

APPAREL PRODUCTION

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Chapter 1

Origin of Clothing

There is no easy way to determine when clothing was first developed, but some information has been inferred by studying lice. The body louse specifically lives in clothing and diverged from head lice about 107,000 years ago, suggesting that clothing existed at that time. Another theory is that modern humans are the only survivors of several species of primates who may have worn clothes and that clothing may have been used as long as 650 thousand years ago. Other louse-based estimates put the introduction of clothing at around 42,000–72,000 BP.

Head louse

The head louse (Pediculus humanus capitis) is an obligate ectoparasite of humans. Head lice are wingless insects spending their entire life on the human scalp and feeding exclusively on

human blood. Humans are the only known hosts of this specific parasite, while chimpanzees host a closely related species, Pediculus schaeffi. Other species of lice infest most orders of mammals and all orders of birds.

Like all lice, head lice differ from other hematophagic ectoparasites such as the flea in that lice spend their entire life cycle on a host. Head lice cannot fly, and their short stumpy legs render them incapable of jumping, or even walking efficiently on flat surfaces.

The non-disease-carrying head louse differs from the related disease-carrying body louse (Pediculus humanus humanus) in preferring to attach eggs to scalp hair rather than to clothing. The two subspecies are morphologically almost identical but do not normally interbreed, although they will do so in laboratory conditions. From genetic studies, they are thought to have diverged as subspecies about 30,000–110,000 years ago, when many humans began to wear a significant amount of clothing. A much more distantly related species of hair-clinging louse, the pubic or crab louse (Pthirus pubis), also infests humans. It is visually different from the other two species and is much closer in appearance to the lice which infest other primates. Lice infestation of any part of the body is known as pediculosis.

Head lice (especially in children) have been, and still are, subject to various eradication campaigns. Unlike body lice, head lice are not the vectors of any known diseases. Except for rare

secondary infections that result from scratching at bites, head lice are harmless, and they have been regarded by some as essentially a cosmetic rather than a medical problem. It has even been suggested that head lice infections might be beneficial in helping to foster a natural immune response against lice which helps humans in defense against the far more dangerous body louse, which is capable of transmission of dangerous diseases.

Adult morphology

Head

One pair of antennae, each with five segments, protrude from the insect's head. Head lice also have one pair of eyes. Eyes are present in all species within Pediculidae (the family of which the head louse is a member) but are reduced or absent in most other members of the Anoplura suborder. Like other members of Anoplura, head lice mouth parts are highly adapted for piercing skin and sucking blood. These mouth parts are retracted into the insect's head except during feeding. Head louse gripping a human hair

Six legs project from the fused segments of the thorax. As is typical in Anoplura, these legs are short and terminate with a single claw and opposing "thumb".Between its claw and thumb, the louse grasps the hair of its host. With their short legs and large claws, lice are well adapted to clinging to the hair of their host. These adaptations leave them incapable of jumping, or even walking efficiently on flat surfaces. Lice can climb up strands of hair very quickly, allowing them to move quickly and reach another host.

Abdomen

There are seven visible segments of the louse abdomen. The first six segments each have a pair of spiracles through which the insect breathes. The last segment contains the anusand (separately) the genitalia.

Gender differences

In male lice, the front two legs are slightly larger than the other four. This specialized pair of legs is used for holding the female during copulation. Males are slightly smaller than females and are characterized by a pointed end of the abdomen and a well-developed genital apparatus visible inside the abdomen. Females are characterized by two gonopods in the shape of a W at the end of their abdomen.

Louse eggs

Like most insects, head lice are oviparous. Females lay about 3-4 eggs per day. Louse eggs are attached near the base of a host hair shaft. Egg-laying behavior is temperature dependent and likely seeks to place the egg in a location that will be conducive to proper embyro development (which is, in turn, temperature dependent). In cool climates, eggs are generally laid within 3–5 mm of the scalp surface. In warm climates, and especially the tropics, eggs may be laid 6 inches (15 cm) or more

To attach an egg, the adult female secretes a glue from her reproductive organ. This glue quickly hardens into a "nit sheath" that covers the hair shaft and large parts of the egg except for the operculum, a cap through which the embryo breathes. The glue was previously thought to bechitin-based, but more recent studies have shown it to be made of proteins similar to hair keratin.

Each egg is oval-shaped and about 0.8 mm in length. They are bright, transparent, tan to coffeecolored so long as they contain an embryo but appear white after hatching. Typically, a hatching time of six to nine days after oviposition is cited by authors. After hatching, the louse nymph leaves behind its egg shell (usually known as nit), still attached to the hair shaft. The empty egg shell remains in place until physically removed by abrasion or the host, or until it slowly disintegrates, which may take 6 and more months.

Nits

The term nit refers to an egg without embryo or a dead egg. With respect to eggs, this rather broad definition includes the following: Accordingly, on the head of an infested individual the following eggs could be found:

- Viable eggs that will eventually hatch
- Remnants of already-hatched eggs (nits)
- Nonviable eggs (dead embryo) that will never hatch

This has produced some confusion in, for example, school policy (see The "no-nit" policy) because, of the three items listed above, only eggs containing viable embryos have the potential

to infest or reinfest a host. Some authors have reacted to this confusion by restricting the definition of nit to describe only a hatched or nonviable egg:

In many languages the terms used for the hatched eggs, which were obvious for all to see, have subsequently become applied to the embryonated eggs that are difficult to detect. Thus the term "nit" in English is often used for both. However, in recent years my colleagues and I have felt the need for some simple means of distinguishing between the two without laborious qualification. We have, therefore, come to reserve the term "nit" for the hatched and empty egg shell and refer to the developing embryonated egg as an "egg".

-Ian F. Burgess (1995) The empty eggshell, termed a nit...

-J. W. Maunder (1983)...nits (dead eggs or empty egg cases)...

-Kosta Y. Mumcuoglu and others (2006)

Others have retained the broad definition while simultaneously attempting to clarify its relevance to infestation:

In the United States the term "nit" refers to any egg regardless of its viability.

—Terri Lynn Meinking (1999) Because nits are simply egg casings that can contain a developing embryo or be empty shells, not all nits are infective.

-L. Keoki Williams and others (2001) Development and nymphs

Head lice, like other insects of the order Phthiraptera, are hemimetabolous. Newly hatched nymphs will moult three times before reaching the sexually-mature adult stage. Thus, mobile head lice populations contain members of up to four developmental stages: three nymphal instars, and the adult (imago). Metamorphosis during head lice development is subtle. The only visible differences between different instars and the adult, other than size, is the relative length of the abdomen, which increases with each molt. Aside from reproduction, nymph behavior is similar to the adult. Nymphs feed only on human blood (hematophagia), and cannot survive long away from a host.

The time required for head lice to complete their nymph development to the imago depends on feeding conditions. At minimum, eight to nine days is required for lice having continuous access to a human host. This experimental condition is most representative of head lice conditions in the

wild. Experimental conditions where the nymph has more limited access to blood produces more prolonged development, ranging from 12 to 24 days.

Nymph mortality in captivity is high—about 38%—especially within the first two days of life. In the wild, mortality may instead be highest in the third instar. Nymph hazards are numerous. Failure to completely hatch from the egg is invariably fatal and may be dependent on the humidity of the egg's environment. Death during molting can also occur, although it is reportedly uncommon. During feeding, the nymph gut can rupture, dispersing the host's blood throughout the insect. This results in death within a day or two. It is unclear if the high mortality recorded under experimental conditions is representative of conditions in the wild.

Reproduction

Adult head lice reproduce sexually, and copulation is necessary for the female to produce fertile eggs. Parthenogenesis, the production of viable offspring by virgin females, does not occur in Pediculus humanus. Pairing can begin within the first 10 hours of adult life. After 24 hours, adult lice copulate frequently, with mating occurring during any period of the night or day. Mating attachment frequently lasts more than an hour. Young males can successfully pair with older females, and vice versa.

Experiments with Pediculus humanus humanus (body lice) emphasize the attendant hazards of lice copulation. A single young female confined with six or more males will die in a few days, having laid very few eggs. Similarly, death of a virgin female was reported after admitting a male to her confinement. The female laid only one egg after mating, and her entire body was tinged with red—a condition attributed to rupture of the alimentary canal during the sexual act. Old females frequently die following, if not during, intercourse. Lifespan and colony persistence

The number of children per family, the sharing of beds and closets, hair washing habits, local customs and social contacts, healthcare in a particular area (e.g. school) and socioeconomic status were found to be significant factors in head louse infestation. Girls are two to four times more frequently infested than boys. Children between 4 and 14 years of age are the most frequently infested group. Behavior

Feeding

All stages are blood-feeders and bite the skin four to five times daily to feed. They inject saliva which contains an anti-coagulant and suck blood. The digested blood is excreted as dark red frass. Position on host

Although any part of the scalp may be colonized, lice favor the nape of the neck and the area behind the ears, where the eggs are usually laid. Head lice are repelled by light and will move towards shadows or dark-colored objects in their vicinity.

Migration

Lice have no wings or powerful legs for jumping, so they move by using their claw-like legs to transfer from hair to hair. Normally head lice infest a new host only by close contact between individuals, making social contacts among children and parent-child interactions more likely routes of infestation than shared combs, hats, brushes, towels, clothing, beds or closets. Head-to-head contact is by far the most common route of lice transmission. Distributio About 6–12 million people, mainly children, are treated annually for head lice in the United States alone. High levels of louse infestations have also been reported from all over the world, including Israel, Denmark, Sweden, UK, France, and Australia. Head lice can live off the head, for example on soft furnishings such as pillow cases, on hairbrushes, or on coat hoods for up to 48 hours.

Treatment

Main article: Treatment of human head lice

There are many chemical and pesticide treatments available that aim to kill the louse, however these often do not affect the eggs (nits). Wet combing is one of the most effective treatments, but persistence is required due to the life cycle of the louse, and combing is recommended once every 3–7 days.

Another treatment is to use controlled, heated air to effectively dehydrate the lice and their eggs. Applying a blow dryer with proper technique works just as well on eggs, but not as well on hatched lice.

After treatment, patients are often instructed to wash all bedding and vacuum all areas the head may have been such as car seats, coat hoods and sofas, but this is not always necessary since adult lice will die within 2 days without a blood meal, and newly hatched lice die within minutes of hatching. Combs and brushes may be deloused in boiling water for 5–10 minutes. Items may also be frozen for 24 hours well below the freezing point of water to ensure that ice crystals form within the cells of the lice.

Prevention

Keeping hair neatly tied up is preventive. A pony tail which is then plaited ensures no loose hairs for lice to get hold of. The hair may be washed and brushed between tying to ensure the hair is manageable. Lice combing may be repeated for an entire family once a week while children are at school age. To prevent infections during child "sleep overs" at friends, they can be given their own pillow case and told to 'top and tail' (i.e. lie in bed with their heads at opposite ends).

Archaeogenetics

Analysis of the DNA of lice found on Peruvian mummies may indicate that some diseases (like typhus) may have passed from the New World to the Old World, instead of the other way around.

Genome

The sequencing of the genome of the body louse was first proposed in the mid-2000s and the annotated genome was published in 2010. An analysis of the body and head louse transcriptomes revealed these two organisms are extremely similar genetically.

Chapter 2

Functions

A baby wearing many items of winter clothing: headband, cap, fur-lined coat, shawl and sweater

The most obvious function of clothing is to improve the comfort of the wearer, by protecting the wearer from the elements. In hot climates, clothing provides protection from sunburn or wind damage, while in cold climates its thermal insulation properties are generally more important. Shelter usually reduces the functional need for clothing. For example, coats, hats, gloves, and other superficial layers are normally removed when entering a warm home, particularly if one is residing or sleeping there. Similarly, clothing has seasonal and regional aspects, so that thinner materials and fewer layers of clothing are generally worn in warmer seasons and regions than in colder ones.

Clothing performs a range of social and cultural functions, such as individual, occupational and sexual differentiation, and social status. In many societies, norms about clothing reflect standards of modesty, religion, gender, and social status. Clothing may also function as a form of adornment and an expression of personal taste or style.

Clothing can and has in history been made from a very wide variety of materials. Materials have ranged from leather and furs, to woven materials, to elaborate and exotic natural and synthetic fabrics. Not all body coverings are regarded as clothing. Articles carried rather than worn (such as purses), worn on a single part of the body and easily removed (scarves), worn purely for adornment (jewelry), or those that serve a function other than protection (eyeglasses), are normally considered accessories rather than clothing, as are footwear and hats.

Clothing protects against many things that might injure the uncovered human body. Clothes protect people from the elements, including rain, snow, wind, and other weather, as well as from the sun. However, clothing that is too sheer, thin, small, tight, etc., offers less protection. Clothes also reduce risk during activities such as work or sport. Some clothing protects from specific environmental hazards, such as insects, noxious chemicals, weather, weapons, and contact with

abrasive substances. Conversely, clothing may protect the environment from the clothing wearer, as with doctors wearing medical scrubs.

Humans have shown extreme inventiveness in devising clothing solutions to environmental hazards. Examples include: space suits, air conditioned clothing, armor, diving suits, swimsuits, bee-keeper gear, motorcycle leathers, high-visibility clothing, and other pieces of protective clothing. Meanwhile, the distinction between clothing and protective equipment is not always clear-cut—since clothes designed to be fashionable often have protective value and clothes designed for function often consider fashion in their design. Wearing clothes also has social implications. They cover parts of the body that social norms require to be covered, act as a form of adornment, and serve other social purposes

Religion

Religion is an organized collection of beliefs, cultural systems, andworld views that relate humanity to an order of existence. Many religions have narratives, symbols, and sacred histories that are intended to explain the meaning of life and/or to explain the origin of life or the Universe. From their beliefs about the cosmos and human nature, people derive morality, ethics, religious laws or a preferred lifestyle. According to some estimates, there are roughly 4,200 religions in the world.

Many religions may have organized behaviors, clergy, a definition of what constitutes adherence or membership, holy places, ands criptures. The practice of a religion may also include rituals, sermons, commemoration or veneration of a deity, gods or goddesses, sacrifices, festivals, feasts, trance, initiations, funerary services, matrimonial services, meditation, prayer, music, art, dance, public service or other aspects of human culture. Religions may also contain mythology.

The word religion is sometimes used interchangeably with faith, belief system or sometimes set of duties; however, in the words of Émile Durkheim, religion differs from private belief in that it is "something eminently social". A global 2012 poll reports that 59% of the world's population is religious, and 36% are not religious, including 13% who are atheists, with a 9 percent decrease in religious belief from 2005. On average, women are more religious than men. Some people

follow multiple religious or multiple religious principles at the same time, regardless of whether or not the religious principles they follow traditionally allow for syncretism.

Beekeeping

Beekeeping (or apiculture, from Latin: apis "bee") is the maintenance of honey beecolonies, commonly in hives, by humans. A beekeeper (or apiarist) keeps bees in order to collect honey and other products of the hive (including beeswax, propolis, pollen, androyal jelly), to pollinate crops, or to produce bees for sale to other beekeepers. A location where bees are kept is called an apiary or "bee yard".

Depictions of humans collecting honey from wild bees date to 15,000 years ago, efforts to domesticate them are shown in Egyptian art around 4,500 years ago. Simple hives and smoke were used and honey was stored in jars, some of which were found in the tombs of pharaohs such as Tutankhamun. It wasn't until the 18th century that European understanding of the colonies and biology of bees allowed the construction of the moveable comb hive so that honey could be harvested without destroying the entire colony.

History of beekeeping

At some point humans began to attempt to domesticate wild bees in artificial hives made from hollow logs, wooden boxes, pottery vessels, and woven straw baskets or "skeps". Honeybees were kept in Egypt from antiquity. On the walls of the sun temple of Nyuserre Ini from the Fifth Dynasty, before 2422 BCE, workers are depicted blowing smoke into hives as they are removing honeycombs. Inscriptions detailing the production of honey are found on the tomb of Pabasa from the Twenty-sixth Dynasty (c. 650 BCE), depicting pouring honey in jars and cylindrical hives. Sealed pots of honey were found in the grave goods of pharaohs such as Tutankhamun.

There was an unsuccessful attempt to introduce bees to Mesopotamia in the 8th century BCE by Shamash-resh-uşur, the governor of Mari and Suhu. His ambitious plans were detailed in a stele of 760 BCE:

In prehistoric Greece (Crete and Mycenae), there existed a system of high-status apiculture, as can be concluded from the finds of hives, smoking pots, honey extractors and other beekeeping paraphernalia in Knossos. Beekeeping was considered a highly valued industry controlled by beekeeping overseers—owners of gold rings depicting apiculture scenes rather than religious ones as they have been reinterpreted recently, contra Sir Arthur Evans.

Archaeological finds relating to beekeeping have been discovered at Rehov, a Bronze and Iron Age archaeological site in the Jordan Valley, Israel. Thirty intact hives, made of straw and unbaked clay, were discovered by archaeologist Amihai Mazar of the Hebrew University of Jerusalem in the ruins of the city, dating from about 900 BCE. The hives were found in orderly rows, three high, in a manner that could have accommodated around 100 hives, held more than 1 million bees and had a potential annual yield of 500 kilograms of honey and 70 kilograms of beeswax, according to Mazar, and are evidence that an advanced honey industry existed in ancient Israel 3,000 years ago. Ezra Marcus, an expert from the University of Haifa, said the finding was a glimpse of ancient beekeeping seen in texts and ancient art from the Near East.

In ancient Greece, aspects of the lives of bees and beekeeping are discussed at length by Aristotle. Beekeeping was also documented by the Roman writers Virgil, Gaius Julius Hyginus, Varro, and Columella.

The art of beekeeping appeared in ancient China for a long time and hardly traceable to its origin. In the book "Golden Rules of Business Success" written by Fan Li (or Tao Zhu Gong) during the Spring and Autumn Period there are some parts mentioning the art of beekeeping and the importance of the quality of the wooden box for bee keeping that can affect the quality of its honey.

The ancient Maya domesticated a separate species of stingless bee.

Origins

There are more than 20,000 species of wild bees. Many species are solitary (e.g., mason bees), and many others rear their young in burrows and small colonies, (e.g., bumblebees). Beekeeping, or apiculture, is concerned with the practical management of the social species of honey bees,

which live in large colonies of up to 100,000 individuals. In Europe and America the species universally managed by beekeepers is the Western honey bee (Apis mellifera). This species has several sub-species or regional varieties, such as the Italian bee (Apis mellifera ligustica), European dark bee (Apis mellifera mellifera), and the Carniolan honey bee (Apis mellifera carnica). In the tropics, other species of social bee are managed for honey production, including

Apis cerana.

All of the Apis mellifera sub-species are capable of inter-breeding and hybridizing. Many bee breeding companies strive to selectively breed and hybridize varieties to produce desirable qualities: disease and parasite resistance, good honey production, swarming behaviour reduction, prolific breeding, and mild disposition. Some of these hybrids are marketed under specific brand names, such as the Buckfast Bee or Midnite Bee. The advantages of the initial F1 hybrids produced by these crosses include: hybrid vigor, increased honey productivity, and greater disease resistance. The disadvantage is that in subsequent generations these advantages may fade away and hybrids tend to be very defensive and aggressive.

Wild honey harvesting

Collecting honey from wild bee colonies is one of the most ancient human activities and is still practiced by aboriginal societies in parts of Africa, Asia, Australia, and South America. Some of the earliest evidence of gathering honey from wild colonies is from rock paintings, dating to around 13,000 BCE. Gathering honey from wild bee colonies is usually done by subduing the bees with smoke and breaking open the tree or rocks where the colony is located, often resulting in the physical destruction of the nest location.

Study of honey bees

It was not until the 18th century that European natural philosophers undertook the scientific study of bee colonies and began to understand the complex and hidden world of bee biology. Preeminent among these scientific pioneers were Swammerdam, René Antoine Ferchault de Réaumur, Charles Bonnet, and the blind Swiss scientist Francois Huber. Swammerdam and Réaumur were among the first to use a microscope and dissection to understand the internal

biology of honey bees. Réaumur was among the first to construct a glass walled observation hive to better observe activities within hives. He observed queens laying eggs in open cells, but still had no idea of how a queen was fertilized; nobody had ever witnessed the mating of a queen and drone and many theories held that queens were "self-fertile," while others believed that a vapor or "miasma" emanating from the drones fertilized queens without direct physical contact. Huber was the first to prove by observation and experiment that queens are physically inseminated by drones outside the confines of hives, usually a great distance away.

Following Réaumur's design, Huber built improved glass-walled observation hives and sectional hives that could be opened like the leaves of a book. This allowed inspecting individual wax combs and greatly improved direct observation of hive activity. Although he went blind before he was twenty, Huber employed a secretary, Francois Burnens, to make daily observations, conduct careful experiments, and keep accurate notes over more than twenty years. Huber confirmed that a hive consists of one queen who is the mother of all the female workers and male drones in the colony. He was also the first to confirm that mating with drones takes place outside of hives and that queens are inseminated by a number of successive matings with male drones, high in the air at a great distance from their hive. Together, he and Burnens dissected bees under the microscope and were among the first to describe the ovaries and spermatheca, or sperm store, of queens as well as the penis of male drones. Huber is universally regarded as "the father of modern bee-science" and his "Nouvelles Observations sur Les Abeilles (or "New Observations on Bees") revealed all the basic scientific truths for the biology and ecology of honeybees.

Invention of the movable comb hive

Early forms of honey collecting entailed the destruction of the entire colony when the honey was harvested. The wild hive was crudely broken into, using smoke to suppress the bees, the honeycombs were torn out and smashed up — along with the eggs, larvae and honey they contained. The liquid honey from the destroyed brood nest was strained through a sieve or basket. This was destructive and unhygienic, but for hunter-gatherer societies this did not matter, since the honey was generally consumed immediately and there were always more wild colonies to exploit. But in settled societies the destruction of the bee colony meant the loss of a valuable resource; this drawback made beekeeping both inefficient and something of a "stop and start"

activity. There could be no continuity of production and no possibility of selective breeding, since each bee colony was destroyed at harvest time, along with its precious queen.

During the medieval period abbeys and monasteries were centers of beekeeping, since beeswax was highly prized for candles and fermented honey was used to make alcoholic mead in areas of Europe where vines would not grow. The 18th and 19th centuries saw successive stages of a revolution in beekeeping, which allowed the bees themselves to be preserved when taking the harvest.

Intermediate stages in the transition from the old beekeeping to the new were recorded for example by Thomas Wildman in 1768/1770, who described advances over the destructive old skep-based beekeeping so that the bees no longer had to be killed to harvest the honey. Wildman for example fixed a parallel array of wooden bars across the top of a straw hive or skep (with a separate straw top to be fixed on later) "so that there are in all seven bars of deal" in a 10-inchdiameter (250 mm) hive "to which the bees fix their combs." He also described using such hives in a multi-storey configuration, foreshadowing the modern use of supers: he described adding (at a proper time) successive straw hives below, and eventually removing the ones above when free of brood and filled with honey, so that the bees could be separately preserved at the harvest for a following season. Wildman also described a further development, using hives with "sliding frames" for the bees to build their comb, foreshadowing more modern uses of movable-comb hives. Wildman's book acknowledged the advances in knowledge of bees previously made by Swammerdam, Maraldi, and de Réaumur-he included a lengthy translation of Réaumur's account of the natural history of bees-and he also described the initiatives of others in designing hives for the preservation of bee-life when taking the harvest, citing in particular reports from Brittany dating from the 1750s, due to Comte de la Bourdonnaye.

The 19th century saw this revolution in beekeeping practice completed through the perfection of the movable comb hive by the American Lorenzo Lorraine Langstroth. Langstroth was the first person to make practical use of Huber's earlier discovery that there was a specific spatial measurement between the wax combs, later called the bee space, which bees do not block with wax, but keep as a free passage. Having determined this bee space (between 5 and 8 mm, or 1/4 to 3/8"), Langstroth then designed a series of wooden frames within a rectangular hive box,

carefully maintaining the correct space between successive frames, and found that the bees would build parallel honeycombs in the box without bonding them to each other or to the hive walls. This enables the beekeeper to slide any frame out of the hive for inspection, without harming the bees or the comb, protecting the eggs, larvae and pupae contained within the cells. It also meant that combs containing honey could be gently removed and the honey extracted without destroying the comb. The emptied honey combs could then be returned to the bees intact for refilling. Langstroth's classic book, The Hive and Honey-bee, published in 1853, described his rediscovery of the bee space and the development of his patent movable comb hive.

The invention and development of the movable-comb-hive fostered the growth of commercial honey production on a large scale in both Europe and the USA (see also Beekeeping in the United States).

Evolution of hive designs

Langstroth's design for movable comb hives was seized upon by apiarists and inventors on both sides of the Atlantic and a wide range of moveable comb hives were designed and perfected in England, France, Germany and the United States. Classic designs evolved in each country: Dadant hives and Langstroth hives are still dominant in the USA; in France the De-Layens trough-hive became popular and in the UK a British National Hive became standard as late as the 1930s although in Scotland the smaller Smith hive is still popular. In some Scandinavian countries and in Russia the traditional trough hive persisted until late in the 20th century and is still kept in some areas. However, the Langstroth and Dadant designs remain ubiquitous in the USA and also in many parts of Europe, though Sweden,Denmark, Germany, France and Italy all have their own national hive designs. Regional variations of hive evolved to reflect the climate, floral productivity and the reproductive characteristics of the various subspecies of native honey bee in each bio-region.

The differences in hive dimensions are insignificant in comparison to the common factors in all these hives: they are all square or rectangular; they all use movable wooden frames; they all consist of a floor, brood-box, honey super, crown-board and roof. Hives have traditionally been constructed of cedar, pine, or cypress wood, but in recent years hives made from injection molded dense polystyrene have become increasingly important.

Hives also use queen excluders between the brood-box and honey supers to keep the queen from laying eggs in cells next to those containing honey intended for consumption. Also, with the advent in the 20th century of mite pests, hive floors are often replaced for part of (or the whole) year with a wire mesh and removable tray.

Pioneers of practical and commercial beekeeping

The 19th century produced an explosion of innovators and inventors who perfected the design and production of beehives, systems of management and husbandry, stock improvement by selective breeding, honey extraction and marketing. Preeminent among these innovators were:

Petro Prokopovych, used frames with channels in the side of the woodwork, these were packed side by side in boxes that were stacked one on top of the other. The bees travelling from frame to frame and box to box via the channels. The channels were similar to the cut outs in the sides of modern wooden sections (1814).

Jan Dzierżon, was the father of modern apiology and apiculture. All modern beehives are descendants of his design.

L. L. Langstroth, revered as the "father of American apiculture", no other individual has influenced modern beekeeping practice more than Lorenzo Lorraine Langstroth. His classic book The Hive and Honey-bee was published in 1853.

Moses Quinby, often termed 'the father of commercial beekeeping in the United States', author of Mysteries of Bee-Keeping Explained.

Amos Root, author of the A B C of Bee Culture, which has been continuously revised and remains in print. Root pioneered the manufacture of hives and the distribution of bee-packages in the United States.

A. J. Cook, author of The Bee-Keepers' Guide; or Manual of the Apiary, 1876.

Dr. C.C. Miller was one of the first entrepreneurs to actually make a living from apiculture. By 1878 he made beekeeping his sole business activity. His book, Fifty Years Among the Bees, remains a classic and his influence on bee management persists to this day.

Major Francesco De Hruschka was an Italian military officer who made one crucial invention that catalyzed the commercial honey industry. In 1865 he invented a simple machine for extracting honey from the comb by means of centrifugal force. His original idea was simply to support combs in a metal framework and then spin them around within a container to collect honey as it was thrown out by centrifugal force. This meant that honeycombs could be returned to a hive undamaged but empty, saving the bees a vast amount of work, time, and materials. This single invention greatly improved the efficiency of honey harvesting and catalysed the modern honey industry.

Walter T. Kelley was an American pioneer of modern beekeeping in the early and mid-20th century. He greatly improved upon beekeeping equipment and clothing and went on to manufacture these items as well as other equipment. His company sold via catalog worldwide and his book, How to Keep Bees & Sell Honey, an introductory book of apiculture and marketing, allowed for a boom in beekeeping following World War II.

In the U.K. practical beekeeping was led in the early 20th century by a few men, pre-eminently Brother Adam and his Buckfast beeand R.O.B. Manley, author of many titles, including Honey Production in the British Isles and inventor of the Manley frame, still universally popular in the U.K. Other notable British pioneers include William Herrod-Hempsall and Gale.

Dr. Ahmed Zaky Abushady (1892–1955), was an Egyptian poet, medical doctor, bacteriologist and bee scientist who was active in England and in Egypt in the early part of the twentieth century. In 1919, Abushady patented a removable, standardized aluminum honeycomb. In 1919 he also founded The Apis Club in Benson, Oxfordshire, and its periodical Bee World, which was to be edited byAnnie D. Betts and later by Dr. Eva Crane. The Apis Club was transitioned to the International Bee Research Association (IBRA). Its archives are held in the National Library of Wales. In Egypt in the 1930s, Abushady established The Bee Kingdom League and its organ,

The Bee Kingdom.

In India, R. N. Mattoo was the pioneer worker in starting beekeeping with Indian honeybee, Apis cerana indica in early 1930s. Beekeeping with European honeybee, Apis mellifera was started by Dr. A. S. Atwal and his team members, O. P. Sharma and N. P. Goyal in Punjab in early 1960s. It remained confined to Punjab and Himachal Pradesh up to late 1970s. Later on in 1982, Dr. R. C. Sihag, working at Haryana Agricultural University, Hisar (Haryana), introduced and established this honeybee in Haryana and standardized its management practices for semi-arid-subtropical climates. On the basis of these practices, Beekeeping with this honeybee could be extended to the rest of the country. Now beekeeping with Apis mellifera predominates in India.

Traditional beekeeping

Fixed comb hives

A fixed comb hive is a hive in which the combs cannot be removed or manipulated for management or harvesting without permanently damaging the comb. Almost any hollow structure can be used for this purpose, such as a log gum, <u>skep</u> or a clay pot. Fixed comb hives are no longer in common use in industrialised countries, and are illegal in some places that require inspection for problems such as varroa and American foulbrood. In many developing countries fixed comb hives are widely used and because they can be made from any locally available material are very inexpensive and appropriate. Beekeeping using fixed comb hives is an essential part of the livelihoods of many communities in poor countries. The charity Bees for Development recognises that local skills to manage bees in fixed comb hives are widespread in Africa, Asia, and South America.

Modern beekeeping

Movable frame hives

In the United States, the Langstroth hive is commonly used. The Langstroth was the first successful top-opened hive with movable frames, and other designs of hive have been based on it. The Langstroth hive was, however, a descendant of Jan Dzierzon's Polish hive designs. In the United Kingdom, the most common type of hive is the British National Hive, which can hold Hoffman, British Standard or popular Manley frames, but it is not unusual to see some other

sorts of hive (Smith, Commercial and WBC, rarely Langstroth). Straw<u>skeps</u>, bee gums, and unframed box hives are now unlawful in most US states, as the comb and brood cannot be inspected for diseases. However, straw skeps are still used for collecting swarms by hobbyists in the UK, before moving them into standard hives.

Top-bar hives

A growing number of amateur beekeepers are adopting various <u>top-bar hives</u> similar to the type commonly found in Africa. Top bar hives were originally used as traditional beekeeping a method in both Greece and Vietnam. These have no frames and the honey-filled comb is not returned to the hive after extraction, as it is in the Langstroth hive. Because of this, the production of honey is likely to be somewhat less than that of a Langstroth hive. Top bar hives are mostly kept by people who are more interested in having bees in their garden than in honey production per se.

Some of the most well known top-bar hives are the Kenyan Top Bar Hive with sloping sides, the Tanzanian Top Bar Hive, which has straight sides and the Vertical Top Bar Hives such as the Warre or "People's Hive" designed by Abbe Warre in the mid-1900s.

The initial costs and equipment requirements are far lower. Often scrap wood or #2 or #3 pine is able to be used with a nice hive as the outcome. Top-bar hives also offer some advantages in interacting with the bees and the amount of weight that must be lifted is greatly reduced. Top-bar hives are being widely used in developing countries in Africa and Asia as a result of the Development program. There are a growing number of beekeepers in the U.S. using various top-bar hives from 2011 onwards.

Protective clothing

While knowledge of the bees is the first line of defense, most beekeepers also wear some protective clothing. Novice beekeepers usually wear gloves and a hooded suit or hat and veil. Experienced beekeepers sometimes elect not to use gloves because they inhibit delicate manipulations. The face and neck are the most important areas to protect, so most beekeepers wear at least a veil.

Defensive bees are attracted to the breath, and a sting on the face can lead to much more pain and swelling than a sting elsewhere, while a sting on a bare hand can usually be quickly removed by fingernail scrape to reduce the amount of venom injected.

The protective clothing is generally light colored (but not colorful) and of a smooth material. This provides the maximum differentiation from the colony's natural predators (bears, skunks, etc.), which tend to be dark-colored and furry.

'Stings' retained in clothing fabric continue to pump out an alarm pheromone that attracts aggressive action and further stinging attacks. Washing suits regularly, and rinsing gloved hands in vinegar minimizes attraction.

Smoker

Smoke is the beekeeper's third line of defense. Most beekeepers use a "smoker"—a device designed to generate smoke from the incomplete combustion of various fuels. Smoke calms bees; it initiates a feeding response in anticipation of possible hive abandonment due to fire. Smoke also masks alarm pheromones released by guard bees or when bees are squashed in an inspection. The ensuing confusion creates an opportunity for the beekeeper to open the hive and work without triggering a defensive reaction. In addition, when a bee consumes honey the bee's abdomen distends, supposedly making it difficult to make the necessary flexes to sting, though this has not been tested scientifically.

Smoke is of questionable use with a swarm, because swarms do not have honey stores to feed on in response. Usually smoke is not needed, since swarms tend to be less defensive, as they have no stores to defend, and a fresh swarm has fed well from the hive.

Many types of fuel can be used in a smoker as long as it is natural and not contaminated with harmful substances. These fuels include hessian, twine, burlap, pine needles, corrugated cardboard, and mostly rotten or punky wood. Indian beekeepers, especially in Kerala, often use coconut fibers as they are readily available, safe, and of negligible expense. Some beekeeping supply sources also sell commercial fuels like pulped paper and compressed cotton, or even aerosol cans of smoke. Other beekeepers use sumac as fuel because it ejects lots of smoke and doesn't have an odor.

Some beekeepers are using "liquid smoke" as a safer, more convenient, alternative. It is a waterbased solution that is sprayed onto the bees from a plastic spray bottle.

Torpor may also be induced by the introduction of chilled air into the hive - while chilled carbon dioxide may have harmful long-term effects.

Effects of stings and of protective measures

Some beekeepers believe that the more stings a beekeeper receives, the less irritation each causes, and they consider it important for safety of the beekeeper to be stung a few times a season. Beekeepers have high levels of antibodies (mainly IgG) reacting to the major antigen of bee venom, phospholipase A2 (PLA). Antibodies correlate with the frequency of bee stings.

The entry of venom into the body from bee-stings may also be hindered and reduced by protective clothing that allows the wearer to remove stings and venom sacs with a simple tug on the clothing. Although the stinger is barbed, a worker bee is less likely to become lodged into clothing than human skin.

Natural beekeeping

The natural beekeeping movement believes that modern beekeeping and agricultural practices, such as crop spraying, hive movement, frequent hive inspections, artificial insemination of queens, routine medication, and sugar water feeding, weaken bee hives.

Practitioners of 'natural beekeeping' tend to use variations of the top-bar hive, which is a simple design that retains the concept of movable comb without the use of frames or foundation. The horizontal top-bar hive, as championed by Marty Hardison, Michael Bush, Philip Chandler, Dennis Murrell and others, can be seen as a modernization of hollow log hives, with the addition of wooden bars of specific width from which bees hang their combs. Its widespread adoption in recent years can be attributed to the publication in 2007 of The Barefoot Beekeeperby Philip Chandler, which challenged many aspects of modern beekeeping and offered the horizontal top-bar hive as a viable alternative to the ubiquitous Langstroth-syle movable-frame hive.

The most popular vertical top-bar hive is probably the Warré hive, based on a design by the French priest Abbé Émile Warré (1867–1951) and popularized by Dr. David Heaf in his English translation of Warré's book L'Apiculture pour Tous as Beekeeping For All.

Urban or backyard beekeeping

Related to natural beekeeping, urban beekeeping is an attempt to revert to a less industrialized way of obtaining honey by utilizing small-scale colonies that pollinate urban gardens. Urban apiculture has undergone a renaissance in the first decade of the 21st century, and urban beekeeping is seen by many as a growing trend; it has recently been legalized in cities where it was previously banned. Paris, Berlin, London, Tokyo, Melbourne and Washington DC are among beekeeping cities.

Some have found that "city bees" are actually healthier than "rural bees" because there are fewer pesticides and greater biodiversity. Urban bees may fail to find forage, however, and homeowners can use their landscapes to help feed local bee populations by planting flowers that provide nectar and pollen. An environment of year-round, uninterrupted bloom creates an ideal environment for colony reproduction.

Bee colonies

Castes

A colony of bees consists of three castes of bee:

- a queen bee, which is normally the only breeding female in the colony;
- a large number of female worker bees, typically 30,000–50,000 in number;
- a number of male drones, ranging from thousands in a strong hive in spring to very few during dearth or cold season.

The queen is the only sexually mature female in the hive and all of the female worker bees and male drones are her offspring. The queen may live for up to three years or more and may be capable of laying half a million eggs or more in her lifetime. At the peak of the breeding season, late spring to summer, a good queen may be capable of laying 3,000 eggs in one day, more than her own body weight. This would be exceptional however; a prolific queen might peak at 2,000 eggs a day, but a more average queen might lay just 1,500 eggs per day. The queen is raised from a normal worker egg, but is fed a larger amount of royal jelly than a normal worker bee, resulting in a radically different growth and metamorphosis. The queen influences the colony by the production and dissemination of a variety of pheromones or "queen substances". One of these

chemicals suppresses the development of ovaries in all the female worker bees in the hive and prevents them from laying eggs.

Mating of queens

The queen emerges from her cell after 15 days of development and she remains in the hive for 3– 7 days before venturing out on a mating flight. Mating flight is otherwise known as 'nuptial flight'. Her first orientation flight may only last a few seconds, just enough to mark the position of the hive. Subsequent mating flights may last from 5 minutes to 30 minutes, and she may mate with a number of male drones on each flight. Over several matings, possibly a dozen or more, the queen receives and stores enough sperm from a succession of drones to fertilize hundreds of thousands of eggs. If she does not manage to leave the hive to mate—possibly due to bad weather or being trapped in part of the hive—she remains infertile and become a *drone layer*, incapable of producing female worker bees. Worker bees sometimes kill a non-performing queen and produce another. Without a properly performing queen, the hive is doomed.

Mating takes place at some distance from the hive and often several hundred feet in the air; it is thought that this separates the strongest drones from the weaker ones, ensuring that only the fastest and strongest drones get to pass on their genes.

Female worker bees

Almost all the bees in a hive are female worker bees. At the height of summer when activity in the hive is frantic and work goes on non-stop, the life of a worker bee may be as short as 6 weeks; in late autumn, when no brood is being raised and no nectar is being harvested, a young bee may live for 16 weeks, right through the winter. During its life a worker bee performs different work functions in the hive, largely dictated by the age of the bee.

Period	Work activity
Days 1-3	Cleaning cells and incubation
Day 3-6	Feeding older larvae

Day 6-10	Feeding younger larvae			
Day 8-16	Receiving nectar and pollen from field bees			
Day 12-18	Wax making and cell building			
Day 14 onwards	Entrance guards; nectar and pollen foraging			

Male bees (drones)

Drones are the largest bees in the hive (except for the queen), at almost twice the size of a worker bee. They do not work, do not forage for pollen or nectar and have no other known function than to mate with new queens and fertilize them on their mating flights. A bee colony generally starts to raise drones a few weeks before building queen cells so they can supersede a failing queen or prepare for swarming. When queen-raising for the season is over, bees in colder climates drive drones out of the hive to die, biting and tearing their legs and wings.

Differing stages of development

Stage of development	Queen	Worker	Drone
Egg	3 days	3 days	3 days
Larva	8 days	10 days	13 days :Successive moults occur within this period 8 to 13 day period
Cell Capped	day 8	day 8	day 10

Pupa	4 days	8 days	8 days
Total	15 days	21 days	24 days

Structure of a bee colony

A domesticated bee colony is normally housed in a rectangular hive body, within which eight to ten parallel frames house the vertical plates of honeycomb that contain the eggs, larvae, pupae and food for the colony. If one were to cut a vertical cross-section through the hive from side to side, the brood nest would appear as a roughly ovoid ball spanning 5-8 frames of comb. The two outside combs at each side of the hive tend to be exclusively used for long-term storage of honey and pollen.

Within the central brood nest, a single frame of comb typically has a central disk of eggs, larvae and sealed brood cells that may extend almost to the edges of the frame. Immediately above the brood patch an arch of <u>pollen</u>-filled cells extends from side to side, and above that again a broader arch of honey-filled cells extends to the frame tops. The pollen is protein-rich food for developing larvae, while honey is also food but largely energy rich rather than protein rich. The nurse bees that care for the developing brood secrete a special food called 'royal jelly' after feeding themselves on honey and pollen. The amount of royal jelly fed to a larva determines whether it develops into a worker bee or a queen.

Apart from the honey stored within the central brood frames, the bees store surplus honey in combs above the brood nest. In modern hives the beekeeper places separate boxes, called 'supers', above the brood box, in which a series of shallower combs is provided for storage of honey. This enables the beekeeper to remove some of the supers in the late summer, and to extract the surplus honey harvest, without damaging the colony of bees and its brood nest below. If all the honey is 'stolen', including the amount of honey needed to survive winter, the beekeeper must replace these stores by feeding the bees sugar or corn syrup in autumn.

Chapter 3

Scholarship

Although dissertations on clothing and its function appear from the 19th century as colonising countries dealt with new environments, concerted scientific research into psycho-social, physiological and other functions of clothing (e.g. protective, cartage) occurred in the first half of the 20th century, with publications such as J. C. Flügel's Psychology of Clothes in 1930, and Newburgh's seminal Physiology of Heat Regulation and The Science of Clothing in 1949. By 1968, the field of environmental physiology had advanced and expanded significantly, but the science of clothing in relation to environmental physiology had changed little. While considerable research has since occurred and the knowledge-base has grown significantly, the main concepts remain unchanged, and indeed Newburgh's book is still cited by contemporary authors, including those attempting to develop thermoregulatory models of clothing development.

John Flügel

John Carl Flügel (13 June 1884 – 6 August 1955), was a British psychologist and psychoanalyst.

Life and career

The English psychoanalyst John Carl Flügel was born in London on 13 June 1884. An honorary fellow of the British Psychological Society and an honorary member of the Indian Psychological Association, he was president of the Programme Committee of the International Congress on Mental Health in 1948 and president of the psychology section of the British Medical Association in 1950.

Flügel's father was German and his mother English, and the family also had close ties with France, and so Flügel learned all three languages as he grew up. Because of a congenital malformation of his feet, however, he did not follow a normal pattern of secondary education. Aged only 17 he attended Oxford University where he studied philosophy and grew interested in hypnotism, becoming a member of Frederick Myers's Society for Psychical Research. He obtained a doctorate in philosophy at Oxford and a doctorate of science from the University of London, where he taught as an auxiliary professor, between 1929 and 1944, in the experimental

psychology laboratory. In 1913 he married Ingeborg Klingberg, who also became a psychoanalyst. They had one daughter.

Flügel was honorary secretary of the British Psychological Society from 1911 to 1920, honorary librarian from 1911 to 1932, and its president from 1932 to 1935. During the First World War he made a number of important contributions to the society.

After undergoing psychoanalysis with Ernest Jones, the two became friends and Flügel became involved, in 1919, in the refounding of the British Psychoanalytical Society. He was also secretary of the International Psychoanalytic Association from 1919 to 1924 and with Ernest Jones helped create the International Journal of Psychoanalysis in 1920. He also helped translate Sigmund Freud's Vorlesungen (Introductory Lectures on Psycho-Analysis; 1916-1917a [1915-1917]).

Flüge died in London on 17 August 1955.

Indian Psychological Association

Other reasons this message may be displayed:

- If a page was recently created here, it may not yet be visible because of a delay in updating the database; wait a few minutes and try the purge function.
- Titles on Wikipedia are **case sensitive** except for the first character; please check alternative capitalizations and consider adding a redirect here to the correct title.
- If the page has been deleted, check the **deletion log**, and see Why was the page I created deleted?.

Case sensitivity

ext sometimes exhibits **case sensitivity**; that is, words can differ in meaning based on differing use of uppercase and lowercaseletters. Words with capital letters do not always have the same meaning when written with lowercase letters. For example, Bill is the first name of former U.S. president William Clinton, who could sign a bill (which is a proposed law that was approved by Congress). And a Polish person can use polish to clean or shine something. In food, the Calorie, with a capital C, is sometimes used to denote 1000calories of energy.

The opposite term of "case-sensitive" is "case-insensitive".

Use in computer systems

In computers, some examples of usually case-sensitive data are:

- usernames
- passwords
- filenames
- tags
- commands
- variable names
- searching for a text string within electronic text

Some computer languages are case-sensitive for their identifiers (Java, C++, C#, C,Verilog, Ruby¹ and XML). Others are case-insensitive (i.e., not case-sensitive), such as Ada, most BASICs (an exception being BBC BASIC), Fortran, SQL and Pascal. There are also languages, such as Haskell, Prolog and Go, in which the capitalization of an identifier encodes information about itssemantics.

A text search operation could be case-sensitive or case-insensitive, depending on the system, application, or context. A case-insensitive search could be more convenient, not requiring the user to provide the precise casing, and returning more results, while a case-sensitive search enables the user to focus more precisely on a narrower result set. For example, Google searches are generally case-insensitive.

In Oracle SQL most operations and searches are case-sensitive by default, while in most other DBMS's SQL searches are case-insensitive by default. In most Internet browsers, the "Find in this page" feature has an option enabling the user to choose whether the search would be case-sensitive or not.

Case-insensitive operations are sometimes said to **fold case**, from the idea of folding the character code table so that upper- and lower-case letters coincide. The alternative **smash case** is more likely to be used by someone that considers this behaviour a misfeature or in cases wherein one case is actually permanently converted to the other.

In Unix file systems, filenames are usually case-sensitive. Old Windows file systems (VFAT, FAT32) are not case-sensitive (there cannot be a readme.txt and a Readme.txt in the same directory) but are case-preserving, i.e. remembering the case of the letters. The originalFAT12 file system was case-insensitive.^[7] Current Windows file systems, like NTFS, are case-sensitive; that is a readme.txt and a Readme.txt can exist in the same directory. Windows disallows the user to create a second file differing only in case due to compatibility issues with older software not designed for such operation.

Database

A **database** is an organized collection of data. The data are typically organized to model relevant aspects of reality in a way that supports processes requiring this information. For example, modeling the availability of rooms in hotels in a way that supports finding a hotel with vacancies.

Database management systems (DBMSs) are specially designed applications that interact with the user, other applications, and the database itself to capture and analyze data. A generalpurpose **database management system (DBMS)** is a software system designed to allow the definition, creation, querying, update, and administration of databases. Well-known DBMSs include My SQL,MariaDB, Postgre SQL, SQLite, Microsoft SQL

Server, Oracle, SAP, dBASE, FoxPro, IBM DB2, Libre Office Base and FileMaker Pro. A database is not generally portable across different DBMS, but different DBMSs can interoperate by using standards such as SQL and ODBC or JDBC to allow a single application to work with more than one database.

Terminology and overview

Formally, the term "database" refers to the data itself and supporting data structures. Databases are created to operate large quantities of information by inputting, storing, retrieving, and managing that information. Databases are set up so that one set of software programs provides all users with access to all the data.

A "database management system" (DBMS) is a suite of computer software providing the interface between users and a database or databases. Because they are so closely related, the term "database" when used casually often refers to both a DBMS and the data it manipulates.

Outside the world of professional information technology, the term database is sometimes used casually to refer to any collection of data (perhaps a spreadsheet, maybe even a card index). This article is concerned only with databases where the size and usage requirements necessitate use of a database management system.^[1]

The interactions catered for by most existing DBMS fall into four main groups:

- Data definition. Defining new data structures for a database, removing data structures from the database, modifying the structure of existing data.
- Update. Inserting, modifying, and deleting data.
- Retrieval. Obtaining information either for end-user queries and reports or for processing by applications.
- Administration. Registering and monitoring users, enforcing data security, monitoring performance, maintaining data integrity, dealing with concurrency control, and recovering information if the system fails.

A DBMS is responsible for maintaining the integrity and security of stored data, and for recovering information if the system fails.

Both a database and its DBMS conform to the principles of a particular database model.^[2] "Database system" refers collectively to the database model, database management system, and database.^[3]

Physically, database servers are dedicated computers that hold the actual databases and run only the DBMS and related software. Database servers are usually multiprocessor computers, with generous memory and RAID disk arrays used for stable storage. RAID is used for recovery of data if any of the disks fails. Hardware database accelerators, connected to one or more servers via a high-speed channel, are also used in large volume transaction processing environments. DBMSs are found at the heart of most database applications. DBMSs may be built around a custom multitasking kernel with built-in networking support, but modern DBMSs typically rely on a standard operating system to provide these functions.^[citation needed] Since DBMSs comprise a significant economical market, computer and storage vendors often take into account DBMS requirements in their own development plans.^[citation needed]

Databases and DBMSs can be categorized according to the database model(s) that they support (such as relational or XML), the type(s) of computer they run on (from a server cluster to a mobile phone), the query language(s) used to access the database (such asSQL or XQuery), and their internal engineering, which affects performance, scalability, resilience, and security.

General-purpose and special-purpose DBMSs

A DBMS has evolved into a complex software system and its development typically requires thousands of person-years of development effort.^[4] Some general-purpose DBMSs such as Adabas, Oracle and DB2 have been undergoing upgrades since the 1970s. General-purpose DBMSs aim to meet the needs of as many applications as possible, which adds to the complexity. However, the fact that their development cost can be spread over a large number of users means that they are often the most cost-effective approach. However, a general-purpose DBMS may introduce unnecessary overhead. Therefore, there are many examples of systems that use special-purpose databases. A common example is an emailsystem: email systems are designed to optimize the handling of email messages, and do not need significant portions of a general-purpose DBMS functionality.

Many databases have application software that accesses the database on behalf of end-users, without exposing the DBMS interface directly. Application programmers may use a wire protocol directly, or more likely through an application programming interface. Database designers and database administrators interact with the DBMS through dedicated interfaces to build and maintain the applications' databases, and thus need some more knowledge and understanding about how DBMSs operate and the DBMSs' external interfaces and tuning parameters.

General-purpose databases are usually developed by one organization or community of programmers, while a different group builds the applications that use it. In many companies, specialized database administrators maintain databases, run reports, and may work on code that runs on the databases themselves (rather than in the client application).

Chapter 4

Culture

(Latin: cultura, lit. "cultivation" is a modern concept based on a term first used inclassical antiquity by the Roman orator Cicero: "cultura animi" (cultivation of the soul). This non-agricultural use of the term "culture" re-appeared in modern Europe in the 17th century referring to the betterment or refinement of individuals, especially through education. During the 18th and 19th century it came to refer more frequently to the common reference points of whole peoples, and discussion of the term was often connected to national aspirations or ideals. Some scientists used the term "culture" to refer to a universal human capacity.

In the 20th century, "culture" emerged as a central concept in anthropology, encompassing the range of human phenomena that cannot be directly attributed to genetic inheritance. Specifically, the term "culture" in American anthropology had two meanings:

1. The evolved human capacity to classify and represent experiences with symbols, and to act imaginatively and creatively; and

2. The distinct ways that people, who live differently, classified and represented their experiences, and acted creatively.

3. Hoebel describes culture as an integrated system of learned behavior patterns which are characteristic of the members of a society and which are not a result of biological inheritance. Distinctions are currently made between the physical artifacts created by a society, its so-calledmaterial culture, and everything else, the intangibles such as language, customs, etc. that are the main referent of the term "culture"

Etymology

The etymology of the modern term "culture" has a classical origin. In English, the word "culture" is based on a term used by Cicero in his Tusculan Disputations, where he wrote of a cultivation of the soul or "cultura animi", thereby using an agricultural metaphor to describe the development of a philosophical soul, which was understood teleologically as the one natural highest possible ideal for human development. Samuel Pufendorf took over this metaphor in a modern context, meaning something similar, but no longer assuming that philosophy is man's

natural perfection. His use, and that of many writers after him "refers to all the ways in which human beings overcome their original barbarism, and through artifice, become fully human".

As described by Velkley:[

The term "culture," which originally meant the cultivation of the soul or mind, acquires most of its later modern meanings in the writings of the 18th-century German thinkers, who on various levels developing Rousseau's criticism of "modern liberalism and Enlightenment". Thus a contrast between "culture" and "civilization" is usually implied in these authors, even when not expressed as such. Two primary meanings of culture emerge from this period: culture as the folk-spirit having a unique identity, and culture as cultivation of waywardness or free individuality. The first meaning is predominant in our current use of the term "culture," although the second still plays a large role in what we think culture should achieve, namely the full "expression" of the unique or "authentic" self.

Aspects of culture

Aspects of human expression include both material culture and ephemeral elements. These include:

- Language and dialect
- Science
- Technology
- Cuisine
- Aesthetics art, music, literature, fashion, and architecture
- Values, ideology
- Social conventions, including norms, taboos, and etiquette
- Gender roles
- Recreational activities such as festivals and holidays
- Commercial practices
- Social structure
- Religion

Cultural regions are often defined with respect to an ethnolinguistic group or religion; the larger cultural groupings are sometimes referred to as "civilizations". Subcultures have distinct aspects, but share a connection with a larger culture (whether by virtue of inhabiting the same society or by inheriting certain cultural elements). Individuals can participate in multiple cultures and subcultures; countercultures specifically reject at least some aspects of mainstream culture.

Cultural identities and subcultures can be defined along any of these lines, or others; for example:

- Profession e.g. truck driver culture
- Workplace organizational culture
- Time and place e.g. the Victorian era in the British Empire
- An archaeological culture, defined by similar artifacts
- Broad geography e.g. Western culture
- Narrow geography e.g. Culture of the United States, National dress
- Unified system of writing conventions e.g. IETF language tags used for internationalization and localization in computing
- Ethnic minority e.g. African-American culture
- Sexuality and gender identity-based cultures
- Individual adoption of cultural style e.g. Goth subculture

• Social class, caste, or socioeconomic status - High culture (usually referring to artistic culture) might be differentiated from low culture, folk culture, or middlebrow culture

- Audience e.g. popular culture
- Technology e.g. cyberculture, video game culture
- Cultural landscape

Mutual communication (whether through technology or transportation of people or goods) is an essential activity which maintains the coherence of a cultural group. This explains why cultural boundaries can follow divisions in language and geography, why globalizationhas created larger
cultural spheres, and highlights the role of mass media in defining and maintaining culture. Education and traditioncommunicate culture through time.

A given nation-state or society may have a single, dominant culture to which immigrants assimilate (the melting pot model), or bemulticultural (the salad bowl/cultural mosaic model).

Cultural conflict can arise within a society or between different societies with different cultures.

Change

Cultural invention has come to mean any innovation that is new and found to be useful to a group of people and expressed in their behavior but which does not exist as a physical object. Humanity is in a global "accelerating culture change period," driven by the expansion of international commerce, the mass media, and above all, the human population explosion, among other factors.

Cultures are internally affected by both forces encouraging change and forces resisting change. These forces are related to both social structures and natural events, and are involved in the perpetuation of cultural ideas and practices within current structures, which themselves are subject to change. (See structuration.)

Social conflict and the development of technologies can produce changes within a society by altering social dynamics and promoting new cultural models, and spurring or enablinggenerative action. These social shifts may accompany ideological shifts and other types of cultural change. For example, the U.S. feminist movement involved new practices that produced a shift in gender relations, altering both gender and economic structures. Environmental conditions may also enter as factors. For example, after tropical forests returned at the end of the last ice age, plants suitable for domestication were available, leading to the invention of agriculture, which in turn brought about many cultural innovations and shifts in social dynamics. Cultures are externally affected via contact between societies, which may also produce—or inhibit—social shifts and changes in cultural practices. War or competition over resources may impact technological development or social dynamics. Additionally, cultural ideas may transfer from one society to another, through diffusion or acculturation. In diffusion, the form of something (though not necessarily its meaning) moves from one culture to another. For example, hamburgers, fastfood in the United States, seemed exotic when introduced into China. "Stimulus diffusion" (the

sharing of ideas) refers to an element of one culture leading to an invention or propagation in another. "Direct Borrowing" on the other hand tends to refer to technological or tangible diffusion from one culture to another. Diffusion of innovationstheory presents a research-based model of why and when individuals and cultures adopt new ideas, practices, and products.

Acculturation has different meanings, but in this context refers to replacement of the traits of one culture with those of another, such has happened to certain Native American tribes and to many indigenous peoples across the globe during the process of colonization. Related processes on an individual level include assimilation (adoption of a different culture by an individual) and transculturation.

Early modern discourses

German Romanticism

The German philosopher Immanuel Kant (1724–1804) has formulated an individualist definition of "enlightenment" similar to the concept of bildung: "Enlightenment is man's emergence from his self-incurred immaturity." He argued that this immaturity comes not from a lack of understanding, but from a lack of courage to think independently. Against this intellectual cowardice, Kant urged: Sapere aude, "Dare to be wise!" In reaction to Kant, German scholars such as Johann Gottfried Herder(1744–1803) argued that human creativity, which necessarily takes unpredictable and highly diverse forms, is as important as human rationality. Moreover, Herder proposed a collective form of bildung: "For Herder, Bildung was the totality of experiences that provide a coherent identity, and sense of common destiny, to a people." In 1795, the great linguist and philosopher Wilhelm von Humboldt(1767-1835) called for an anthropology that would synthesize Kant's and Herder's interests. During the Romantic era, scholars inGermany, especially those concerned with nationalist movements-such as the nationalist struggle to create a "Germany" out of diverse principalities, and the nationalist struggles by ethnic minorities against the Austro-Hungarian Empire-developed a more inclusive notion of culture as "worldview"(Weltanschauung). According to this school of thought, each ethnic group has a distinct worldview that is incommensurable with the worldviews of other groups. Although more inclusive than earlier views, this approach to culture still allowed for distinctions between "civilized" and "primitive" or "tribal" cultures.

In 1860, Adolf Bastian (1826–1905) argued for "the psychic unity of mankind". He proposed that a scientific comparison of all human societies would reveal that distinct worldviews consisted of the same basic elements. According to Bastian, all human societies share a set of "elementary ideas" (Elementargedanken); different cultures, or different "folk ideas" (Völkergedanken), are local modifications of the elementary ideas. This view paved the way for the modern understanding of culture. Franz Boas (1858–1942) was trained in this tradition, and he brought it with him when he left Germany for the United States.

English Romanticism

In the 19th century, humanists such as English poet and essayist Matthew Arnold (1822–1888) used the word "culture" to refer to an ideal of individual human refinement, of "the best that has been thought and said in the world." This concept of culture is comparable to the German concept of bildung: "...culture being a pursuit of our total perfection by means of getting to know, on all the matters which most concern us, the best which has been thought and said in the world.

In practice, culture referred to an élite ideal and was associated with such activities as art, classical music, and haute cuisine. As these forms were associated with urban life, "culture" was identified with "civilization" (from lat. civitas, city). Another facet of the Romantic movement was an interest in folklore, which led to identifying a "culture" among non-elites. This distinction is often characterized as that between high culture, namely that of the ruling social group, and low culture. In other words, the idea of "culture" that developed in Europe during the 18th and early 19th centuries reflected inequalities within European societies.

Matthew Arnold contrasted "culture" with anarchy; other Europeans, following philosophers Thomas Hobbes and Jean-Jacques Rousseau, contrasted "culture" with "the state of nature". According to Hobbes and Rousseau, the Native Americans who were being conquered by Europeans from the 16th centuries on were living in a state of nature; this opposition was expressed through the contrast between "civilized" and "uncivilized." According to this way of thinking, one could classify some countries and nations as more civilized than others and some people as more cultured than others. This contrast led to Herbert Spencer's theory of Social Darwinism and Lewis Henry Morgan's theory of cultural evolution. Just as some critics have argued that the distinction between high and low cultures is really an expression of the conflict between European elites and non-elites, some critics have argued that the distinction between civilized and uncivilized people is really an expression of the conflict between European colonial powers and their colonial subjects.

Other 19th century critics, following Rousseau, have accepted this differentiation between higher and lower culture, but have seen the refinement and sophistication of high culture as corrupting and unnatural developments that obscure and distort people's essential nature. These critics considered folk music (as produced by "the folk", i.e., rural, illiterate, peasants) to honestly express a natural way of life, while classical music seemed superficial and decadent. Equally, this view often portrayed indigenous peoples as "noble savages" living authentic and unblemished lives, uncomplicated and uncorrupted by the highly stratifiedcapitalist systems of the West.

In 1870 Edward Tylor (1832–1917) applied these ideas of higher versus lower culture to propose a theory of the evolution of religion. According to this theory, religion evolves from more polytheistic to more monotheistic forms. In the process, he redefined culture as a diverse set of activities characteristic of all human societies. This view paved the way for the modern understanding of culture.

20th century discourses

Anthropology

American anthropology

Although anthropologists worldwide refer to Tylor's definition of culture, in the 20th century "culture" emerged as the central and unifying concept of American anthropology, where it most commonly refers to the universal human capacity to classify and encode humanexperiences symbolically, and to communicate symbolically encoded experiences socially. American anthropology is organized into four fields, each of which plays an important role in research on culture:

- 1. biological anthropology
- 2. linguistic anthropology
- 3. cultural anthropology

4. archaeology

Research in these fields has influenced anthropologists working in other countries to different degrees.

Biological anthropology

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Discussion concerning culture among biological anthropologists centers around two debates. First, is culture uniquely human or shared by other species (most notably, other primates)? This is an important question, as the theory of evolution holds that humans are descended from (now extinct) non-human primates. Second, how did culture evolve among human beings?

Gerald Weiss noted that although Tylor's classic definition of culture was restricted to humans, many anthropologists take this for granted and thus elide that important qualification from later definitions, merely equating culture with any learned behavior. This slippage is a problem because during the formative years of modern primatology, some primatologists were trained in anthropology (and understood that culture refers to learned behavior among humans), and others were not. Notable non-anthropologists, like Robert Yerkes and Jane Goodall thus argued that since chimpanzees have learned behaviors, they have culture. Today, anthropological primatologists are divided, several arguing that non-human primates have culture, others arguing that they do not.

This scientific debate is complicated by ethical concerns. The subjects of primatology are nonhuman primates, and whatever culture these primates have is threatened by human activity. After reviewing the research on primate culture, W.C. McGrew concluded, "[a] discipline requires subjects, and most species of nonhuman primates are endangered by their human cousins. Ultimately, whatever its merit, cultural primatology must be committed to cultural survival [i.e. to the survival of primate cultures].

McGrew suggests a definition of culture that he finds scientifically useful for studying primate culture. He points out that scientists do not have access to the subjective thoughts or knowledge of non-human primates. Thus, if culture is defined in terms of knowledge, then scientists are

severely limited in their attempts to study primate culture. Instead of defining culture as a kind of knowledge, McGrew suggests that we view culture as a process. He lists six steps in the process:

1. A new pattern of behavior is invented, or an existing one is modified.

2. The innovator transmits this pattern to another.

3. The form of the pattern is consistent within and across performers, perhaps even in terms of recognizable stylistic features.

4. The one who acquires the pattern retains the ability to perform it long after having acquired it.

5. The pattern spreads across social units in a population. These social units may be families, clans, troops, or bands.

6. The pattern endures across generations.

McGrew admits that all six criteria may be strict, given the difficulties in observing primate behavior in the wild. But he also insists on the need to be as inclusive as possible, on the need for a definition of culture that "casts the net widely":

Culture is considered to be group-specific behavior that is acquired, at least in part, from social influences. Here, group is considered to be the species-typical unit, whether it be a troop, lineage, subgroup, or so on. Prima facie evidence of culture comes from within-species but across-group variation in behavior, as when a pattern is persistent in one community of chimpanzees but is absent from another, or when different communities perform different versions of the same pattern. The suggestion of culture in action is stronger when the difference across the groups cannot be explained solely by ecological factors

As Charles Frederick Voegelin pointed out, if "culture" is reduced to "learned behavior," then all animals have culture.[Certainly all specialists agree that all primate species evidence common cognitive skills: knowledge of object-permanence, cognitive mapping, the ability to categorize objects, and creative problem solving. Moreover, all primate species show evidence of shared social skills: they recognize members of their social group; they form direct relationships based on degrees of kinship and rank; they recognize third-party social relationships; they predict future behavior; and they cooperate in problem-solving Nevertheless, the term "culture" applies to non-human animals only if we define culture as any or all learned behavior. Within mainstream physical anthropology, scholars tend to think that a more restrictive definition is necessary. These researchers are concerned with how human beings evolved to be different from other species. A more precise definition of culture, which excludes non-human social behavior, would allow physical anthropologists to study how humans evolved their unique capacity for "culture".

Chimpanzees (Pan troglodytes and Pan paniscus) are humans' (Homo sapiens) closest living relative; both are descended from a common ancestor which lived around seven million years ago. Human evolution has been rapid with modern humans appearing about 340 000 years ago. During this time humanity evolved three distinctive features:

(a) the creation and use of conventional symbols, including linguistic symbols and their derivatives, such as written language and mathematical symbols and notations; (b) the creation and use of complex tools and other instrumental technologies; and (c) the creation and participation in complex social organization and institutions.

According to developmental psychologist Michael Tomasello, "where these complex and species-unique behavioral practices, and the cognitive skills that underlie them, came from" is a fundamental anthropological question. Given that contemporary humans and chimpanzees are far more different from horses and zebras, or rats and mice, and that the evolution of this great difference occurred in such a short period of time, "our search must be for some small difference that made a big difference – some adaptation, or small set of adaptations, that changed the process of primate cognitive evolution in fundamental ways." According to Tomasello, the answer to this question must form the basis of a scientific definition of "human culture. In a recent review of the major research on human and primate tool-use, communication, and learning strategies, Tomasello argues that the key human advances over primates (language, complex technologies, and complex social organization) are all the results of humans pooling cognitive resources. This is called "the ratchet effect:" innovations spread and are shared by a group, and mastered "by youngsters, which enables them to remain in their new and improved form within the group until something better comes along." The key point is that children are born good at a particular kind of social learning; this creates a favored environment for social innovations, making them more likely to be maintained and transmitted to new generations than

individual innovations. For Tomasello, human social learning—the kind of learning that distinguishes humans from other primates and that played a decisive role in human evolution—is based on two elements: first, what he calls "imitative learning," (as opposed to "emulative learning" characteristic of other primates) and second, the fact that humans represent their experiences symbolically (rather than iconically, as is characteristic of other primates). Together, these elements enable humans to be both inventive, and to preserve useful inventions. It is this combination that produces the ratchet effect.The kind of learning found among other primates is "emulation learning," which "focuses on the environmental events involved – results or changes of state in the environment that the other produced – rather than on the actions that produced those results. Tomasello emphasizes that emulation learning is a highly adaptive strategy for apes because it focuses on the effects of an act. In laboratory experiments, chimpanzees were shown two different ways for using a rake-like tool to obtain an out-of-reach-object. Both methods were effective, but one was more efficient than the other. Chimpanzees consistently emulated the more efficient method.

Examples of emulation learning are well documented among primates. Notable examples include Japanese macaque potato washing, Chimpanzee tool use, and Chimpanzee gestural communication. In 1953, an 18-month-old female macaque monkey was observed taking sandy pieces of sweet potato (given to the monkeys by observers) to a stream (and later, to the ocean) to wash off the sand. After three months, the same behavior was observed in her mother and two playmates, and then the playmates' mothers. Over the next two years seven other young macaques were observed washing their potatoes, and by the end of the third year 40% of the troop had adopted the practice. Although this story is popularly represented as a straightforward example of human-like learning, evidence suggests that it is not. Many monkeys naturally brush sand off of food; this behavior had been observed in the macaque troop prior to the first observed washing. Moreover, potato washing was observed in four other separate macaque troops, suggesting that at least four other individual monkeys had learned to wash off sand on their own Other monkey species in captivity quickly learn to wash off their food. Finally, the spread of learning among the Japanese macaques was fairly slow, and the rate at which new members of the troop learned did not keep pace with the growth of the troop. If the form of learning were imitation, the rate of learning should have been exponential. It is more likely that the monkeys' washing behavior is based on the common behavior of cleaning off food, and that monkeys that

spent time by the water independently learned to wash, rather than wipe their food. This explains both why those monkeys that kept company with the original washer, and who thus spent a good deal of time by the water, also figured out how to wash their potatoes. It also explains why the rate at which this behavior spread was slow.

Chimpanzees exhibit a variety of population-specific tool use: termite-fishing, ant-fishing, antdipping, nut-cracking, and leaf-sponging. Gombe Chimpanzees fish for termites using small, thin sticks, but chimpanzees in Western Africa use large sticks to break holes in mounds and use their hands to scoop up termites. Some of this variation may be the result of "environmental shaping" (there is more rainfall in western Africa, softening termite mounds and making them easier to break apart, than in the Gombe reserve in eastern Africa. Nevertheless it is clear that chimpanzees are good at emulation learning. Chimpanzee children independently know how to roll over logs, and know how to eat insects. When children see their mothers rolling over logs to eat the insects beneath, they quickly learn to do the same. In other words, this form of learning builds on activities the children already know.

Chapter 5

Origin and history

First Recorded Use

According to archaeologists and anthropologists, the earliest clothing likely consisted of fur, leather, leaves, or grass that were draped, wrapped, or tied around the body. Knowledge of such clothing remains inferential, since clothing materials deteriorate quickly compared to stone, bone, shell and metal artifacts. Archeologists have identified very early sewing needles of bone and ivory from about 30,000 BC, found near Kostenki, Russia in 1988. Dyed flax fibers that could have been used in clothing have been found in a prehistoric cave in the Republic of Georgia that date back to 36,000 BP.

Scientists are still debating when people started wearing clothes. Ralf Kittler, Manfred Kayser and Mark Stoneking, anthropologists at the Max Planck Institute for Evolutionary Anthropology, have conducted a genetic analysis of human body lice that suggests clothing originated quite recently, around 107,000 years ago. Body lice is an indicator of clothes-wearing, since most humans have sparse body hair, and lice thus require human clothing to survive. Their research suggests the invention of clothing may have coincided with the northward migration of modern Homo sapiens away from the warm climate of Africa, thought to have begun between 50,000 and 100,000 years ago. However, a second group of researchers using similar genetic methods estimate that clothing originated around 540,000 years ago (Reed et al. 2004. PLoS Biology 2(11): e340). For now, the date of the origin of clothing remains unresolved.

Anthropology

Anthropology is the study of humankind, past and present, that draws and builds upon knowledge from social and biological sciences, as well as the humanities and thenatural sciences.

Since the work of Franz Boas and Bronisław Malinowski in the late 19th and early 20th centuries, anthropology in Great Britain and US has been distinguished from ethnology and from other social sciences by its emphasis on cross-cultural comparisons, long-term in-depth examination of context, and the importance it places on participant-observation or experiential immersion in the area of research. Cultural anthropology in particular has emphasized cultural relativism, holism, and the use of findings to frame cultural critiques. This has been particularly

prominent in the United States, from Boas's arguments against 19th-century racial ideology, through Margaret Mead's advocacy for gender equality and sexual liberation, to current criticisms of post-colonialoppression and promotion of multiculturalism. Ethnography is one of its primary methods as well as the text that is generated from anthropological fieldwork.

While in Great Britain and the Commonwealth countries, the British tradition of Social Anthropology tends to dominate, in the United States anthropology is traditionally divided into the four field approach developed by Franz Boas in the early 20th century: biological or physical anthropology, social anthropology or cultural anthropology, archaeology and anthropological linguistics. These fields frequently overlap, but tend to use different methodologies and techniques.

In those European countries that did not have overseas colonies, where ethnology (a term coined and defined by Adam F. Kollár in 1783) was more widespread, social anthropology is now defined as the study of social organization in non-state societies and is sometimes referred to as sociocultural anthropology in the parts of the world that were influenced by the European tradition.

Fields

Anthropology is a global discipline where humanities, social, and natural sciences are forced to confront one another. Anthropology builds upon knowledge from natural sciences, including the discoveries about the origin and evolution of Homo sapiens, human physical traits, human behavior, the variations among different groups of humans, how the evolutionary past of Homo sapiens has influenced its social organization and culture, and from social sciences, including the organization of human social and cultural relations, institutions, social conflicts, etc Early anthropology originated in Classical Greece and Persia and studied and tried to understand observable cultural diversity. As such, anthropology has been central in the development of several new (late 20th century) interdisciplinary fields such as cognitive science global studies, and various ethnic studies.

According to Clifford Geertz,

"anthropology is perhaps the last of the great nineteenth-century conglomerate disciplines still for the most part organizationally intact. Long after natural history, moral philosophy, philology, and political economy have dissolved into their specialized successors, it has remained a diffuse assemblage of ethnology, human biology, comparative linguistics, and prehistory, held together mainly by the vested interests, sunk costs, and administrative habits of academia, and by a romantic image of comprehensive scholarship."

Sociocultural anthropology has been heavily influenced by structuralist and postmodern theories, as well as a shift toward the analysis of modern societies. During the 1970s and 1990s, there was an epistemological shift away from the positivist traditions that had largely informed the discipline. During this shift, enduring questions about the nature and production of knowledge came to occupy a central place in cultural and social anthropology. In contrast, archaeology and biological anthropology remained largely positivist. Due to this difference in epistemology, the four sub-fields of anthropology have lacked cohesion over the last several decades.

Sociocultural

Main articles: Cultural anthropology and Social anthropology

Sociocultural anthropology draws together the principle axes of cultural anthropology and social anthropology. Cultural anthropology is the comparative study of the manifold ways in which people make sense of the world around them, while social anthropology is the study of the relationships among persons and groups. Cultural anthropology is more akin to philosophy, literature and the arts, while social anthropology to sociology and history.

Inquiry in sociocultural anthropology is guided in part by cultural relativism, the attempt to understand other societies in terms of their own cultural symbols and values. Accepting other cultures in their own terms moderates reductionism in cross-cultural comparison. This project is often accommodated in the field of ethnography. Ethnography can refer to both a methodology and a product of research, namely a monograph or book. As methodology, ethnography is based upon long-term fieldwork within a community or other research site. Participant observation is one of the foundational methods of social and cultural anthropology Ethnology in volves the systematic comparison of different cultures. The process of participant-observation can be especially helpful to understanding a culture from an emic (conceptual, vs. etic, or technical) point of view. The study of kinship and social organization is a central focus of sociocultural anthropology, as kinship is a human universal. Sociocultural anthropology also covers economic and political organization, law and conflict resolution, patterns of consumption and exchange, material culture, technology, infrastructure, gender relations, ethnicity, childrearing and socialization, religion, myth, symbols, values, etiquette, worldview, sports, music, nutrition, recreation, games, food, festivals, and language (which is also the object of study in linguistic anthropology).

Comparison across cultures is a key element of method in sociocultural anthropology, including the industrialized (and de-industrialized) West. Cultures in the Standard Cross-Cultural Sample (SCCS) of world societies are:

Making clothing

Some human cultures, such as the various people of the Arctic Circle, traditionally make their clothing entirely of prepared and decorated furs and skins. Other cultures supplemented or replaced leather and skins with cloth: woven, knitted, or twined from various animal and vegetable fibers.

Although modern consumers may take the production of clothing for granted, making fabric by hand is a tedious and labor intensive process. The textile industry was the first to be mechanized – with the powered loom – during the Industrial Revolution.

Different cultures have evolved various ways of creating clothes out of cloth. One approach simply involves draping the cloth. Many people wore, and still wear, garments consisting of rectangles of cloth wrapped to fit – for example, the dhoti for men and the sari for women in the Indian subcontinent, the Scottish kilt or the Javanese sarong. The clothes may simply be tied up, as is the case of the first two garments; or pins or belts hold the garments in place, as in the case of the latter two. The precious cloth remains uncut, and people of various sizes or the same person at different sizes can wear the garment.

Another approach involves cutting and sewing the cloth, but using every bit of the cloth rectangle in constructing the clothing. The tailor may cut triangular pieces from one corner of the cloth, and then add them elsewhere as gussets. Traditional European patterns for men's shirts and women's chemises take this approach.

Modern European fashion treats cloth much less conservatively, typically cutting in such a way as to leave various odd-shaped cloth remnants. Industrial sewing operations sell these as waste; home sewers may turn them into quilts.

In the thousands of years that humans have spent constructing clothing, they have created an astonishing array of styles, many of which have been reconstructed from surviving garments, photos, paintings, mosaics, etc., as well as from written descriptions. Costume history serves as a source of inspiration to current fashion designers, as well as a topic of professional interest to costumers constructing for plays, films, television, and historical reenactment.

Arctic Circle

he Arctic Circle is one of the five major circles of latitude that mark maps of the Earth. In 2012, it is the parallel of latitude that runs $66^{\circ} 33' 44''$ (or 66.5622°) north of the Equator.

The region north of this circle is known as the Arctic, and the zone just to the south is called the Northern Temperate Zone. The equivalent polar circle in the Southern Hemisphere is called the Antarctic Circle.

The Arctic Circle is the southernmost latitude in the Northern Hemisphere at which the sun can remain continuously above or below the horizon for 24 hours (at the June solstice and December solstice respectively). North of the Arctic Circle, the sun is above the horizonfor 24 continuous hours at least once per year (and therefore visible at midnight) and below the horizon for 24 continuous hours at least once per year. On the Arctic Circle those events occur, in principle, exactly once per year, at the June and December solstices, respectively.

The Arctic Circle appears to mark the southern extremity of the northern hemisphere polar day (24-hour sunlit day, often referred to as the midnight sun) and polar night (24-hour sunless night). But, because of atmospheric refraction and mirages, and because the sun appears as a disk and not a point, part of the midnight sun may be seen on the night of the northern summer solstice up to about 50'(90 km (56 mi)) south of the Arctic Circle; similarly, on the day of the northern winter solstice, part of the sun may be seen up to about 50' north of the Arctic Circle. That is true at sea level; those limits increase with elevation above sea level although in mountainous regions, there is often no direct view of the true horizon.

The position of the Arctic Circle is not fixed. It directly depends on the Earth's axial tilt, which fluctuates within a margin of 2° over a 40,000-year period, notably due to tidal forces resulting from the orbit of the Moon. The Arctic Circle is currently drifting northwards at a speed of about 15 m (49 ft) per year; see Circle of latitude for more information.

Geography

Relatively few people live north of the Arctic Circle due to the severe climate. Areas have been settled for thousands of years by indigenous peoples. Tens of thousands of years ago, waves of people migrated from east Asia (Siberia) across the Bering Straits into North America and gradually eastward to settle. Much later, in the historic period, there has been migration into some Arctic areas by Europeans and other immigrants.

The three largest communities above the Arctic Circle are situated in Russia: Murmansk (population 307,257), Norilsk (175,301), and Vorkuta (70,548).

Rovaniemi (in Finland), which lies slightly south of the line, has a population of approximately 60,000, and is the largest settlement in the immediate vicinity of the Arctic Circle. Among the people of the Arctic, the Norwegians have the easiest climate, with most ports in North Norway remaining ice-free all the year as a result of the Gulf Stream. Tromsø (in Norway) has about 69,000 inhabitants and Bodø47,000.

In contrast, the largest North American community north of the circle, Sisimiut (Greenland), has approximately 5,000 inhabitants. Of the Canadian and United States Arctic communities, Barrow, Alaska is the largest settlement with circa 4,000 inhabitants.

The Arctic Circle passes through the Arctic Ocean, the Scandinavian Peninsula, North Asia, Northern America and Greenland. The land on the Arctic Circle is divided among eight countries: Norway, Sweden, Finland, Russia, the United States (Alaska), Canada, Denmark(Greenland), and Iceland (where it passes through the small offshore island of Grímsey).

The area north of the Arctic Circle is about 20,000,000 km2 (7,700,000 sq mi) and covers 4% of the Earth.

Starting at the Prime Meridian and heading eastwards, the Arctic Circle passes through:

Chapter 6

Contemporary Clothing

Western dress code

The Western dress code has been evolving over the past 500+ years. The mechanization of the textile industry made many varieties of cloth widely available at affordable prices. Styles have changed, and the availability of synthetic fabrics has changed the definition of "stylish". In the latter half of the 20th century, blue jeans became very popular, and are now worn to events that normally demand formal attire. Activewear has also become a large and growing market.

The licensing of designer names was pioneered by designers like Pierre Cardin in the 1960s and has been a common practice within the fashion industry from about the 1970s.

Sportswear (activewear)

Sportswear or activewear is clothing, including footwear, worn for sport or physical exercise. Sport-specific clothing is worn for most sports and physical exercise, for practical, comfort or **Safety Reasons.**

Typical sport-specific garments include shorts, tracksuits, T-shirts, tennis shirts and polo shirts. Specialized garments include wet suits (for swimming, diving or surfing) and salopettes (for skiing) and leotards (for gymnastics). Sports footwear include trainers. It also includes some underwear, such as the jockstrap and sports bra. Sportswear is also at times worn as casual fashion clothing.

For most sports the athletes wear a combination of different items of clothing, e.g. sport shoes, pants and shirts. In some sports, protective gear may need to be worn, such ashelmets or American football body armour.

Spread of western styles

By the early years of the 21st century, western clothing styles had, to some extent, become international styles. This process began hundreds of years earlier, during the periods of European colonialism. The process of cultural dissemination has perpetuated over the centuries as Western media corporations have penetrated markets throughout the world, spreading Western culture and styles. Fast fashion clothing has also become a global phenomenon. These garments are less

expensive, mass-produced Western clothing. Donated used clothing from Western countries are also delivered to people in poor countries by charity organizations.

Fast fashion

Fast fashion is a contemporary term used by fashion retailers to express that designs move from catwalk quickly in order to capture current fashion trends. Fast fashion clothing collections are based on the most recent fashion trends presented at Fashion Week in both the spring and the autumn of every year. These trends are designed and manufactured quickly and cheaply to allow the mainstream consumer to take advantage of current clothing styles at a lower price. This philosophy of quick manufacturing at an affordable price is used in large retailers such as H&M, Zara, Peacocks, and Topshop. It particularly came to the fore during the vogue for "boho chic" in the mid-2000s. This has developed from a product-driven concept based on a manufacturing model referred to as "quick response" developed in the U.S. in the 1980s and moved to a marketbased model of "fast fashion" in the late 1990s and first part of the 21st century. Zara has been at the forefront of this fashion retail revolution and their brand has almost become synonymous with the term, but there were other retailers who worked with the concept before the label was applied, such as Benetton. Fast fashion has also become associated with disposable fashion because it has delivered designer product to a mass market at relatively low prices The slow fashion movement has arisen in opposition to fast fashion, blaming it for pollution (both in the production of clothes and in the decay of synthetic fabrics), shoddy workmanship, and emphasizing very brief trends over classic style.

Ethnic and cultural heritage

People may wear ethnic or national dress on special occasions or in certain roles or occupations. For example, most Korean men and women have adopted Western-style dress for daily wear, but still wear traditional hanboks on special occasions, like weddings and cultural holidays. Items of Western dress may also appear worn or accessorized in distinctive, non-Western ways. A Tongan man may combine a used T-shirt with a Tongan wrapped skirt, or tupenu.

Hanbok

Hanbok (South Korea) or Chosŏn-ot (North Korea) is the traditional Korean dress. It is often characterized by vibrant colors and simple lines without pockets. Although the term literally

means "Korean clothing", hanbok today often refers specifically to hanbok ofChosŏn Dynasty and is worn as semi-formal or formal wear during traditional festivals and celebrations.

Throughout history, Korea had a dual clothing tradition, in which rulers and aristocrats adopted different kinds of mixed foreign-influenced indigenous styles, while the commoners continued to use a distinct style of indigenous clothing that today is known as Hanbok.

Basic Composition and Design

Jeogori

Jeogori is the basic upper garment of the hanbok, which has been worn by both men and women. It covers the arms and upper part of the wearer's body The basic form of ajeogori consists of gil, git, dongjeong, goreum and sleeves. is the large section of the garment in both front and back side and git is a band of fabric that trims the collar.Dongjeong is a removable white collar placed over the end of the git and is generally squared off. The are coat-strings that tie the jeogori Women's jeogori may have kkeutdong, a different colored cuff placed at the end of the sleeves. There are two jeogori that may be the earliest surviving archaeological finds. One from a Yangcheon Heo Clan tomb is dated 1400-1450, while the other was discovered inside a statue of Buddha at Sangwonsa Temple (presumably left as an offering) that has been dated to the 1460s.

The form of Jeogori has changed over time While men's jeogori remained relatively unchanged, women's jeogori dramatically shortened during Chosŏn dynasty, reaching its shortest length at the late 19th century. However, due to reformation efforts and practical reasons, modern jeogori for women is longer than its earlier counterpart. Nonetheless the length is still above the waist line. Traditionally, goreum were short and narrow, however modern goreum are rather long and wide. There are several types of jeogori according to fabric, sewing technique, and shape.

Chima

Chima refers to "skirt" which is also called sang or gun in hanja The underskirt, or petticoat layer is called sokchima. According to remaining murals of Goguryeo, and an earthen toy excavated from the neighborhood of Hwangnam-dong, Gyeongju, Goguryo women wore a chima first, and then jeogori over the chima, covering its belt.

Although striped, patchwork skirts, and gored skirts are known from the Goguryeo period from the Chosŏn dynasty (redirected fromJoseon)at least skirts were made from rectangular cloth that was pleated or gathered into a skirt band This waistband extended past the skirt fabric itself, and formed ties so that the skirt could be fastened around the trunk of the body.

Sokchima was largely made in a similar way to the overskirts until the early 20th century when straps were added later developing into a sleeveless bodice or 'reformed' petticoat By the mid 20th century, some outer chima had also gained a sleeveless bodice, that was then covered by the Jeogori

Baji

Baji refers to the bottom part of the men's hanbok. It is the formal term for 'pants' in Korean. Compared to western style pants, it does not fit tightly. The roomy nature of the cloth is due to a design aimed at making the cloth ideal for sitting on the floor. It performs similar role today for modern trousers, but Baji is commonly used in Korea for any kinds of pants. There are two in front of baji, and a person can tighten up whenever needed.

Baji are classified as unlined trousers, leather trousers, silk pants, cotton pants according to dress, sewing way, embroidery and so on.

Po

Po is a generic term referring to an outer robe or overcoat, which was worn mostly by men since the Goryeo period until the Chosŏn period Durumagi is a variety of po that was worn to protect the cold. It had been widely worn as an outer robe over jeogori and baji.It is also called jumagui, juchaui, or juui.

"Po" is also called "Jeogori", written as in hangul. Jeogori inherited the Chinese Ming ao skirt's white collar and Jin. As buttoned blouse, skirt in front of the two on each seam have Jin, female's Jeogori has a long belt hung in front of the dress, also have an effect of adornment. Jeogori below the cuff is refers to the jacket sleeves, characterized by a traditional Korean house in the eaves of natural feminine curves. There are differences between the men and women's Jeogori. Men's Jeogori coarse to with line and flat; Women's Jeogoris have beautifully decorated curves which are short and beautiful.

Jokki and magoja

Jokki is a type of vest while magoja is an outer jacket. Although jokki and magoja were created at the end of the Chosŏn Dynasty in which the Western culture began to affect Korea, the garments have been considered parts of traditional clothing. Each is additionally worn over jeogori for warmth and style. Magoja was an originally Manchu style clothing, but was introduced to Korea after Heungseon Daewongun, the father of King Gojong returned from his political exile in Manchuria in 1887 Magoja derived frommagwae that he wore at that time to protect cold weather of the region. It was good to keep warmth and easy to wear, so that magoja became popular in Korea. It is also called "deot jeogori" (literally "an outer jeogori") or magwae. Magoja does not have git, band of fabric that trims the collar,[3] goreum (tying strings) unlike jeogori and durumagi (overcoat). Magojawas originally a male garment, but later became a unisex clothing. The magoja for men has seop (overlapped column on the front) and its length is longer than women's magoja, so that its both sides of the bottom are open. A magoja is made of a silk and is adorned with one or two buttons which are usually made from amber. In a male magoja, buttons are attached to the right side on contrary to women's magoja.

At first, women wore the magoja for style rather than as a daily outfit and especially Kaeseong people used to wear it a lot. It is made of a silk and the color for women tends to be a neutral color to harmonize with other garments such as jeogori and chima which are worn together. In spring and autumn, a pastel tone is used for the women's magoja, so that wearers could wear it over a jeogori for style. As for men's magoja worn during spring and summer, jade, green, gray, dark grey were used.

Children's hanbok

In old days, Kkachi durumagi (literally "a magpie's overcoat") were worn as seolbim new clothing and shoes worn on Seollal, New Year's Day in the Korean calendar, while at present, it is worn as a ceremonial garment for doljanchi, celebration for a baby's first birthday. It is a children's colorful overcoat. It was worn mostly by young boys. The clothes is also called obangjang durumagi which means "an overcoat of five directions It was worn over jeogori (a jacket) and jokki (a vest) while the wearer could put jeonbok (a long vest) over it. Kkachi durumagi was also worn along with headgear such as bokgeon (a peaked cloth hat hogeon (peaked cloth hat with a tiger pattern) for young boys orgulle (decorative headgear) for young girls.

Modern hanbok for children consists of only two or three pieces and can be put on easily. They are usually made of less expensive fabrics since they are only worn once or twice a year during

bigger holidays like Chuseok and Seollal. Children are also dressed up in hanbok on their first birthday, dol.

Occasions

Hanbok is classified according to its purposes: everyday dress, ceremonial dress and special dress. Ceremonial dresses are worn on formal occasions, including a child's first birthday, a wedding or a funeral. Special dresses are made for shamans and officials.

Sport and activity

Most sports and physical activities are practiced wearing special clothing, for practical, comfort or safety reasons. Common sportswear garments include shorts, T-shirts, tennis shirts, leotards, tracksuits, and trainers. Specialized garments include wet suits (forswimming, diving or surfing), salopettes (for skiing) and leotards (for gymnastics). Also,spandex materials are often used as base layers to soak up sweat. Spandex is also preferable for active sports that require form fitting garments, such as wrestling, track & field, dance, gymnastics and swimming.

Fashion

There exists a diverse range of styles in fashion, varying by geography, exposure to modern media, economic conditions, and ranging from expensive haute couture to traditional garb, tothrift store grunge.

Future trends

The world of clothing is always changing, as new cultural influences meet technological innovations. Researchers in scientific labs have been developing prototypes for fabrics that can serve functional purposes well beyond their traditional roles, for example, clothes that can automatically adjust their temperature, repel bullets, project images, and generate electricity. Researchers are working on creating textiles with designer bacteria that survive off of "dead" skin and sweat reducing the need to wash cloths, but could also potentially eat living flesh. Such bacteria could also be used to create bio luminescent fabrics. Some practical advances already available to consumers are bullet-resistant garments made with kevlar and stain-resistant fabrics that are coated with chemical mixtures that reduce the absorption of liquids.

Chapter 7

Political issues

Working conditions

Though mechanization transformed most aspects of human industry by the mid-20th century, garment workers have continued to labor under challenging conditions that demand repetitive manual labor. Mass-produced clothing is often made in what are considered by some to be sweatshops, typified by long work hours, lack of benefits, and lack of worker representation. While most examples of such conditions are found in developing countries, clothes made in industrialized nations may also be manufactured similarly, often staffed by undocumented immigrants.

Coalitions of NGOs, designers (Katharine Hamnett, American Apparel, Veja, Quiksilver, eVocal, Edun,...) and campaign groups like the Clean Clothes Campaign (CCC) have sought to improve these conditions as much as possible by sponsoring awareness-raising events, which draw the attention of both the media and the general public to the workers.

Outsourcing production to low wage countries like Bangladesh, China, India and Sri Lanka became possible when the Multi Fibre Agreement (MFA) was abolished. The MFA, which placed quotas on textiles imports, was deemed a protectionist measure Globalization is often quoted as the single most contributing factor to the poor working conditions of garment workers. Although many countries recognize treaties like the International Labor Organization, which attempt to set standards for worker safety and rights, many countries have made exceptions to certain parts of the treaties or failed to thoroughly enforce them. India for example has not ratified sections 87 and 92 of the treaty.

Despite the strong reactions that "sweatshops" evoked among critics of globalization, the production of textiles has functioned as a consistent industry for developing nations providing work and wages, whether construed as exploitative or not, to thousands of people.

• Exercise caution before relying upon un sourced claims.

• If you can provide a reliable source for the claim, please be bold and replace the "Citation needed" template with enough information to locate the source. You may leave the copyediting to someone else, or learn more about citing sources on Wikipedia.

• If someone tagged your contributions with and you disagree, discuss the matter on the article's discussion page.

• Controversial, poorly-sourced claims in biographies of living people should be deleted immediately.

• This template can be used within a sentence, or at the end following any punctuation.

Identifying reliable sources

The guideline in this page discusses the reliability of various types of sources. The policy on sourcing, which requires inline citations for any material challenged or likely to be challenged, and for all quotations. The policy is strictly applied to all material in the main space—articles, lists, and sections of articles—without exception, and in particular to biographies of living persons, which states:

Contentious material about living persons (or recently deceased) that is un sourced or poorly sourced—whether the material is negative, positive, neutral, or just questionable—should be removed immediately and without waiting for discussion.

In the event of a contradiction between this page and our policies regarding sourcing and attribution, the policy takes priority and editors should seek to resolve the discrepancy. Other policies relevant to sourcing are No original research and of living persons. For questions about the reliability of particular sources, see sources.

Overview

Articles should be based on reliable, third-party, published sources with a reputation for factchecking and accuracy. This means that we publish the opinions only of reliable authors, and not the opinions of Wikipedians who have read and interpreted primary source material for themselves. The following examples cover only some of the possible types of reliable sources and source reliability issues, and are not intended to be exhaustive. Proper sourcing always depends on context; common sense and editorial judgment are an indispensable part of the process.

Definition of a source

The word "source" when citing sources on Wikipedia has three related meanings:

- the piece of work itself (the article, book);
- the creator of the work (the writer, journalist),

• and the publisher of the work (for example, Random House or Cambridge University Press).

Any of the three can affect reliability. Reliable sources may be published materials with a reliable publication process, authors who are regarded as authoritative in relation to the subject, or both. These qualifications should be demonstrable to other people.

Definition of published

The term "published" is most commonly associated with text materials, either in traditional printed format or online. However, audio, video, and multimedia materials that have been recorded then broadcast, distributed, or archived by a reputable party may also meet the necessary criteria to be considered reliable sources. Like text sources, media sources must be produced by a reliable third party and be properly cited. Additionally, an archived copy of the media must exist. It is convenient, but by no means necessary, for the archived copy to be accessible via the Internet.

Context matters

The reliability of a source depends on context. Each source must be carefully weighed to judge whether it is reliable for the statement being made in the Wikipedia article and is an appropriate source for that content. In general, the more people engaged in checking facts, analyzing legal issues, and scrutinizing the writing, the more reliable the publication. Sources should directly support the information as it is presented in the Wikipedia article. If no reliable sources can be found on a topic, Wikipedia should not have an article on it.

Some types of sources

Many Wikipedia articles rely on scholarly material. When available, academic and peerreviewed publications, scholarly monographs, and textbooks are usually the most reliable sources. However, some scholarly material may be outdated, in competition with alternative theories, or controversial within the relevant field. Try to cite present scholarly consensus when available, recognizing that this is often absent. Reliable non-academic sources may also be used in articles about scholarly issues, particularly material from high-quality mainstream publications. Deciding which sources are appropriate depends on context. Material should be attributed in-text where sources disagree.

Scholarship

• Articles should rely on secondary sources whenever possible. For example, a review article, monograph, or textbook is better than a primary research paper. When relying on primary sources, extreme caution is advised: Wikipedians should never interpret the content of primary sources for themselves. See Wikipedia:No original research.

• Material such as an article, book, monograph, or research paper that has been vetted by the scholarly community is regarded as reliable. If the material has been published in reputable peer-reviewed sources or by well-regarded academic presses, generally it has been vetted by one or more other scholars.

• Completed dissertations or theses written as part of the requirements for a PhD, and which are publicly available (most via interlibrary loan or from Proquest), can be used but care should be exercised. Some of them will have gone through a process of academic peer reviewing, of varying levels of rigor, but some will not. If possible, use theses that have been cited in the literature; supervised by recognized specialists in the field; or reviewed by third parties. Dissertations in progress have not been vetted and are not regarded as published and are thus not reliable sources as a rule. Some theses are later published in the form of scholarly monographs or peer reviewed articles, and, if available, these are usually preferable to the original thesis as sources. Masters dissertations and theses are considered reliable only if they can be shown to have had significant scholarly influence.

• One can confirm that discussion of the source has entered mainstream academic discourse by checking the scholarly citations it has received in citation indexes. A corollary is that journals not included in a citation index, especially in fields well covered by such indexes, should be used with caution, though whether it is appropriate to use will depend on the context.

• Isolated studies are usually considered tentative and may change in the light of further academic research. The reliability of a single study depends on the field. Studies relating to complex and abstruse fields, such as medicine, are less definitive. Avoid undue weight when using single studies in such fields. Meta-analyses, textbooks, and scholarly review articles are preferred when available, so as to provide proper context.

• Care should be taken with journals that exist mainly to promote a particular point of view. A claim of peer review is not an indication that the journal is respected, or that any meaningful peer review occurs. Journals that are not peer reviewed by the wider academic community should not be considered reliable, except to show the views of the groups represented by those journals.

• Some publications that appear to be reliable journals, are instead of very low quality and have no peer-review. They simply publish whatever is submitted if the author is willing to pay a fee. Some go so far as to mimic the names of reliable journals. If you are unsure about the quality of a journal, check that the editorial board is based in a respected accredited university, and that it is included in the relevant citation index.

News organizations

News sources often contain both factual content and opinion content. "News reporting" from well-established news outlets is generally considered to be reliable for statements of fact (though even the most reputable reporting sometimes contains errors). News reporting from less-established outlets is generally considered less reliable for statements of fact. Editorial commentary, analysis and opinion pieces, whether written by the editors of the publication (editorials) or outside authors (op-eds) are reliable primary sources for statements attributed to that editor or author, but are rarely reliable for statements of fact.

• When taking information from opinion content, the identity of the author may help determine reliability. The opinions of specialists and recognized experts are more likely to be reliable and to reflect a significant viewpoint. If the statement is not authoritative, attribute the opinion to the author in the text of the article and do not represent it as fact. Reviews for books, movies, art, etc. can be opinion, summary or scholarly pieces. For information about academic topics, scholarly sources and high-quality non-scholarly sources are generally better than news reports. News reports may be acceptable depending on the context. Articles which deal in depth

with specific studies, as a specialized article on science, are apt to be of more value than general articles which only tangentially deal with a topic. Frequently, although not always, such articles are written by specialist writers who may be cited by name.

• The reporting of rumors has a limited encyclopedic value, although in some instances verifiable information about rumors may be appropriate. Wikipedia is not the place for passing along gossip and rumors.

• Some news organizations have used Wikipedia articles as a source for their work. Editors should therefore beware of circular sourcing.

• Whether a specific news story is reliable for a specific fact or statement in a Wikipedia article will be assessed on a case-by-case basis.

• Some stories are republished or passed along by multiple news organizations. This is especially true for wire services such as the Associated Press. Each single story must only count as being one source.

• News organizations are not required to publish their editorial policy or editorial board online. Many major newspapers do not publish their editorial policies.

• One signal that a news organization engages in fact-checking and has a reputation for accuracy is the publication of corrections.

Biased or opinionated sources

While a source may be biased, it may be reliable in the specific context. On the other hand, an opinion in a reliable source is still anopinion, rather than a fact. When dealing with a potentially biased source, editors should consider whether the source meets the normal requirements for reliable sources, such as editorial control and a reputation for fact-checking. Editors should also consider whether the bias makes it appropriate to use in-text attribution to the source, as in "According to the opinion columnist Maureen Dowd..." or "According to the opera critic Tom Sutcliffe..."

Common sources of bias include political, financial, religious, philosophical, or other beliefs.

Questionable and self-published sources

Questionable sources

Questionable sources are those with a poor reputation for checking the facts, or with no editorial oversight. Such sources include websites and publications expressing views that are widely acknowledged as extremist, that are promotional in nature, or which rely heavily on rumors and personal opinions. Questionable sources are generally unsuitable for citing contentious claims about third parties, which includes claims against institutions, persons living or dead, as well as more ill-defined entities. The proper uses of a questionable source are very limited.

Self-published sources

Anyone can create a personal web page or publish their own book, and also claim to be an expert in a certain field. For that reason self-published media—whether books, newsletters, personal websites, open wikis, blogs, personal pages on social networking sites, Internet forum postings, ortweets—are largely not acceptable. This includes any website whose content is largely usergenerated, including the Internet Movie Database (IMDB), CBDB.com, collaboratively created websites such as wikis, and so forth, with the exception of material on such sites that is labeled as originating from credentialed members of the sites' editorial staff, rather than users.

"Blogs" in this context refers to personal and group blogs. Some news outlets host interactive columns they call blogs, and these may be acceptable as sources so long as the writers are professional journalists or are professionals in the field on which they write and the blog is subject to the news outlet's full editorial control. Posts left by readers may never be used as sources.

Self-published material may sometimes be acceptable when its author is an established expert whose work in the relevant field has been published by reliable third-party publications. Self-published information should never be used as a source about a living person, even if the author is a well-known professional researcher or writer; see WP:BLP#Reliable sources.

Self-published and questionable sources as sources on themselvesSelf-published or questionable sources may be used as sources of information about themselves, especially in articles about themselves, without the requirement that they be published experts in the field, so long as:

1. the material is neither unduly self-serving nor an exceptional claim;

2. it does not involve claims about third parties (such as people, organizations, or other entities);

- 3. it does not involve claims about events not directly related to the subject;
- 4. there is no reasonable doubt as to its authenticity;
- 5. the article is not based primarily on such sources.

These requirements also apply to pages from social networking websites such as Twitter, Tumblr, and Facebook.

Chapter 8

Life cycle

Clothing maintenance

Clothing suffers assault both from within and without. The human body sheds skin cells and body oils, and exudes sweat, urine, and feces. From the outside, sun damage, moisture, abrasion and dirt assault garments. Fleas and lice can hide in seams. Worn clothing, if not cleaned and refurbished, itches, looks scruffy, and loses functionality (as when buttons fall off, seams come undone, fabrics thin or tear, and zippers fail).

In some cases, people wear an item of clothing until it falls apart. Cleaning leather presents difficulties, and bark cloth (tapa) cannot be washed without dissolving it. Owners may patch tears and rips, and brush off surface dirt, but old leather and bark clothing always lookold.

But most clothing consists of cloth, and most cloth can be laundered and mended (patching, darning, but compare felt).

Button

In modern clothing and fashion design, a button is a smallfastener, most commonly made of plastic, but also frequently of seashell, which secures two pieces of fabric together. Inarchaeology, a button can be a significant artifact. In theapplied arts and in craft, a button can be an example of folk art, studio craft, or even a miniature work of art.

Buttons are most often attached to articles of clothing but can also be used on containers such as wallets and bags. However, buttons may be sewn onto garments and similar items exclusively for purposes of ornamentation. Buttons serving as fasteners work by slipping through a fabric or thread loop, or by sliding through a buttonhole. Other types of fastenings include zippers, velcro and magnets.

Early button history

Buttons and button-like objects used as ornaments or seals rather than fasteners have been discovered in the Indus Valley Civilization during its Kot Yaman phase (circa 2800–2600 BCE) as well as Bronze Age sites in China (circa 2000–1500 BCE), and Ancient Rome.

Buttons made from seashell were used in the Indus Valley Civilization for ornamental purposes by 2000 BCE. Some buttons were carved into geometric shapes and had holes pierced into them so that they could be attached to clothing with thread. Ian McNeil (1990) holds that: "The button, in fact, was originally used more as an ornament than as a fastening, the earliest known being found at Mohenjo-daro in the Indus Valley. It is made of a curved shell and about 5000 years old."

The earliest functional buttons were found in the tombs of conquering Hungarian tribes from the late 9th century. Functional buttons with buttonholes for fastening or closing clothes appeared first in Germany in the 13th century. They soon became widespread with the rise of snug-fitting garments in 13th- and 14th-century Europe.

Materials and manufacture

Because buttons have been manufactured from almost every possible material, bothnatural and synthetic, and combinations of both, the history of the material composition of buttons reflects the timeline of materials technology.

Buttons can be individually crafted by artisans, craftspeople or artists from raw materials or found objects (for example fossils), or a combination of both. Alternatively, they can be the product of low-tech cottage industry or can be mass-produced in high-tech factories. Buttons made by artists are art objects, known to button collectors as "studio buttons" (or simply "studios", from studio craft)The most famous button artist is known as Renarldo Galvies. He was born in 1958 in France and he is known for crafting some of the worlds finest buttons to some button collectors.

Nowadays, hard plastic, seashell, metals, and wood are the most common materials used in button-making; the others tending to be used only in premium or antiqueapparel, or found in collections.

Laundry, ironing, storage

Humans have developed many specialized methods for laundering, ranging from early methods of pounding clothes against rocks in running streams, to the latest in electronic washing machines and dry cleaning (dissolving dirt in solvents other than water). Hot water washing (boiling), chemical cleaning and ironing are all traditional methods of sterilizing fabrics for hygiene purposes.

Many kinds of clothing are designed to be ironed before they are worn to remove wrinkles. Most modern formal and semi-formal clothing is in this category (for example, dress shirts and suits). Ironed clothes are believed to look clean, fresh, and neat. Much contemporary casual clothing is made of knit materials that do not readily wrinkle, and do not require ironing. Some clothing is permanent press, having been treated with a coating (such as polytetrafluoroethylene) that suppresses wrinkles and creates a smooth appearance without ironing.

Once clothes have been laundered and possibly ironed, they are usually hung on clothes hangers or folded, to keep them fresh until they are worn. Clothes are folded to allow them to be stored compactly, to prevent creasing, to preserve creases or to present them in a more pleasing manner, for instance when they are put on sale in stores.

Watercourses

Laundry was first done in watercourses, letting the water carry away the materials which could cause stains and smells. Laundry is still done this way in some less industrialized areas and rural regions. Agitation helps remove the dirt, so the laundry is often rubbed, twisted, or slapped against flat rocks. Wooden bats or clubs could be used to help with beating the dirt out. These were often called washing beetles or bats and could be used by the waterside on a rock (a beetling-stone), on a block (battling-block), or on a board. They were once common across Europe and were also used by settlers in North America. Similar techniques have also been identified in Japan.

When no watercourses were available, laundry was done in water-tight vats or vessels. Sometimes large metal cauldrons were filled with fresh water and heated over a fire; boiling water was even more effective than cold in removing dirt. Wooden or stone scrubbing surfaces set up near a water supply or portable washboards, including factory-made corrugated metal ones, gradually replaced rocks as a surface for loosening soil.

Once clean, the clothes were wrung out — twisted to remove most of the water. Then they were hung up on poles or clotheslines to air dry, or sometimes just spread out on clean grass.

Washhouses

Sanremo Italy Cabeção Portugal Before the advent of the washing machine, apart from watercourses, laundry was also done in communal or public washhouses (also called washhouses or wash houses), especially in rural areas in Europe or the Mediterranean Basin. Water was channelled from a river orspring and fed into a building or outbuilding built specifically for laundry purposes and often containing two basins - one for washing and the other for rinsing through which the water was constantly flowing, as well as a stone lip inclined towards the water against which the washers could beat the clothes. Such facilities were much more comfortable than washing in a watercourse because the launderers could work standing up instead of on their knees, and were protected from inclement weather by walls (often) and a roof (with some exceptions). Also, they didn't have to go far, as the facilities were usually at hand in the village or at the edge of a town. These facilities were public and available to all families, and usually used by the entire village. The laundry job was reserved for women, who washed all their family's laundry (or the laundry of others as a paid job). As such, washhouses were an obligatory stop in many women's weekly lives and became a sort of institution or meeting place for women in towns or villages, where they could discuss issues or simply chat, equated by many with gossip, and equatable to the concept of the village pump in English. Indeed, this tradition is reflected in the Catalan idiom "fer safareig" (literally, "to do the laundry"), which means to gossip, for instance.

Many of these washhouses are still standing and even filled with water in villages throughoutEurope.

In cities (in Europe as of the 19th century), public washhouses were also built so that the poorer population, who would otherwise not have access to laundry facilities, could wash their clothes. The aim was to foster hygiene and thus reduce outbreaks of epidemics.

The Industrial Revolution

The Industrial Revolution completely transformed laundry technology.

The mangle (wringer US) was developed in the 19th century — two long rollers in a frame and a crank to revolve them. A laundry-worker took sopping wet clothing and cranked it through the mangle, compressing the cloth and expelling the excess water. The mangle was much quicker than hand twisting. It was a variation on the box mangle used primarily for pressing and smoothing cloth.

Meanwhile 19th century inventors further mechanized the laundry process with various handoperated washing machines. Most involved turning a handle to move paddles inside a tub. Then some early 20th century machines used an electrically powered agitator to replace tedious hand rubbing against a washboard. Many of these were simply a tub on legs, with a hand-operated mangle on top. Later the mangle too was electrically powered, then replaced by a perforated double tub, which spun out the excess water in a spin cycle.

Laundry drying was also mechanized, with clothes dryers. Dryers were also spinning perforated tubs, but they blew heated air rather than water.

Apartments

In some parts of the world, including North America, apartment buildings and dormitoriesoften have laundry rooms, where residents share washing machines and dryers. Usually the machines are set to run only when money is put in a coin slot. They turn on when the money is inserted and they run for as long as you pay.

In other parts of the world, including Europe, apartment buildings with laundry rooms are uncommon, and each apartment may have its own washing machine. Those without a machine at home or the use of a laundry room must either wash their clothes by hand or visit a commercial Self-service laundry.

Right to Dry Movement

Some organizations have been campaigning against legislation which has outlawed line-drying of clothing in public places, especially given the increased greenhouse gasemissions produced by clothes dryers.

Legislation making it possible for thousands of American families to start using a clothesline in communities where they were formerly banned was passed in Colorado in 2008. In 2009, clothesline legislation was debated in the states of Connecticut, Hawaii, Maryland, Maine, New Hampshire, Nebraska, Oregon, Virginia, and Vermont. Other states are considering similar bills.

Many homeowners' associations and other communities in the United States prohibit residents from using a clothesline outdoors, or limits such use to locations that are not visible from the street or to certain times of day. Other communities, however, expressly prohibit rules that prevent the use of clotheslines. Florida is the only state to expressly guarantee a right to dry, although Utah and Hawaii have passed solar rights legislation.

A Florida law explicitly states: "No deed restrictions, covenants, or similar binding agreements running with the land shall prohibit or have the effect of prohibiting solar collectors, clotheslines, or other energy devices based on renewable resources from being installed on buildings erected on the lots or parcels covered by the deed restrictions, covenants, or binding agreements."[4] No other state has such clearcut legislation.[citation needed] Vermont considered a "Right to Dry" bill in 1999, but it was defeated in the Senate Natural Resources & Energy Committee. The language has been included in a 2007 voluntary energy conservation bill, introduced by Senator Dick McCormack. Similar measures have been introduced in Canada, in particular the province of Ontario.

Non-iron

A resin used for making non-wrinkle shirts releases formaldehyde, which could cause contact dermatitis for some people; no disclosure requirements exist, and in 2008 the U.S. Government Accountability Office tested formaldehyde in clothing and found that generally the highest levels were in non-wrinkle shirts and pants. In 1999, a study of the effect of washing on the formaldehyde levels found that after 6 months after washing, 7 of 27 shirts had levels in excess of 75 ppm, which is a safe limit for direct skin exposure.

Mending

In past times, mending was an art. A meticulous tailor or seamstress could mend rips with thread raveled from hems and seam edges so skillfully that the tear was practically invisible. When the raw material – cloth – was worth more than labor, it made sense to expend labor in saving it. Today clothing is considered a consumable item. Mass-manufactured clothing is less expensive than the labor required to repair it. Many people buy a new piece of clothing rather than spend time mending. The thrifty still replace zippers andbuttons and sew up ripped hems.

Recycling

Used, unwearable clothing can be used for quilts, rags, rugs, bandages, and many other household uses. It can also be recycled intopaper. In Western societies, used clothing is often thrown out or donated to charity (such as through a clothing bin). It is also sold toconsignment shops, dress agencies, flea markets, and in online auctions. Used clothing is also often collected on an industrial scale to be sorted and shipped for re-use in poorer countries.

There are many concerns about the life cycle of synthetics, which come primarily from petrochemicals. Unlike natural fibers, their source is not renewable and they are not biodegradable.
Chapter 9

Chicken skin gloves and Nelson

It's not just bums that are getting bigger.

Hands, it seems, are also becoming supersized, and nowhere is this more obvious then at the Dents Glove Museum.

Dents have been gloving the hands of royalty and celebrities, since the 17th century, in everything from dingo, dog and mink, to wild boar and rat skins.

And their private collection of gloves, housed in a bank of old map chests at their Warminster based factory, has the gloves to prove it.

The collection, most of which were made by Dents, is fascinating. Tucked away between sheets of acid free tissue the world's smallest hand knitted gloves, no bigger then a thumbnail, share space with the gargantuan horse hide mitts of a farm labourer.



King Charles I's ornately embroidered gloves look suitably showy next to Oliver Cromwell's no nonsense jobbies whilst the black gauntlets of Michael Keaton's Batman (from the 1988 incarnation) seem positively super-heroic next to the blue suede pair sported by Jack Nicholson's Joker.

Chicken skin gloves

But it's the range of skins, furs and everything else in between that's been cut, sewn and pressed into a glove shape, in the past, that's the most fascinating:

"They've tried every animal there is," says John Cundick who's been with the company since the 1940s.

"We've had decorations on gloves using lizard, python and salmon skins. Salmon was only used for edging the gloves because although it's very, very strong there's no stretch in the skins so you couldn't make gloves with it.

In Pictures: Dents Glove Museum

"Rat skins were also used as well as chicken. I'm not talking about Dents now but makers made thousands of pairs of chicken skin gloves which nobody wanted because they had holes where the feathers had been plucked out. So that was a disaster."



Unborn calf-skin gloves

The most bizarre curio in the collection, although not made by Dents, has to be the 'suede' gloves that are so unthinkably fine they can nestle easily in the half shell of a walnut:



The 'suede' gloves that are so fine they can fit into a walnut shell

"It's not a very good story," says John. "It was one of the queen's, we're not quite sure if it was Queen Victoria, but they wanted a glove that nobody else had. So what they did was they killed a pregnant cow and took the calf out and made a pair of gloves.

"She must have had about two dozen pairs made over a few years. But you couldn't wear them everyday because they're so thin. You could only wear them once and then you'd have to throw them away."

Lord Nelson's bloody glove

And it wasn't just queens who had a penchant for the bizarre. Jack Brabham, the Grand Prix motor racing champion, for instance gripped the wheel of his Cooper in the 60s in a pair of Dents driving gloves made of kangaroo leather and wild dingo dog.

But the highlight, of the 2,000 plus VIP gloves, has to be the two left-handed blood stained gloves belonging to Lord Nelson:

"He didn't have a right hand," says John, "so there were two gloves always made. Two left-hand gloves.

"Although it's been confirmed that the stain on one glove is blood, we can't tie it in with the Battle of Trafalgar."



Nelson's gloves, still with the bloodstains from the Battle of Trafalgar?

These days our hands might be a bit beefier and the hides used a tad less exotic but the process of making fine leather and suede gloves is pretty much the same:

"Gloves are still made at Dents in the same way they were over 100 years ago," says Deborah Moore, Dents Creative Director.

"Although what we're finding is that hands are getting bigger. We're all getting larger and we're selling more of the larger sizes."

Wild peccary gloves

So it is still possible to get your oversized mitts on a pair of chicken skin mitts? Well, no. But, according to Deborah, Dents can help you get your hands on something that is a bit on the wild side:

"One of the few skins we use is from a peccary which we bring in from South America. It's a wild pig. It's quite a nasty animal, and they fight and so the skins have lots of scars and shot marks on them when we get them," she said.

"But it's soft, supple and the most important thing is that it's got stretch and retains its shape."



Chapter 10

Fiber Plant

Clothes can be made out of fiber plants such as cotton, plastics such as polyester, or animal skin and hair such as wool. Humans began wearing clothes roughly 83,00 to 170,000 years ago.

Other reasons this message may be displayed:

• If a page was recently created here, it may not yet be visible because of a delay in updating the database; wait a few minutes and try the purge function.

• Titles on Wikipedia are case sensitive except for the first character; please check alternative capitalizations and consider adding a redirect here to the correct title.

• If the page has been deleted, check the deletion log, and see Why was the page I created deleted?.

Case sensitivity

Text sometimes exhibits case sensitivity; that is, words can differ in meaning based on differing use of uppercase and lowercaseletters. Words with capital letters do not always have the same meaning when written with lowercase letters. For example, Bill is the first name of former U.S. president William Clinton, who could sign a bill (which is a proposed law that was approved by Congress). And a Polish person can use polish to clean or shine something. In food, the Calorie, with a capital C, is sometimes used to denote 1000calories of energy.

The opposite term of "case-sensitive" is "case-insensitive".

Use in computer systems

In computers, some examples of usually case-sensitive data are:

- usernames
- passwords
- filenames
- tags

- commands
- variable names
- searching for a text string within electronic text

Some computer languages are case-sensitive for their identifiers (Java, C++, C#, C,Verilog, Ruby and XML). Others are case-insensitive (i.e., not case-sensitive), such as Ada, most BASICs (an exception being BBC BASIC), Fortran, SQL and Pascal. There are also languages, such as Haskell, Prolog and Go, in which the capitalization of an identifier encodes information about its semantics.

A text search operation could be case-sensitive or case-insensitive, depending on the system, application, or context. A case-insensitive search could be more convenient, not requiring the user to provide the precise casing, and returning more results, while a case-sensitive search enables the user to focus more precisely on a narrower result set. For example, Google searches are generally case-insensitive. In Oracle SQL most operations and searches are case-sensitive by default, while in most other DBMS's SQL searches are case-insensitive by default. In most Internet browsers, the "Find in this page" feature has an option enabling the user to choose whether the search would be case-sensitive or not.

Case-insensitive operations are sometimes said to fold case, from the idea of folding the character code table so that upper- and lower-case letters coincide. The alternative smash case is more likely to be used by someone that considers this behaviour a misfeature or in cases wherein one case is actually permanently converted to the other.

In Unix filesystems, filenames are usually case-sensitive. Old Windows filesystems (VFAT, FAT32) are not case-sensitive (there cannot be a readme.txt and a Readme.txt in the same directory) but are case-preserving, i.e. remembering the case of the letters. The originalFAT12 filesystem was case-insensitive. Current Windows file systems, like NTFS, are case-sensitive; that is a readme.txt and a Readme.txt can exist in the same directory. Windows disallows the user to create a second file differing only in case due to compatibility issues with older software not designed for such operation.

Letter case

In orthography and typography, letter case (or just case) is the distinction between the letters that are in larger upper case (large letters, capital letters, capitals, caps, majuscule, upper-case, or uppercase) and smaller lower case (small letters, minuscule, lower-case or lowercase) letters in certain languages. The term originated from the common layouts of the shallow drawers called type cases used to hold the movable type for letterpress printing.

In the Latin script, capital letters are A, B, C, etc.; lower case includes a, b, c, etc. Most Western languages (certainly those based on the Latin, Cyrillic, Greek, Armenian alphabets, and Coptic alphabets) use letter cases in their written form as an aid to clarity. Scripts using two separate cases are also called "bicameral scripts". Many other writing systems (such as the Georgian language, Glagolitic, Arabic, Hebrew, Devanagari, Chinese, Kana, and Hangul character sets) make no distinction between capital and lowercase letters - a system called unicase. If an alphabet has case, all or nearly all letters have both forms. Both forms in each pair are considered to be the same letter: they have the same name and pronunciation and will be treated identically when sorting in alphabetical order. An example of a letter without both forms is the German β (ess-tsett), which exists only in minuscule. When capitalised it normally becomes two letters ("SS"), but the β letter may be used as a capital to prevent confusion in special cases, such as names. This is because β was originally a ligature of the two letters "fs" (a long s and an s), both of which become "S" when capitalised. It later evolved into a letter in its own right. B is also occasionally referred to as a ligature of "sz", which recalls the way this consonant was pronounced in some medieval German dialects. The original spelling sz is preserved in Hungarian and pronounced.

Languages have capitalisation rules to determine whether upper case or lower case letters are to be used in a given context. In English, capital letters are used as the first letter of a sentence, a proper noun, or a proper adjective, and for initials or abbreviations in American English; British English only capitalises the first letter of an abbreviation. The first-person pronoun "I" and the interjection "O" are also capitalised. Lower case letters are normally used for all other purposes. There are however situations where further capitalisation may be used to give added emphasis, for example in headings and titles or to pick out certain words (often using small capitals). There are also a few pairs of words of different meanings whose only difference is capitalisation of the first letter. Other languages vary in their use of capitals. For example, in German the first letter of all nouns is capitalised, while in Romance languages the names of days of the week, months of the year, and adjectives of nationality, religion and so on generally begin with a lower case letter.

Case comparison

Originally alphabets were written entirely in capital letters, spaced between well-defined upper and lower bounds. When written quickly with a pen, these tended to turn into rounder and much simpler forms, like uncials. It is from these that the first minuscule hands developed, the halfuncials and cursive minuscule, which no longer stay bound between a pair of lines. These in turn formed the foundations for the Carolingian minuscule script, developed by Alcuin for use in the court of Charlemagne, which quickly spread across Europe.

European languages, except for Ancient Greek and Latin, did not make the case distinction before about 1300. In Latin, papyri from Herculaneum dating before 79 A.D. (when it was destroyed) have been found which include lower-case letters a, b, d, h, p, and r. According to papyrologist Knut Kleve, "The theory, then, that the lower-case letters have been developed from the fifth century uncials and the ninth century Carolingian minuscules seems to be wrong."

Both "majuscule" and "minuscule" letters existed, but the printing press had not yet been invented, and a given handwritten document could use either one size/style or the other. However, before about 1700 literacy was comparatively low in Europe and the Americas. Therefore, there was not any motivation to use both upper case and lower case letters in the same document as all documents were used by only a small number of scholars.

The timeline of writing in Western Europe can be divided into four eras:

• Greek majuscule (9th–3rd century BC) in contrast to the Greek uncial script (3rd century BC – 12th century AD) and the later Greek minuscule

• Roman majuscule (7th century BC – 4th century AD) in contrast to the Roman uncial (4th–8th century BC), Roman Half Uncial, and minuscule

• Carolingian majuscule (4th–8th century AD) in contrast to the Carolingian minuscule (around 780 – 12th century)

• Gothic majuscule (13th and 14th century), in contrast to the early Gothic (end of 11th to 13th century), Gothic (14th century), and late Gothic (16th century) minuscules.

Traditionally, certain letters were rendered differently according to a set of rules. In particular, those letters that began sentences or nouns were made larger and often written in a distinct script. There was no fixed capitalization system until the early 18th century. The English language eventually dropped the rule for nouns, while the German language kept it.

Similar developments have taken place in other alphabets. The lower-case script for the Greek alphabet has its origins in the 7th century and acquired its quadrilinear form in the 8th century. Over time, uncial letter forms were increasingly mixed into the script. The earliest dated Greek lower-case text is the Uspenski Gospels (MS 461) in the year 835. The modern practice of capitalizing the first letter of every sentence seems to be imported (and is rarely used when printing Ancient Greek materials even today).

Redirect

A redirect is a page which has no content itself, but sends the reader to another page, usually an article or section of an article. For example, if you type "UK" in the search box, or follow the wikilink UK, you will be taken to the article United Kingdom, with a note at the top of the page: "(Redirected from UK)". This is because the page UK contains the wikitext #REDIRECT [[United Kingdom]], which defines it as a redirect page and indicates the target article. It is also possible to redirect to a specific section of the target page, using the #REDIRECT

Purposes of redirects

Reasons for creating and maintaining redirects include:

• Alternative names (for example, Edison Arantes do Nascimento redirects to Pelé), a redirect to the most appropriate article title.

- Plurals (for example, Greenhouse gases redirects to Greenhouse gas).
- Closely related words (for example, Symbiont redirects to Symbiosis).
- Adjectives/Adverbs point to noun forms (e.g., Treasonous redirects to Treason)

• Less specific forms of names, for which the article subject is still the primary topic. For example, Hitler redirects to Adolf Hitler, whereas Johnson is a disambiguation page rather than a redirect, since no Johnson is regarded as the primary topic for that name.

• More specific forms of names (for example, Articles of Confederation and Perpetual Union redirects to Articles of Confederation).

• Abbreviations and initialisms (for example, DSM-IV redirects to Diagnostic and Statistical Manual of Mental Disorders). But often an abbreviation will have multiple meanings, none of which is a primary topic—in that case a disambiguation page should be created rather than a redirect.

• Alternative spellings or punctuation. For example, Colour redirects to Color, and Al-Jazeera redirects to Al Jazeera.

• Punctuation issues—titles containing dashes should have redirects using hyphens.

• Representations using ASCII characters, that is, common transliterations (for example, Pele also redirects to Pelé while Kurt Goedel and Kurt Godel redirect to Kurt Gödel).

• Likely misspellings (for example, Condoleeza Rice redirects to Condoleezza Rice).

• Likely alternative capitalizations (for example, Natural Selection redirects to Natural selection). This is not necessary for user searching, but may aid linking from other articles and external sites.

• To comply with the maintenance of nontrivial edit history, pursuant to WP:MERGETEXT for copyright licensing requirements.

• Sub-topics or other topics which are described or listed within a wider article. (Such redirects are often targeted to a particular section of the article.)

• Redirects to disambiguation pages which do not contain "(disambiguation)" in the title (for example, America (disambiguation)redirects to America). These help maintenance by allowing deliberate links to disambiguation pages to be distinguished from links which need to be disambiguated.

• Shortcuts (for example, WP:V redirects to Wikipedia:Verifiability). This is commonly done in project space, but not in article space.

• Old-style CamelCase links (if already in existence) (AnnaKournikova redirects to Anna Kournikova).

• Links auto-generated from Exif information (Adobe Photoshop CS Windows redirects to Adobe Photoshop).

• Finding what links to a section, when links are made to the redirect rather than the section.

There are redirect templates to explain the reason for a redirect.

Note that redirects to other Wikimedia projects, other websites, or special pages do not work. These should be avoided or replaced with a {{soft redirect}} template. Soft redirects are also used in category space (using the {{category redirect}} template).

How to make a redirect

To create a basic redirect manually, set #REDIRECT [[target page name here]] as the only body text of the page. For instance, if you were redirecting from "UK" to "United Kingdom", this would be the entire body of the "UK" page:

Redirect

Redirects can also be automatically created when you move (rename) an existing page.

How to edit a redirect or convert it into an article

Sometimes an existing redirect should really be handled by a full article, per Category: Redirects with possibilities. For example, the name of a notable musician (who does not yet have an article) may instead be a redirect to an existing article about a band of which the musician is a member. In this case you may edit the redirect to make it into an article. Also, if an existing redirect points to the wrong page, you may edit the redirect to point to a different page.

If you want to edit a redirect page you must use a special technique in order to get to the redirect page itself. This is because when you try to go straight to the redirect page and edit it, the redirect page will automatically redirect you to its target page (because this is what a redirect page is meant to do). Below is an example of why you might need to go to a redirect page itself (to do a small edit) and how to actually get there.

For example, say Trygve Halvdan Lie did not have his own article, and so this link was a redirect to the page Secretary-General of the United Nations. If, later on, the page Trygve Lie was created as a biography, the page Trygve Halvdan Lie should be changed to redirect to Trygve Lie per WP:COMMON NAME. To do this, go to the redirect page by clicking the redirect note on the target page, which in this case would read "(Redirected from Trygve Halvdan Lie)". Once there, you may click the "Edit" tab, and change the page from REDIRECT Targeted and untargeted redirects

Most redirects are untargeted, i.e. they lead simply to a page, not to any specific section of the page. This is usually done when there is more than one possible name under which an article might be sought (for example, Cellphoneredirects to the article Mobile phone). For deciding which should be the actual title of the article, see Article titles.

It is also possible to create a targeted redirect, i.e. a redirect to a particular point on the target page—either a section header or an anchor. For example, Malia Obama redirects to Family of Barack Obama#Malia and Sasha Obama. Therefore, entering "Malia Obama" will bring the searcher straight to that section of the article Family of Barack Obama which deals with "Malia and Sasha Obama".

Consider that when the target page is displayed, it is likely that the top of the page will not be shown, so the user may not see the helpful "(redirected from...)" text unless they know to scroll back to the top. This is less likely to cause confusion if the redirect is to a heading with the same name as the redirect.

The text given in the link on a targeted redirect page must exactly match the target section heading or anchor text, including capitalization. (In the absence of a match, the reader will simply be taken to the top of the target page.) It is often helpful to leave ahidden comment in the target text, to inform other editors that a section title is linked, so that if the title is altered, the redirect can be changed. For example:

To ensure that a redirect will not break if a section title gets altered, or to create a redirect to a point on the page other than a section heading, create an explicit target anchor in the page, e.g., by using the template. The anchor text will not be visible (unless the {{visible anchor}} template is used), but it will serve as a permanent marker of that place on the page. Editors should generally not remove or alter such anchors without checking all incoming links and redirects.

For example, in the Google search article, the text {{anchor|calculator}} is placed at the point where Google Calculator is described. The title Google Calculator can then be redirected to Warning

1. Don't give an anchor the same name as a section heading – this creates invalid code, as anchor names must be unique.

2. Be careful with anchor capitalization – section redirects are case-sensitive in standardscompliant browsers.

Double redirects

The software will not follow chains of more than one redirect - this is called a double redirect. A redirect should not be left pointing to another redirect page.

Double redirects often arise after a page is moved (renamed)—after moving a page, check whether there are any redirects to the old title (using the link on the move result page, or using "What links here"), and change them to redirect straight to the new title. (Double redirects are usually fixed by a bot after some time.)

Linking to a redirect

You can link to a redirect page just as you can link to an article page by placing the redirect page name within a set of double brackets, such as:

replacing Redirect page name with the name of the redirect page to link. To link to a redirect page without following the underlying redirect, use:

replacing Redirect page name with the name of the redirect page to link. Clicking on a noredirect link will send the reader to the redirect page rather than the final redirect destination.

Categorizing redirect pages

Most redirect pages are not placed in article categories. There are three types of redirect categorization that are helpful and useful:

• Maintenance categories are in use for particular types of redirects, such as Category:Redirects from initialisms, in which a redirect page may be sorted using the {{R from initialism}} template. See Wikipedia:Template messages/Redirect pages for a full alphabetical

list of these templates. A brief functional list of redirect category (Rcat) templates is found at {{R template index}}.

• Sometimes a redirect is placed in an article category because the form of the redirected title is more appropriate to the context of that category, e.g. Shirley Temple Black. (Redirects appear in italics in category listings.)

• Discussion pages. If a discussion/talk page exists for a redirect, please ensure (1) that the talk page's projects are all tagged with the "class=Redirect" parameter and (2) that the talk page is tagged at the TOP with the {{talk page of redirect}} template. If the discussion page is a redirect, then it can also be tagged with appropriate Rcats.

Redirects from moves

When a page is renamed/moved, a redirect that is titled with the replaced pagename is created and is automatically tagged with the {{R from move}} template. This sorts the redirect into Category:Redirects from moves.

When should we delete a redirect?

To delete a redirect without replacing it with a new article, list it on redirects for discussion. See the deletion policyfor details on how to nominate pages for deletion.

Listing is not necessary if you just want to replace a redirect with an article, or change where it points: see these instructions for help doing this. If you want to swap a redirect and an article, but are not able to move the article to the location of the redirect please use Wikipedia:Requested moves to request help from an admin in doing that.

The major reasons why deletion of redirects is harmful are:

• a redirect may contain nontrivial edit history;

• if a redirect is reasonably old (or a redirect is created as a result of moving a page that has been there for quite some time), then it is quite possible that its deletion will break links in old, historical versions of some other articles—such an event is very difficult to envision and even detect.

Note that there could exist (for example), links to the URL anywhere on the internet. If so, then those links might not show up by checking for (clicking on) "What Links Here" for "Attorneygate"—since those links might come from somewhere outside Wikipedia.

Therefore consider the deletion only of either really harmful redirects or of very recent ones.

Reasons for deleting

You might want to delete a redirect if one or more of the following conditions is met (but note also the exceptions listed below this list):

1. The redirect page makes it unreasonably difficult for users to locate similarly named articles via the search engine. For example, if the user searches for "New Articles", and is redirected to a disambiguation page for "Articles", it would take much longer to get to the newly added articles on Wikipedia.

2. The redirect might cause confusion. For example, if "Adam B. Smith" was redirected to "Andrew B. Smith", because Andrew was accidentally called Adam in one source, this could cause confusion with the article on Adam Smith, so the redirect should be deleted.

3. The redirect is offensive or abusive, such as redirecting "Joe Bloggs is a Loser" to "Joe Bloggs" (unless "Joe Bloggs is a Loser" is discussed in the article), or "Joe Bloggs" to "Loser". (Speedy deletion criterion G10 may apply.) See also: #Neutrality of redirects

4. The redirect constitutes self-promotion or spam. (Speedy deletion criterion G11 may apply.)

5. The redirect makes no sense, such as redirecting Apple to Orange. (Speedy deletion criterion G1 may apply.)

6. It is a cross-namespace redirect out of article space, such as one pointing into the User or Wikipedia namespace. The major exception to this rule are the pseudo-namespace shortcut redirects, which technically are in the main article space. Some long-standing cross-namespace redirects are also kept because of their long-standing history and potential usefulness. "MOS:" redirects, for example, are an exception to this rule. (Note "WP:" redirects are in the Wikipedia namespace, WP: being an aliasfor Wikipedia.)

7. If the redirect is broken, meaning it redirects to itself or to an article that does not exist, it can be immediately deleted under speedy deletion criterion G8, though you should check that there is not an alternative place it could be appropriately redirected to first.

8. If the redirect is a novel or very obscure synonym for an article name, it is unlikely to be useful. In particular, redirects from a foreign language title to a page whose subject is unrelated to that language (or a culture that speaks that language) should generally not be created. Improbable typos or misnomers are potential candidates for speedy deletion, if recently created.

9. If the target article needs to be moved to the redirect title, but the redirect has been edited before and has a history of its own, then it needs to be deleted to make way for move. If the move is uncontroversial, tag the redirect for G6 speedy deletion. If not, take the article to Requested Moves.

10. If the redirect could plausibly be expanded into an article, and the target article contains virtually no information on the subject, it is better that the target article contain a redlink than a redirect back to itself.

Reasons for not deleting

However, avoid deleting such redirects if:

1. They have a potentially useful page history, or edit history that should be kept to comply with the licensing requirements for a merge (see Wikipedia:Merge and delete). On the other hand, if the redirect was created by renaming a page with that name, and the page history just mentions the renaming, and for one of the reasons above you want to delete the page, copy the page history to the Talk page of the article it redirects to. The act of renaming is useful page history, and even more so if there has been discussion on the page name.

2. They would aid accidental linking and make the creation of duplicate articles less likely, whether by redirecting a plural to a singular, by redirecting a frequent misspelling to a correct spelling, by redirecting a misnomer to a correct term, by redirecting to a synonym, etc. In other words, redirects with no incoming links are not candidates for deletion on those grounds because they are of benefit to the browsing user. Some extra vigilance by editors will be required to minimize the occurrence of those frequent misspellings in the article texts because the linkified misspellings will not appear as broken links.

3. They aid searches on certain terms. For example, if someone sees the "Keystone State" mentioned somewhere but does not know what that refers to, then he or she will be able to find out at the Pennsylvania (target) article.

4. You risk breaking incoming or internal links by deleting the redirect. Old CamelCase links and old subpage links should be left alone in case there are any existing links on external pages pointing to them.

5. Someone finds them useful. Hint: If someone says they find a redirect useful, they probably do. You might not find it useful—this is not because the other person is being untruthful, but because you browse Wikipedia in different ways. stats.grok.se can also provide evidence of outside utility.

6. The redirect is to a plural form or to a singular form, or to some other grammatical form.

Chapter 11

Human

Humans (variously Homo sapiens and Homo sapiens sapiens) are primates of the family Hominidae, and the only extant species of the genus Homo. Humans are distinguished from other primates by their bipedal locomotion, and especially by their relatively larger brainwith its particularly well developed neocortex, prefrontal cortex and temporal lobes, which enable high levels of abstract reasoning, language, problem solving, and culture through social learning. Humans use tools to a much higher degree than any other animal, and are the only extant species known to build fires and cook their food, as well as the only known species to clothe themselves and create and use numerous other technologies and arts. The scientific study of humans is the discipline of anthropology.

Humans are uniquely adept at utilizing systems of symbolic communication such as language and art for self-expression, the exchange of ideas, and organization. Humans create complex social structures composed of many cooperating and competing groups, from families and kinship networks to states. Social interactions between humans have established an extremely wide variety of values, social norms, and rituals, which together form the basis of human society. The human desire to understand and influence their environment, and explain and manipulate phenomena, has been the foundation for the development of science, philosophy, mythology, and religion.

The human lineage diverged from the last common ancestor with its closest living relative, the chimpanzee, some five million years ago, evolving into the australopithecines and eventually the genus Homo. The first Homo species to move out of Africa was Homo erectus, theAfrican variety of which, together with Homo heidelbergensis, is considered to be the immediate ancestor of modern humans. Homo sapiens originated in Africa, where it reached anatomical modernity about 200,000 years ago and began to exhibit full behavioral modernity around 50,000 years ago. Homo sapiens proceeded to colonize the continents, arriving in Eurasia 125,000–60,000 years ago, Australia around 40,000 years ago, theAmericas around 15,000 years ago, and remote islands such as Hawaii, Easter Island,Madagascar, and New Zealand between the years AD 300 and 1280.

Humans began to practice sedentary agriculture about 12,000 years ago, domesticating plants and animals which allowed for the growth of civilization. Humans subsequently established various forms of government, religion, and culture around the world, unifying people within a region and leading to the development of states and empires. The rapid advancement of scientific and medical understanding in the 19th and 20th centuries led to the development of fuel-driven technologies and improved health, causing the human population to rise exponentially. With individuals widespread in every continent except Antarctica, humans are a cosmopolitan species. By 2012 the global human population was estimated to be around 7 billion.

Etymology and definition

In common usage, the word "human" generally refers to the only extant species of the genus Homo — anatomically and behaviorally modern Homo sapiens. Its usage often designates differences between the species as a whole, against any other nature or entity. The term "human" also designates the collective identity, often applied to superseding concepts of race and creed; e.g. "our" human natureand humanity.

In scientific terms, the definition of "human" has changed with the discovery and study of the fossil ancestors of modern humans. The previously clear boundary between human and ape blurred, resulting in "Homo" referring to "human" now encompassing multiple species. There is also a distinction between anatomically modern humans and Archaic Homo sapiens, the earliest fossil members of the species, which are classified as a subspecies of Homo sapiens, e.g. Homo sapiens neanderthalensis.

The English adjective human is a Middle English loanword from Old French humain, ultimately from Latin hūmānus, the adjective form ofhomō "man". The word's use as a noun (with a plural: humans) dates to the 16th century. The native English term man can refer to the species generally (a synonym for humanity), and could formerly refer to specific individuals of either sex. The latter use is now obsolete. Generic uses of the term "man" are declining, in favor of reserving it for referring specifically to adult males. The word is from Proto-Germanic mannaz, from a Proto-Indo-European (PIE) root man-.

The species binomial Homo sapiens was coined by Carl Linnaeus in his 18th century work Systema Naturae, and he himself is thelectotype specimen. The generic name Homo is a learned 18th century derivation from Latin homō "man", ultimately "earthly being" (Old Latin hemō, a cognate to Old English guma "man", from PIE d^h g ^hemon-, meaning "earth" or "ground").The species-namesapiens means "wise" or "sapient". Note that the Latin word homo refers to humans of either gender, and that sapiens is the singular form (while there is no word sapien).

History

Evolution

Scientific study of human evolution studies the development of the genus Homo, reconstructing the evolutionary divergence of the human lineage from other hominins (members of the human clade after the split from the chimpanzee lineage), hominids (great apes) and primates. Modern humans are defined as belonging to the species Homo sapiens, specifically to the single extant subspecies Homo sapiens sapiens.

Evidence from the fossil record

There is little fossil evidence for the divergence of the gorilla, chimpanzee and hominin lineages. The earliest fossils that have been proposed as members of the hominin lineage are Sahelanthropus tchadensis dating from7 million years ago, and Orrorin tugenensis dating from 5.7 million years agoand Ardipithecus kadabba dating to 5.6 million years ago. Each of these has been argued to be a bipedal ancestor of later hominins, but in each case the claims have been contested. It is also possible that either of these species is an ancestor of another branch of African apes, or that they represent a shared ancestor between hominins and other Hominoidea. The question of the relation between these early fossil species and the hominin lineage is still to be resolved. From these early species the australopithecines arose around4 million years ago diverged into robust (also called Paranthropus) and gracilebranches, one of which (possibly A. garhi) went on to become ancestors of the genus Homo.

The earliest members of the genus Homo are Homo habilis which evolved around 2.3 million years ago. Homo habilis is the first species for which we have positive evidence of use of stone tools. The brains of these early hominins were about the same size as that of a chimpanzee, and their main adaptation was bipedalism as an adaptation to terrestrial living. During the next million years a process of encephalizationbegan, and with the arrival of Homo erectus in the fossil record, cranial capacity had doubled. Homo erectus were the first of the hominina to leave Africa, and these species spread through Africa, Asia, and Europe between 1.3 to 1.8 million

years ago. One population of H. erectus, also sometimes classified as a separate species Homo ergaster, stayed in Africa and evolved into Homo sapiens. It is believed that these species were the first to use fire and complex tools. The earliest transitional fossils between H. ergaster/erectus and archaic humans are from Africa such as Homo rhodesiensis, but seemingly transitional forms are also found at Dmanisi, Georgia. These descendants of African H. erectus spread through Eurasia from ca. 500,000 years ago evolving into H. antecessor, H. heidelbergensis and H. neanderthalensis. The earliest fossils of anatomically modern humans are from the Middle Paleolithic, about 200,000 years ago such as the Omo remains of Ethiopia and the fossils of Herto sometimes classified as Homo sapiens idaltu. Later fossils of archaic Homo sapiens from Skhul in Israel and Southern Europe begin around 90,000 years ago.

Anatomical adaptations

Human evolution is characterized by a number of morphological, developmental, physiological, and behavioral changes that have taken place since the split between the last common ancestor of humans and chimpanzees. The most significant of these adaptations are 1. bipedalism, 2. increased brain size, 3. lengthened ontogeny(gestation and infancy), 4. decreased sexual dimorphism. The relationship between all these changes is the subject of ongoing debate. Other significant morphological changes included the evolution of a power and precision grip, a change first occurring in H. erectus.

Bipedalism is the basic adaption of the hominin line, and it is considered the main cause behind a suite of skeletal changes shared by all bipedal hominins. The earliest bipedal hominin is considered to be either Sahelanthropus[30] or Orrorin, withArdipithecus, a full bipedal, coming somewhat later. The knuckle walkers, the gorillaand chimpanzee, diverged around the same time, and either Sahelanthropus or Orrorinmay be humans' last shared ancestor with those animals. The early bipedals eventually evolved into the australopithecines and later the genus Homo. There are several theories of the adaptational value of bipedalism. It is possible that bipedalism was favored because it freed up the hands for reaching and carrying food, because it saved energy during locomotion, because it enabled long distance running and hunting, or as a strategy for avoiding hyperthermia by reducing the surface exposed to direct sun.

The human species developed a much larger brain than that of other primates – typically 1,330 cc in modern humans, over twice the size of that of a chimpanzee or gorilla. The pattern of

encephalization started with Homo habilis which at approximately 600 cc had a brain slightly larger than chimpanzees, and continued with Homo erectus (800–1100 cc), and reached a maximum in Neanderthals with an average size of 1200-1900cc, larger even than Homo sapiens. The pattern of human postnatal brain growth differs from that of other apes (heterochrony), and allows for extended periods of social learning and language acquisition in juvenile humans. However, the differences between the structure of human brains and those of other apes may be even more significant than differences in size. The increase in volume over time has affected different areas within the brain unequally – the temporal lobes, which contain centers for language processing have increased disproportionately, as has the prefrontal cortex which has been related to complex decision making and moderating social behavior. Encephalization has been tied to an increasing emphasis on meat in the diet, or with the development of cooking, and it has been proposed that intelligence increased as a response to an increased necessity for solving social problems as human society became more complex.

The reduced degree of sexual dimorphism is primarily visible in the reduction of the male canine tooth relative to other ape species (except gibbons). Another important physiological change related to sexuality in humans was the evolution of hidden estrus. Humans are the only ape in which the female is fertile year round, and in which no special signals of fertility are produced by the body (such asgenital swelling during estrus). Nonetheless humans retain a degree of sexual dimorphism in the distribution of body hair and subcutaneous fat, and in the overall size, males being around 25% larger than females. These changes taken together have been interpreted as a result of an increased emphasis on pair bonding as a possible solution to the requirement for increased parental investment due to the prolonged infancy of offspring.

Rise of Homo sapiens

Further information: Recent African origin of modern humans, Anatomically modern humans, Archaic human admixture with modern Homo sapiens, and Early human migrations

By the beginning of the Upper Paleolithic period (50,000 BP), full behavioral modernity, including language, music and other cultural universals had developed. As modern humans spread out from Africa they encountered other hominids such as Homo neanderthalensis and the so-called Denisovans, who may have evolved from populations of Homo erectus that had left Africa already around 2 million years ago. The nature of interaction between early humans and

these sister species has been a long standing source of controversy, the question being whether humans replaced these earlier species or whether they were in fact similar enough to interbreed, in which case these earlier populations may have contributed genetic material to modern humans. Recent studies of the human and Neanderthal genomes suggest gene flow between archaic Homo sapiens and Neanderthals and Denisovans.

This dispersal out of Africa is estimated to have begun about 70,000 years BP from northeast Africa. Current evidence suggests that there was only one such dispersal and that it only involved a few hundred individuals. The vast majority of humans stayed in Africa and adapted to diverse array of environments.[45] Modern humans subsequently spread globally, replacing earlier hominins (either through competition or hybridization). They inhabited Eurasia and Oceania by 40,000 years BP, and the Americas at least 14,500 years BP.

Transition to civilization

Main articles: Neolithic Revolution and Cradle of civilization

Further information: Until c. 10,000 years ago, humans lived as hunter-gatherers. They generally lived in small nomadic groups known as band societies. The advent of agriculture prompted the Neolithic Revolution, when access to food surplus led to the formation of permanent human settlements, the domestication of animals and the use of metal tools for the first time in history. Agriculture encouraged trade and cooperation, and led to complex society. Because of the significance of this date for human society, it is the epoch of the Holocene calendar or Human Era.

About 6,000 years ago, the first proto-states developed in Mesopotamia, Egypt's Nile Valleyand the Indus Valley. Military forces were formed for protection, and government bureaucracies for administration. States cooperated and competed for resources, in some cases waging wars. Around 2,000–3,000 years ago, some states, such as Persia, India,China, Rome, and Greece, developed through conquest into the first expansive empires. Ancient Greece was the seminal civilization that laid the foundations of Western culture, being the birthplace of Western philosophy, democracy, major scientific and mathematical advances, the Olympic Games, Western literature and historiography, as well as Western drama, including both tragedy and comedy. [48] Influential religions, such as Judaism, originating in West Asia, and Hinduism, originating in South Asia, also rose to prominence at this time.

The late Middle Ages saw the rise of revolutionary ideas and technologies. In China, an advanced and urbanized society promoted innovations and sciences, such as printing and seed drilling. In India, major advancements were made in mathematics, philosophy, religion and metallurgy. The Islamic Golden Age saw major scientific advancements in Muslim empires. In Europe, the rediscovery of classical learning and inventions such as the printing press led to the Renaissance in the 14th and 15th centuries. Over the next 500 years, exploration and colonialism brought great parts of the world under European control, leading to later struggles for independence. The Scientific Revolution in the 17th century and the Industrial Revolution in the 18th–19th centuries promoted major innovations in transport, such as the railway and automobile; energy development, such as coal and electricity; and government, such as representative democracy and Communism.

With the advent of the Information Age at the end of the 20th century, modern humans live in a world that has become increasinglyglobalized and interconnected. As of 2010, almost 2 billion humans are able to communicate with each other via the Internet, and 3.3 billion by mobile phone subscriptions.

Although interconnection between humans has encouraged the growth of science, art, discussion, and technology, it has also led to culture clashes and the development and use of weapons of mass destruction. Human civilization has led to environmental destructionand pollution significantly contributing to the ongoing mass extinction of other forms of life called the holocene extinction event, which may be further accelerated by global warming in the future.

Habitat and population

Early human settlements were dependent on proximity towater and, depending on the lifestyle, other natural resourcesused for subsistence, such as populations of animal prey forhunting and arable land for growing crops and grazing livestock. But humans have a great capacity for altering their habitats by means of technology, through irrigation, urban planning, construction, transport, manufacturing goods, deforestation and desertification. Deliberate habitat alteration is often done with the goals of increasing material wealth, increasing thermal comfort, improving the amount of food available, improving aesthetics, or improving ease of access to resources or other human settlements. With the advent of large-scale trade and transport infrastructure, proximity to these resources has become unnecessary, and in many places, these factors are no

longer a driving force behind the growth and decline of a population. Nonetheless, the manner in which a habitat is altered is often a major determinant in population change.

Technology has allowed humans to colonize all of the continents and adapt to virtually all climates. Within the last century, humans have explored Antarctica, the ocean depths, and outer space, although large-scale colonization of these environments is not yet feasible. With a population of over seven billion, humans are among the most numerous of the large mammals. Most humans (61%) live in Asia. The remainder live in the Americas (14%), Africa (14%), Europe (11%), and Oceania (0.5%).

Human habitation within closed ecological systems in hostile environments, such as Antarctica and outer space, is expensive, typically limited in duration, and restricted to scientific, military, or industrial expeditions. Life in space has been very sporadic, with no more than thirteen humans in space at any given time. Between 1969 and 1972, two humans at a time spent brief intervals on the Moon. As of December 2013, no other celestial body has been visited by humans, although there has been a continuous human presence in space since the launch of the initial crew to inhabit the International Space Station on October 31, 2000. However, other celestial bodies have been visited by human-made objects.

Since 1800, the human population has increased from one billion to over seven billion, In 2004, some 2.5 billion out of 6.3 billion people (39.7%) lived in urban areas. In February 2008, the U.N. estimated that half the world's population would live in urban areas by the end of the year. Problems for humans living in cities include various forms of pollution and crime, especially in inner city and suburban slums. Both overall population numbers and the proportion residing in cities are expected to increase significantly in the coming decades.

Humans have had a dramatic effect on the environment. Humans are apex predators, being rarely preyed upon by other species. Currently, through land development, combustion of fossil fuels, and pollution, humans are thought to be the main contributor to global climate change. If this continues at its current rate it is predicted that climate change will wipe out half of all species over the next century.

Further information: Human physical appearance, Anatomically modern humans, and Sex differences in humans

Most aspects of human physiology are closely homologous to corresponding aspects of animal physiology. The human body consists of the legs, the torso, the arms, theneck, and the head. An adult human body consists of approximately 100 trillion cells. Most commonly defined body systems in humans are the nervous, the cardiovascular, the circulatory, the digestive, the endocrine, the immune, the integumentary, the lympathic, the muscoskeletal, the reproductive, the respiratory, and the urinary system.

Humans, like most of the other apes, lack external tail, have several blood typesystems, opposable thumbs, and are sexually dimorphic. The comparatively minor anatomical differences between humans and chimpanzees are a result of humanbipedalism. As a result, humans are slower over short distances, but are among the best long-distance runners in the animal kingdom. Humans' thinner body hair and more productive sweat glands help avoid heat exhaustion while running for long distances.

As a consequence of bipedalism human females have narrower birth canals. The construction of the human pelvis differs from other primates, as do the toes. A trade-off for these advantages of the modern human pelvis is that childbirth is more difficult and dangerous than in most mammals, especially given the larger head size of humanbabies compared to other primates. This means that human babies must turn around as they pass through the birth canal which other primates do not do, and it makes humans the only species where females require help from their conspecifics to reduce the risks of birthing. As a partial evolutionary solution, human fetuses are born less developed and more vulnerable. Chimpanzee babies are cognitively more developed than human babies until the age of six months when the rapid development of human brains surpasses chimpanzees'. Another difference between women and chimpanzee females is that women go through menopause and become unfertile decades before the end of their lives. All non-human apes are capable of giving birth until death. Menopause has probably developed among aged women as it has provided an evolutionary advantage (more caring time) to young relatives.

Other than bipedalism, humans differ from chimpanzees mostly in smelling, hearing, digesting proteins, brain size, and the ability of language. Humans have about three times bigger brain than chimpanzees. More importantly, the brain to body ratio is much higher in humans than in chimpanzees and humans have a significantly more developed cerebral cortex with a larger

number of neurons. The mental abilities of humans are remarkable compared to other apes. Humans' ability of speech is unique among primates. Humans are able to create new and complex ideas, and to develop technology, which is unprecedented among other organisms on **Earth.**

The average human male is about 1.7–1.8 metres (5.6–5.9 ft), the average human female is about 1.6–1.7 metres (5.2–5.6 ft) in height. Shrinkage of stature may begin in middle age in some individuals but tends to be universal in the extremely aged. Through history human populations universally became taller, probably as a consequence of better nutrition, healthcare, and living conditions. The average mass of an adult human is 54–64 kg (120–140 lbs) for females and 76–83 kg (168–183 lbs) for males. Like many other conditions, body weight and body type is influenced by both genetic susceptibility and environment and varies greatly among individuals. (see obesity)

Although humans appear hairless compared to other primates, with notable hair growth occurring chiefly on the top of the head, underarms and pubic area, the average human has more hair follicles on his or her body than the average chimpanzee. The main distinction is that human hairs are shorter, finer, and less heavily pigmented than the average chimpanzee's, thus making them harder to see. Humans have about 2 million sweat glands spread over their entire bodies, much more than that of the chimpanzees whose sweat glands are scarce and are mainly located on the palm of the hand and on the soles of the feet.

The dental formula of humans is: 2.1.2.32.1.2.3. Humans have proportionately shorter palates and much smaller teeth than other primates. They are the only primates to have short, relatively flush canine teeth. Humans have characteristically crowded teeth, with gaps from lost teeth usually closing up quickly in young individuals. Humans are gradually losing their wisdom teeth, with some individuals having them congenitally absent.

Genetics

Like all mammals humans are a diploid eukaryotic species. Each somatic cell has two sets of 23 chromosomes, each set received from one parent, gametes have only one set of chromosomes which is a mixture of the two parental sets. Among the 23 chromosomes there are 22 pairs of autosomes and one pair of sex chromosomes. Like other mammals, humans have an XY sex-determination system, so that females have the sex chromosomes XX and males have XY.

One human genome was sequenced in full in 2003, and currently efforts are being made to achieve a sample of the genetic diversity of the species (see International HapMap Project). By present estimates, humans have approximately 22,000 genes. The variation in human DNA is minute compared to that of other species, possibly suggesting a population bottleneck during the Late Pleistocene (ca. 100,000 years ago), in which the human population was reduced to a small number of breeding pairs. Nucleotide diversity is based on single mutations called single nucleotide polymorphisms (SNPs). The nucleotide diversity between humans is about 0.1%, which is 1 difference per 1,000 base pairs. A difference of 1 in 1,000 nucleotidesbetween two humans chosen at random amounts to approximately 3 million nucleotide differences since the human genome has about 3 billion nucleotides. Most of these SNPs are neutral but some (about 3 to 5%) are functional and influence phenotypicdifferences between humans through alleles.

By comparing the parts of the genome that are not under natural selection and which therefore accumulate mutations at a fairly steady rate, it is possible to reconstruct a genetic tree incorporating the entire human species since the last shared ancestor. Each time a certain mutation (Single nucleotide polymorphism) appears in an individual and is passed on to his or her descendants a haplogroup is formed including all of the descendants of the individual who will also carry that mutation. By comparing mitochondrial DNA which is inherited only from the mother, geneticists have concluded that the last female common ancestor whose genetic marker is found in all modern humans, the so-called mitochondrial Eve, must have lived around 200,000 years ago.

The forces of natural selection have continued to operate on human populations, with evidence that certain regions of the genomedisplay directional selection in the past 15,000 years.

Life cycle

As with other mammals, human reproduction takes place as internal fertilization by sexual intercourse. During this process, the erectpenis of the male is inserted into the female's vagina until the maleejaculates semen, which contains sperm. The sperm travels through the vagina and cervix into the uterus or Fallopian tubes for fertilization of the ovum. Upon fertilization and implantation, gestation then occurs within the female's uterus.

The zygote divides inside the female's uterus to become an embryo, which over a period of 38 weeks (9 months) of gestation becomes afetus. After this span of time, the fully grown fetus is

birthed from the woman's body and breathes independently as an infant for the first time. At this point, most modern cultures recognize the baby as a person entitled to the full protection of the law, though some jurisdictions extend various levels of personhood earlier to human fetuses while they remain in the uterus.

Compared with other species, human childbirth is dangerous. Painful labors lasting 24 hours or more are not uncommon and sometimes lead to the death of the mother, the child or both. This is because of both the relatively large fetal head circumference and the mother's relatively narrow pelvis. The chances of a successful labor increased significantly during the 20th century in wealthier countries with the advent of new medical technologies. In contrast, pregnancy and natural childbirth remain hazardous ordeals in developing regions of the world, with maternal death rates approximately 100 times greater than in developed countries.

In developed countries, infants are typically 3–4 kg (6–9 pounds) in weight and 50–60 cm (20– 24 inches) in height at birth. However, low birth weight is common in developing countries, and contributes to the high levels of infant mortality in these regions. Helpless at birth, humans continue to grow for some years, typically reaching sexual maturity at 12 to 15 years of age. Females continue to develop physically until around the age of 18, whereas male development continues until around age 21. The human life span can be split into a number of stages: infancy, childhood, adolescence, young adulthood, adulthood and old age. The lengths of these stages, however, have varied across cultures and time periods. Compared to other primates, humans experience an unusually rapid growth spurt during adolescence, where the body grows 25% in size. Chimpanzees, for example, grow only 14%, with no pronounced spurt. The presence of the growth spurt is probably necessary to keep children physically small until they are psychologically mature. Humans are one of the few species in which females undergo menopause. It has been proposed that menopause increases a woman's overall reproductive success by allowing her to invest more time and resources in her existing offspring and/or their children (the grandmother hypothesis), rather than by continuing to bear children into old age.

For various reasons, including biological/genetic causes, women live on average about four years longer than men — as of 2013 the global average life expectancy at birth of a girl is estimated at 70.2 years compared to 66.1 for a boy. There are significant geographical variations in human life expectancy, mostly correlated with economic development — for example life expectancy at

birth in Hong Kong is 84.8 years for girls and 78.9 for boys, while in Swaziland, primarily because of AIDS, it is 31.3 years for both sexes. The developed world is generally aging, with the median age around 40 years. In the developing world the median age is between 15 and 20 years. While one in five Europeans is 60 years of age or older, only one in twenty Africans is 60 years of age or older.[96] The number of centenarians (humans of age 100 years or older) in the world was estimated by the United Nations at 210,000 in 2002. At least one person, Jeanne Calment, is known to have reached the age of 122 years; higher ages have been claimed but they are not well substantiated.

Diet

Humans are omnivorous, capable of consuming a wide variety of plant and animal material. Varying with available food sources in regions of habitation, and also varying with cultural and religious norms, human groups have adopted a range of diets, from purely vegetarian to primarily carnivorous. In some cases, dietary restrictions in humans can lead to deficiency diseases; however, stable human groups have adapted to many dietary patterns through both genetic specialization and cultural conventions to use nutritionally balanced food sources. The human diet is prominently reflected in human culture, and has led to the development of food science.

Until the development of agriculture approximately 10,000 years ago, Homo sapiensemployed a hunter-gatherer method as their sole means of food collection. This involved combining stationary food sources (such as fruits, grains, tubers, and mushrooms, insect larvae and aquatic mollusks) with wild game, which must be hunted and killed in order to be consumed. It has been proposed that humans have used fire to prepare and cook food since the time of Homo erectus. Around ten thousand years ago,humans developed agriculture, which substantially altered their diet. This change in diet may also have altered human biology; with the spread of dairy farming providing a new and rich source of food, leading to the evolution of the ability to digest lactose in some adults. Agriculture led to increased populations, the development of cities, and because of increased population density, the wider spread of infectious diseases. The types of food consumed, and the way in which they are prepared, has varied widely by time, location, and culture.

In general, humans can survive for two to eight weeks without food, depending on stored body fat. Survival without water is usually limited to three or four days. About 36 million humans die every year from causes directly or indirectly related to hunger. Childhood malnutrition is also common and contributes to the global burden of disease. However global food distribution is not even, and obesity among some human populations has increased rapidly, leading to health complications and increased mortality in some developed, and a few developing countries. Worldwide over one billion people are obese, while in the United States 35% of people are obese, leading to this being described as an "obesity epidemic". Obesity is caused by consuming more calories than are expended, so excessive weight gain is usually caused by a combination of an energy-dense high fat diet and insufficient exercise.

Chapter 12

Fashion forecasting

Fashion forecasting is a global career that focuses on upcoming trends. A fashion forecaster predicts the colors, fabrics and styles that will be presented on the runway and in the stores for the upcoming seasons. The concept applies to not one, but all levels of the fashion industry including haute couture, ready-to-wear, mass market, and street wear. Trend forecasting is an overall process that focuses on other industries such as automobiles, medicine, food and beverages, literature, and home furnishings. Fashion forecasters are responsible for attracting consumers and helping retail businesses and designers sell their brands. Today, fashion industry workers rely on the Internet to retrieve information on new looks, hot colors, celebrity wardrobes, and designer collections.

Long-term forecasting

Long-term forecasting is the process of analyzing and evaluating trends that can be identified by scanning a variety of sources for information. It is a fashion which lasts over 2 years. When scanning the market and the consumers, fashion forecasters must follow demographics of certain areas, both urban and suburban, as well as examine the impact on retail and its consumers due to the economy, political system, environment, and culture. Long-term forecasting seeks to identify: major changes in international and domestic demographics, shifts in the fashion industry along with market structures, consumer expectations, values, and impulsion to buy, new developments in technology and science, and shifts in the economic, political, and cultural alliances between certain countries. There are many specialized marketing consultants that focus on long-term forecasting and attend trade shows and other events that notify the industry on what is to come. Any changes in demographics and psychographics that are to affect the consumers needs and which will influence a company's business and particular [niche market] are determined.

Demographics

Demographics are the quantifiable statistics of a given population. Demographics are also used to identify the study of quantifiable subsets within a given population which characterize that population at a specific point in time. Demographic data is used widely in public opinion polling and marketing. Commonly examined demographics include gender, age, ethnicity, knowledge of languages, disabilities, mobility, home ownership, employment status, and even location. Demographic trendsdescribe the historical changes in demographics in a population over time (for example, the average age of a population may increase or decrease over time). Both distributions and trends of values within a demographic variable are of interest. Demographics can be viewed as the essential information about the population of a region and the culture of the people there.

Demographic profiles in marketing

Marketers typically combine several variables to define a demographic profile. A demographic profile (often shortened to "a demographic") provides enough information about the typical member of this group to create a mental picture of this hypothetical aggregate. For example, a marketer might speak of the single, female, middle-class, age 18 to 24, college educated demographic.

Researchers typically have two objectives in this regard: first to determine what segments or subgroups exist in the overall population; and secondly to create a clear and complete picture of the characteristics of a typical member of each of segments. Once these profiles are constructed, they can be used to develop a marketing strategy and marketing plan. The five types of demographics for marketing are age, gender, income level, race and ethnicity.

Generational cohorts

A generational cohort has been defined as "the group of individuals (within some population definition) who experience the same event within the same time interval".[1] The notion of a group of people bound together by the sharing of the experience of common historical events developed in the early 1920s, in particular beginning with the theory of generations by the sociologist Karl Mannheim. Today the concept has found its way into popular culture through well known phrases like "baby boomer" and "Generation X".

The United Kingdom has a series of four national birth cohort studies, the first three spaced apart by 12 years: the 1946 National Survey of Health and Development, the 1958 National Child Development Study, the 1970 British Cohort Study, and the Millennium Cohort Study, begun much more recently in 2000. These have followed the lives of samples of people (typically beginning with around 17,000 in each study) for many years, and are still continuing. As the samples have been drawn in a nationally representative way, inferences can be drawn from these studies about the differences between four distinct generations of British people in terms of their health, education, attitudes, childbearing and employment patterns.

Criticisms and qualifications of demographic profiling

Demographic profiling is essentially an exercise in making generalizations about groups of people. As with all such generalizations many individuals within these groups will not conform to the profile - demographic information is aggregate and probabilistic information about groups, not about specific individuals. Critics of demographic profiling argue that such broad-brush generalizations can only offer such limited insight and that their practical usefulness is debatable.

Most demographic information is also culturally based. The generational cohort information above, for example, applies primarily to North America (and to a lesser extent to Western Europe) and it may be unfruitful to generalize conclusions more widely as different nations face different situations and potential challenges.

Psychographic

Psychographics is the study of personality, values, attitudes, interests, and lifestyles.[1] Because this area of research focuses on interests, activities, and opinions, psychographic factors are also called IAO variables. Psychographic studies of individuals or communities can be valuable in the fields of marketing, demographics, opinion research, futuring, and social research in general. They can be contrasted with demographic variables (such as age and gender), behavioral variables (such as usage rate or loyalty), and organizational demographics variables (sometimes called firmographic variables), such as industry, number of employees, and functional area.

Psychographics should not be confused with demographics, for example, historical generations may be defined both by demographics, such as the years in which a particular generation is born or even the fertility rates of that generation's parents, but also by psychographic variables like attitudes, personality formation, and cultural touchstones. For example, the traditional approaches to defining the Baby Boom Generation or Generation X or Millennials have relied on both demographic variables (classifying individuals based on birth years) and psychographic variables (such as beliefs, attitudes, values and behaviors).

When a relatively complete profile of a person or group's psychographic make-up is constructed, this is called a "psychographic profile". Psychographic profiles are used in market segmentation as well as in advertising. Some categories of psychographic factors used in market segmentation include:

- activity, interest, opinion (AIOs)
- attitudes
- values
- behavior

Psychographics can also be seen as an equivalent of the concept of "culture" when it is used for segmentation at a national level.

Short-term forecasting

Short-term forecasting focuses on current events both domestically and internationally as well as pop culture in order to identify possible trends that can be communicated to the customer through the seasonal color palette, fabric, and silhouette stories. It gives fashion a modern twist to a classic look that intrigues our eyes. Some important areas to follow when scanning the environment are: current events, art, sports, science and technology.

Responsibility for trend forecasting

Each retailers trend forecasting varies and is mainly dependent upon whether the company is a wholesale brand or private label developer. Larger companies such as Forever 21, have their own trend departments where they follow the styles, fabrics, and colors for the upcoming seasons. This can also be referred to as vertical integration. A company with its own trend department has a better advantage to those who do not because its developers are able to work together to create a unified look for their sales floor. Each seasonal collection offered by a product developer is the result of trend research focused on the target market it has defined for itself. Product developers may offer anywhere from two to six seasonal collections per year, depending on the impact of fashion trends in a particular product category and price point. Women's wear companies are more sensitive to the whims of fashion and may produce four to six lines a year. Men's wear companies present two to four lines a year, and children's wear firms typically present three to four seasonal collections. For each season a collection is designed by the product developers and
is based on a specific theme, which is linked to the color and fabric story. A merchandiser also plays a key role in the direction of upcoming trends. Different from developers, merchandisers have much more experience in buying and are knowledgeable in what consumers will be looking for. The designer takes the particular trends and then determines the styles, silhouette's, and colors for the line and garments while creating an overall theme for the particular season.

Vertical integration

In microeconomics and management, the term vertical integration describes a style of growth and management control. Vertically integrated companies in a supply chainare united through a common owner. Usually each member of the supply chain produces a different product or (market-specific) service, and the products combine to satisfy a common need. It is contrasted with horizontal integration. Vertical integration has also described management styles that bring large portions of the supply chain not only under a common ownership, but also into one corporation (as in the 1920s when the Ford River Rouge Complex began making much of its own steel rather than buying it from suppliers).

Vertical integration is one method of avoiding the hold-up problem. A monopoly produced through vertical integration is called a vertical monopoly.

Nineteenth-century steel tycoon Andrew Carnegie's example in the use of vertical integration led others to use the system to promote financial growth and efficiency in their businesses.

Three types

Vertical integration is the degree to which a firm owns its upstream suppliers and its downstream buyers. Contrary to horizontal integration, which is a consolidation of many firms that handle the same part of the production process, vertical integration is typified by one firm engaged in different parts of production (e.g., growing raw materials, manufacturing, transporting, marketing, and/or retailing).

There are three varieties: backward (upstream) vertical integration, forward (downstream) vertical integration, and balanced (both upstream and downstream) vertical integration.

• A company exhibits backward vertical integration when it controls subsidiaries that produce some of the inputs used in the production of its products. For example, an automobile company may own a tire company, a glass company, and a metal company. Control of these

three subsidiaries is intended to create a stable supply of inputs and ensure a consistent quality in their final product. It was the main business approach of Ford and other car companies in the 1920s, who sought to minimize costs by integrating the production of cars and car parts as exemplified in the Ford River Rouge Complex.

• A company tends toward forward vertical integration when it controls distribution centers and retailers where its products are sold.

Examples

One of the earliest, largest and most famous examples of vertical integration was the Carnegie Steel company. The company controlled not only the mills where the steel was made, but also the mines where the iron ore was extracted, the coal mines that supplied thecoal, the ships that transported the iron ore and the railroads that transported the coal to the factory, the coke ovens where the coal was cooked, etc. The company also focused heavily on developing talent internally from the bottom up, rather than importing it from other companies. Later on, Carnegie even established an institute of higher learning to teach the steel processes to the next generation.

Oil industry

Oil companies, both multinational (such as ExxonMobil, Royal Dutch Shell, ConocoPhillips or BP) and national (e.g. Petronas) often adopt a vertically integrated structure. This means that they are active along the entire supply chain from locating deposits, drilling and extracting crude oil, transporting it around the world, refining it into petroleum products such as petrol/gasoline, to distributing the fuel to company-owned retail stations, for sale to consumers.

Telephone

Telephone companies in most of the 20th century, especially the largest (the Bell System) were integrated, making their owntelephones, telephone cables, telephone exchange equipment and other supplies.

Reliance

The Indian petrochemical giant Reliance Industries has integrated back into polyester fibres from textiles and further intopetrochemicals, beginning with Dhirubhai Ambani. Reliance has entered the oil and natural gas sector, along with retail sector. Reliance now has a complete vertical

product portfolio from oil and gas production, refining, petrochemicals, synthetic garments and retail outlets.

Media industry

From the early 1920s through the early 1950s, the American motion picture had evolved into an industry controlled by a few companies, a condition known as a "mature oligopoly". The film industry was led by eight major film studios. The most powerful of these studios were the fully integrated Big Five studios: MGM, Warner Brothers, 20th Century Fox, Paramount Pictures, and RKO. These studios not only produced and distributed films, but also operated their own movie theaters. Meanwhile, the Little Three studios: Universal Studios, Columbia Pictures, and United Artists produced and distributed films, but did not own their own theaters.

The issue of vertical integration (also known as common ownership) has been a main focus of policy makers because of the possibility of anti-competitive behaviors affiliated with market influence. For example, in United States v. Paramount Pictures, Inc., the Supreme Court ordered the five vertically integrated studios to sell off their theater chains and all trade practices were prohibited (United States v. Paramount Pictures, Inc., 1948). The prevalence of vertical integration wholly predetermined the relationships between both studios and networks and modified criteria in financing. Networks began arranging content initiated by commonly owned studios and stipulated a portion of the syndication revenues in order for a show to gain a spot on the schedule if it was produced by a studio without common ownership.[4] In response, the studios fundamentally changed the way they made movies and did business. Lacking the financial resources and contract talent they once controlled, the studios now relied on independent producers supplying some portion of the budget in exchange for distribution rights.

Certain media conglomerates may, in a similar manner, own television broadcasters (either overthe-air or on cable), production companies that produce content for their networks, and also own the services that distribute their content to viewers (such as television and internet service providers). Bell Canada, Comcast, and BSkyB are vertically integrated in such a manner operating media subsidiaries (in the case of Bell and Comcast, Bell Media and NBCUniversal respectively), and also both provide "triple play" services of television, internet, and phone service in some markets (such as Bell TV/Bell Internet, Xfinity, and Sky's satellite TV services).

Apple

Apple Inc. have been listed as an example of vertical integration, specifically with many elements of the ecosystem for the iPhone andiPad, where they control the processor, the hardware and the software. Hardware itself is not typically manufactured by Apple, but isoutsourced to contract manufacturers such as Foxconn or Pegatron who manufacture Apple's branded products to their specifications. Apple retail stores sell its own hardware, software and services directly to consumers.

Agriculture industry

Vertical integration through production and marketing contracts have also become the dominant model for livestock production. Currently, 90% of poultry, 69% of hogs, and 29% of cattle are contractually produced through vertical integration. The USDA supports vertical integration because it has increased food productivity. However, "... contractors receive a large share of farm receipts, formerly assumed to go to the operator's family."

Under production contracts, growers raise animals owned by integrators. Form contracts contain detailed conditions for growers, who are paid based on how efficiently they use feed, provided by the integrator, to raise the animals. The contract dictates how to construct the facilities, how to feed, house, and medicate the animals, and how to handle manure and dispose of carcasses. Generally, the contract also shields the integrator from liability.

Under marketing contracts, growers agree in advance to sell their animals to integrators under an agreed price system. Generally, these contracts shield the integrator from liability for the grower's actions and the only negotiable item is price.

Problems and benefits

There are internal and external society-wide gains and losses stemming from vertical integration. They will differ according to the state of technology in the industries involved, roughly corresponding to the stages of the industry lifecycle.

Static technology

This is the simplest case, where the gains and losses have been studied extensively.

Internal gains

- Lower transaction costs
- Synchronization of supply and demand along the chain of products
- Lower uncertainty and higher investment
- Ability to monopolize market throughout the chain by market foreclosure

• Strategic independence (especially if important inputs are rare or highly volatile in price, such as REM)

Internal losses

- Higher coordination costs
- Higher monetary and organizational costs of switching to other suppliers/buyers

• Weaker motivation for good performance at the start of the supply chain since sales are guaranteed and poor quality may be blended into other inputs at later manufacturing stages

Benefits to society

- Better opportunities for investment growth through reduced uncertainty
- Local companies are better positioned against foreign competition

Losses to society

• Monopolization of markets

• Rigid organizational structure, having much the same shortcomings as the socialist economy (cf. John Kenneth Galbraith's works)

Vertical expansion

Vertical expansion, in economics, is the growth of a business enterprise through the acquisition of companies that produce the intermediate goods needed by the business or help market and distribute its product. Such expansion is desired because it secures the supplies needed by the firm to produce its product and the market needed to sell the product. The result is a more efficient business with lower costs and more profits.

Related is lateral expansion, which is the growth of a business enterprise through the acquisition of similar firms, in the hope of achieving economies of scale.

Vertical expansion is also known as a vertical acquisition. Vertical expansion or acquisitions can also be used to increase scales and to gain market power. The acquisition of DirecTV by News Corporation is an example of forward vertical expansion or acquisition. DirecTV is a satellite TV company through which News Corporation can distribute more of its media content: news, movies, and television shows. The acquisition of NBC by Comcast Cable is an example of backward vertical integration.

In the United States, protecting the public from communications monopolies that can be built in this way is one of the missions of the Federal Communications Commission.

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