Qur'an, sura Al-Insan, believers in Allah in Jannah wear fine green silk. [7][8] ▪ Al-Khidr (*The Green One*) is a Muslim Saint, who, it is believed, appeared to Moses. ▪ Bartholomew I of Constantinople is often referred to as "the Green Patriarch" because of the support he has caused the Ecumenical Patriarchate to place for maintenance and protection of the environment. ▪ In the Roman Catholic church, green is a traditional color of the	▪ In high schools in the United States during the 1960s, it was widely believed that if someone wore green on Thursdays, it meant that they were homosexual.[9] ▪ In modern-day United States high schools, to wear green on a Thursday is believed to mean that the wearer is horny.

under a Global Green Charter. In the UK the ecology party became the Green Party. ▪ In the United States, especially in the state of Minnesota, green has been used by many Democratic candidates (blue, white, gold and green colors show up frequently in official state imagery in Minnesota), though it does not necessarily symbolize adherence to Green principles. Minnesota Democratic-Farmer-Labor Party Politicians to use green symbolically include U.S. Senator Amy Klobuchar, U.S. Representative Keith Ellison and late U.S. Senator Paul Wellstone. Wellstone was frequently and famously sympathetic to green causes. ▪ The Pan-Green Coalition in Taiwan. ▪ Green is the color generally associated with Plaid Cymru, the Welsh political party — but not for reasons of its political ideology. ▪ The flag of Hamas is green, symbolising their Islamist ideology.	sacred science of canon law. Also, Roman Catholic clergy wear green vestments at liturgical celebrations during Ordinary Time. ▪ In the Eastern Catholic Church, green is the color of Pentecost.	
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Shades of Green

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						Olive			

Jade	**Jungle**	**Lime**	**Moss**	**Myrtle**	**Olive**	**Drab**	**Pear**	**Pine**	**Sea**
Spring	**Swamp**	**Tea**	**Forest**	**Chartreuse Yellow**	**Harlequin**	**Office**	**Lime Pulp**	**Hunter**	**Kelly**
		Shamrock	**In Islam**	**Lime**	**Persian**	**British Racing**	**Spring Bud**		

Visible (Optical) Spectrum					
Violet	Blue	Green	Yellow	Orange	Red

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