

Contents:

[Introduction](#)

[Neolithic symbols and emblems](#)

[Antic symbols and emblems](#)

[Christian symbols and emblems](#)

[Feudal symbols and emblems](#)

[Imperial symbols and emblems](#)

[Heraldic symbols and emblems](#)

[Astrological/astronomical symbols and emblems](#)

[Oriental symbols and emblems](#)

[Modern symbols and emblems](#)

[Dictionary](#)

Introduction

Why this book ? The primordial aim of this work is to simplify the understanding of symbols from our past, present or future. Almost all literary work is abundant in symbols, considered to be known by the reader. Unlike letters and words, symbols are means for complex communication, often with multiple levels of meaning, depending on the instruction of the reader. Not understanding the symbols may lead to poor judgements. On the other hand, overemphasizing the presence and meaning of symbols may lead to skitsofrenia. There must be a measure in all things. Signs and symbols are meant to simplify our life, to bring order in an entropic world. Two or more symbols combined may produce derived concepts, an alphabet, or an articulated language. This text is not a reference in any speciality, nor does it exhaust any of the themes or subjects, it is merely an invitation for afternoon lectures. Understanding the symbols of the past, will clear your way in understanding the symbols and emblems to be developed in the future.

author: Mircea Aurel Valer Rusu

Neolithic symbols and emblems

Starting with the last Ice Age, around 10 000 BC, prehistoric men started to adopt a more settled existence making use of polished stone tools. Their favourite places of hunting and gathering were marked by megalithic constructions. Famous such archeological sites are: Gobekli Tepe (9500-7500 BC), Catal Huyuk Anatolia (7500-7000 BC), Ggantije Gozo Malta (3600 BC), Gavrinis Passage Grave Brittany (3500 BC), Züschen Tomb Germany (3300 BC), Stonehenge Stone Circle (2600 BC). In all cases, there is a circular massive base in stone, that could have withstood a massive structure in wood. For example, Gobekli Tepe was proposed as the archeological site for the famous Tower of Babylon. Other amazing examples of primitive work are carved monoliths known as menhirs (men standing stones). They are distributed across Europe, Africa, Asia and Oceania. Famous examples are: Locmariaquer Brittany, Senapati Manipur India, Carnac Brittany, Cevennes France, Laconi Sardinia, Rogaland Norway, Almendres Cromlech Portugal, Arlobi Spain, Tucuman Argentina, Rano Raraku Easter Island. Since the entire population of the world has been estimated

for that time at around 65 million people, it is hard to understand what could have driven the ancient people to such a tremendous work, unless they had some kind of knowledge of time and immortality. Nevertheless, in modern times we use to associate such work with immortality. With the discovery of clay molding, human creativity entered in a new era, with items including totems and personal adornments. Since most of the energy in primitive man was consumed for food and procreation, the earliest symbols were related to fertility, both in men and animals. Known as "neolithic Venus", numerous statuettes carved "in the round shapes" were found in all prehistoric sites, the earliest dating around 26 000 BC. Famous sites are: Hohle Fels Germany (26 000 BC), Willendorf France (25 000 BC), Dolni Vestonice Moravia (20 000 BC), Moravny Slovakia (20 000 BC), Kostenki Russia (20 000 BC), Balzi Rossi Italy (18 000 BC), Chatal Huyuk Turkey (17 000 BC), Monruz Switzerland (11 000 BC), Halaf Turkey (6000 BC), Hamangia Romania (5000 BC), Mehrgarh Pakistan (3000 BC). The neolithic art expanded in a parallel fashion with the use of pottery. Famous examples were found in Asia: Xianrendong Cave Pottery (18 000 BC), Yuchanyan Cave Pottery (16 000 BC), Amur River Basin Pottery (14 000 BC), Jomon Pottery Japan (10 000 BC). In the Near East, ceramic art flourished starting with the Hassuna Period in Mesopotamia (7000-6000 BC). In Europe, ceramic cultures started to flourish with the Linear Pottery (5500-4500 BC).



Already from the Upper Palaeolithic, the desire to adorn the body induced man to make jewellery, out of bones, animal teeth or sea shells. In the beginning, bones and teeth from killed animals were perforated and used as ornaments, to attest someone's hunting skills. The greater the teeth, the greater was his pride. Some of the items were related to ritual practices and believe systems, others were used as personal and social identity marks, some for the sake of beauty. Considering the craftsmanship needed in producing them, ornaments found in archeological sites were often used as a criteria in dating the human remains buried at some place. For example, at Gobekli Tepe, a human formed stone pillar clearly shows necklace and belt, dating around 10 000 BC. In South-East Turkey, again in the 10th millenium BC, at Kortik Tepe, hundreds of thousands of beads were made, resulting into a stone bracelet manufacture that exploited local raw materials. The nature of raw matherials may also give geographical clues to the provenance of items. Obsidian is probably the best known example of such raw matherial sourcing, restricted to only a small number of volcanic areas. Another clear example is provided by the marine shells, some times found at several hundreds kilometers from shore. Raw matherial such as, chipped stone, ceramics or early metals, have been used in archeological periodisation, resulting in core typologies. Since several individual ornaments were extremely worn, they were probably passed from generation to generation, while others seem to have been deposited without use, in religious burials. Extensive work on neolithic beads shows that neolithic people moved rapidly and in many directions, probably in search of food. A consistent system of recording ornamentation items, including well defined parameters in typology and terminology, results in a better interpretation of social behaviour and inter-human relationships. For example, an analysis of more than 200 bead-types found in more than 400 sites, spanning over a 3000 year period (from 8 000 to 5 000 BC), suggests that Northern Europeans initially rejected the practice of farming. With this respect, researchers associated the bone and teeth necklaces with hunting, while the creation of discrete types of beads, bracelets and pendants was associated with farming and

agricultural activities. For example, the ring bracelet made of stone indicates a trans-cultural and long lasting tradition during the Neolithic age, from around 5 600 to 4 800 BC. The most common stone ring bracelets in Italy were made of soft, green stone, such as soapstone, breccia, or travertine, while bracelets made of marble and limestone were more common in Southern France. Jade and turquoise objects, such as bracelets, earrings and pendants, played a major part in the Chinese culture, evolving up to this day. In India, the origin of jewellery stretches down to the era of Ramayana and Mahabharata, when people used to decorate themselves with flowers, feathers and beads. Good examples are found in ornamental objects discovered at the sites such as: Kannekolour, Bijaspur, Wadgiri.



Pictographs are among the earliest graphic systems used to display resemblances to physical objects. Pictography was also the earliest form of writing, continued later in some symbolic variants such as: Chinese characters, cuneiform or hieroglyphic writing. When carved or incised in stones, the pictographs are called petroglyphs. Some of the earliest known pictographs from before 3000 BC were discovered in China, Egypt and Mesopotamia. When the graphic symbol was used to represent a concept, or an idea, the term ideogram is used instead. When a graphic symbol is used to represent a word it is called a logogram or logograph and the use of logograms for writing is called logography or logographic system. In modern times, pictographs are still in use as the main written way of communication in some non-literate cultures of Africa, Americas and Oceania. Petroglyphs have been found in all parts of the globe, with the highest concentration in Africa, Scandinavia, Siberia, North America and Australia. Some of the charcoal pictographs sites in Australia, at the Drysdale River in the Kimberly region, have been radiocarbon dated to 4800 to 20 300 BC. Some 8453 petroglyphs carved into the cliffs, estimated to date back 7000-8000 years, were identified in China, at Damaidi, a small village located in Zhongwei, on the Yellow River. Other early Neolithic symbols in China consists of 16 distinct markings inscribed on bones, found in Jiahu, near Henan, dated around 6000 BC. Two of them were identified as symbols for Eye and Sun. Other prehistoric type of logographic writing used marks engraved on oracle bones or turtle plastrons, designed for various types of pyromantic divination. The best example is the Chinese oracle bone script, dated in the late second millenium BC, amounting about 150 000 pieces, found at the Yinxu site, located in Xiaotun Village, Henan Province. Another representative site is the Paleo-Indian culture, of the Moab region in the United States, at the Arches National Park in Utah, where an archaic culture flourished from 5500 BC to 1 AD. Animal and plant forms, body forms and headdresses are common, mixed with abstract motifs such as: zig zag and parallel lines, dots and circles. In Africa, one of the largest concentration in rock petroglyphs is in Namibia, at the Twyfelfontein, where a sandstone table mountain received very little rainfall, while hunter gatherers inhabited the region for some 6 000 years. In Armenia, the Ukhtasar Petroglyphs are belived to date back to 12 000 BC, carved onto dark volcanic stones, left behind by an extinct vulcano. The carvings depict hunting scenes, spirals and circles, probably suggesting hunting teritories. Kosku River and Tamgaly are famous petroglyph sites in Kazakhstan, while Maharashtra, Ratnagiri and Kashmir are the states with the highest concentration in petroglyphs in India. In Europe, some well known locations are: Durham and Creswell Crags in England, Tara in Ireland, Valcamonica in Italy, Alta and Mollerstufossen in Norway, Kanozero and Sikachi-Alyan in Russia, Tanumshede, Torhamn and Glosa in

Sweden.



Another group of early symbols were identified on fragments of Neolithic pottery. For example, the archeological site at Banpo, in the Shaanxi province of China, dating from the 5th millenium BC had produced 22 different symbols on 113 pottery fragments, symbols that have been interpreted as early Chinese characters. Identifiable symbols are related to food: herbs, grains, fish, deer. Other liniar symbols may have been identified as fences, or simple tools destined for agricultural use. Similar symbols were found on clay tablets, dating some 4-5000 BC. For example, at the neolithic site at Tartaria, near the gold deposits in Zlatna, Romania, some clay tablets found clearly show a goat, a fire place, a fence, and the knowledge to divide space in four quarters, as for acounting. A similar tablet was found at the site of ancient Sumerian city of Kish (Tell al-Uhaymir, Irak) inscribed with proto-cuneiform signs, dated to some 3350-3200 BC. A foot, a hand, a sledge and a plant can clearly be identified on this clay tablet, together with the division of space, suggesting different periods in time. Another example of Sumerian pictographs were discovered at Tell Brak, an ancient city in Syria, evaluated to date from the same period. In this case, one can clearly identify a tree, a fork, an eye and a symbol for habitation, or a furnace. Early Summerian pictographic writing also included symbols for: star, sun, man, farmer, head, reed, ox, bird, fish. Only two centuries later, on a clay tablet discovered in Mesopotamia, at the site of Tell Jemdet Nasr, dated around 3000-2900 BC, the symbols have more density and the lines are more clearly cut, with an evident standardization. Even more abstract symbols are found on the clay tablets discovered in Bulgaria, near the village of Gradeshnitsa. Consisting of straight and curved lines, they result in complex geometric figures. One side of the tablet clearly indicates a divided space, with four rectangles defended by walls, that may represent a habitation or a sheep fold. Symbols and proto-writting were also found all along the Danube River on fragments of pottery identified to Vinca and Cucuteni-Trypillia cultures. Such clay tablets could have served as a primitive notebook or an accounting book used by the tribal chiefs. Characteristic to the Danube culture, in their transhumance, primitive communities used to share grazing fields and sheep folds. In Mesopotamia, clay tablets were used in later times to account amounts of goods or market transactions. For example, sheep, grain or bread loaves transactions were recorded, using clay tokens. Clay tablets were in use by ancient kings to mark their revenue from different territories. A basket of grain was the universal trading unit, each sign representing one unit. A cow or a horse amounted ten grain baskets.



The most extensive system of symbol used for proto-writing, known as hieroglyphic writing, was discovered in Egypt, on numerous archeological sites, starting with the Early Bronze Age, in the third millennia BC. Starting with the Second Dynasty (2890 - 2686 BC), the Egyptian hieroglyphs developed into a mature writing system used for monumental inscriptions. More than 800 distinct signs were in use to form full sentences. Later, in the Greco - Roman period, there were in use more than 5000 different symbols, including logograms and phonetic glyphs, used to inscribe phonetic words. Some of the oldest symbols, immediately recognizable are: eye, plough, horn, hand, foot, sandal, mountain, bread, angle, bird, fish, snake, water, bow, arrow, amphora, land, town, plants. In order to organize writing, symbols were inscribed successively on horizontal or vertical lines, using seals. The names of gods and sitting kings were placed within a cartouche (an oval contour). The ancient language and the knowledge of reading the hieroglyphes has been completely lost. Early attempts at decipherment were made in the 10th century, by Ibn Wahshiyya, author of an influential Arabic work on agriculture, called Nabataean Agriculture. In one of his works, called "The Book of the Desire of the Maddened Lover for the Knowledge of Secret Scripts" he is known to have correctly identified the phonetic value of a number of hieroglyphs, but his knowledge of the Egyptian language was insufficient for a fluent translation. The breakthrough in decipherment came in 1799, with the discovery of the Rosetta Stone, by Napoleon's troops, a funerary stone with a parallel text written in Greek. The complete decipherment was made in 1820, by philologist Jean Francois Champollion, after 15 years of hard work. Additional information came in 1815, from the Philae Obelisk in Upper Egypt, bearing an inscription both in Greek and Egyptian. A similar approach to writing, dating from the second millennia BC, was found all across Anatolia and in modern Syria, known as the "Anatolian hieroglyphs", consisting of 500 signs. The Anatolian hieroglyphs are typologically similar to the Egyptian ones, but they are not derived from that script. Among the symbols unique to this writing are: pillars, column capitals, donkey, crane, yoke, falk, ibex. The earliest examples occur on seals and consist of names, titles, skills, property and auspicious signs. Others are inscribed only on funerary stones. The language used with the Anatolian hieroglyphes was identified as Luwian, and real progress in their decipherment was made after 1930, due to the efforts of historians such as: Ignace Gelb, Piero Meriggi, Emil Forrer and Bedrich Hrozny. A hieroglyphic writing system was also identified in Crete, during the Minoan era. The corpus of Cretan hieroglyphic inscriptions includes 120 clay documents with 274 sign groups, using 723 signs. Hieroglyphs were also found on 150 seals and sealings, with 307 sign groups, using 832 signs.



Hieroglyphs are not unique to Egypt, Anatolia and Creta. A similar type of proto-writing has been discovered in the American continent, affiliated with the Olmec, Aztec, Mayan, or Muisca civilizations. The Olmec civilization was the earliest, flourishing in between 1500 BC and 400 BC. A block of serpentinite known as Cascajal Block, dated around 900 BC, measuring 36 x 21 x 13 cm, was discovered near the village of Lomas de Tacamichapan, in Veracruz, containing 62 petroglyphes. Some of the symbols were identified to resemble plants (maize, pineapple), mushrooms, animals, eggs, insects and fish. Other rectangular shapes may have represented habitation, storage buildings, primitive tools and weapons. The symbols apparently run in almost horizontal rows, but there is no sign of overall organization to form words or sentences. There are various interpretations of this script. The simplest one is that the stone was used to teach children the basics of their language: food, weapons, tools, building. A descendent writing system, called the Zapotec script, dated around 700 BC to 200 BC, was identified on megalithic ceremonial structures around Monte Alban, an archeological site in the Santa Cruz Xoxocotlan Municipality of Mexico. The Aztec writing system, called Nahuatl script, combines ideographic writing with phonetic logograms and syllabic signs. The Aztec numerical system was vigesimal (with twenty units) indicated by lines and dots. The most famous artefact is the Aztec sun stone, or calendar stone, also called Owlcation. Since it is based on the Sun, with a 365 day cycle, it is considered to be an agricultural calendar, mainly used for hunting and gathering rather than for agricultural works. Events such as solar eclipses, floods, droughts or famines, were recorded using a numeral system, in a continuous year-count, reading from left to right. Maya hieroglyphs were in continuous use from the 3rd century BC until the Spanish conquest. The first glyphs to be deciphered were the numerals, also in a vigesimal system, based on the powers of twenty. The oldest knowledge about the Mayan language came from the work of Bishop Diego de Landa Calderon (1524-1579), who produced an alphabet in correspondence with the Spanish one, known as the "de Landa alphabet". Unfortunately, due to matters related to human sacrifice, the Spanish bishop ordered an Inquisition where more than 5000 Maya cult images were burnt. Only three books of Mayan hieroglyphs are known to have survived. In 1930, linguist Benjamin Whorf proposed that Maya hieroglyphs were phonetic, or more specifically syllabic. Epigrapher Yuri Knorozov played a major role in their decipherment using the principle of synharmony, where each pair of consonant vowel was represented by two glyphs. Knorozov was a pioneer in using mathematics and computers in the effort of decipherment. In 1988, archeologist Wolfgang Gockel published a translation of the scripts, based on morphemic rather than syllabic interpretation of the glyphs. It is certain that the Mayan had a very good knowledge on embryonic development in chicken, since there is a glyph for each numeral, one for each day in the 21 days of development. Other symbols were interpreted as: lord, shield, throne, stone, flint stone, house, flower, man, captive, mountain, water, fire, road, snake, sun, jaguar, dance, sky, spirit, place. Another ancient civilisation in present day Colombia, the Muisca civilisation also used petroglyphes with anthropo-zoomorphic figures and hieroglyphes for written numerals. More than 90 paintings by cartographer Manuel Maria Paz (1820-1902) containing old hieroglyphic inscriptions are preserved at the National Library of Colombia.



A similar approach to proto-writing was discovered on the Indian subcontinent, produced by the Indus Valley civilization, known as the Harappan script, or as the Indus script. A corpus of over 4000 inscribed objects have been discovered until now. In early 1970s, epigraphist Iravatham Mahadevan had published a corpus of 3700 inscriptions on seals, with 417 distinct signs in specific patterns. Most of the inscriptions were very short, with an average of five symbols, the longest contained 26 symbols. The earliest examples were dated as early as 35th century BC, while inscribed pottery fragments were dated around 2800 to 1900 BC. Commonly, the signs are carved on flat, rectangular stamp seals, made of soft materials such as: soapstone, bone, shell, terracotta, sandstone, copper, silver and gold. In most cases, the main character carved is the pictogram of a strong animal: elephant, water buffalo, rhinoceros, tiger or unicorn, surrounded by symbols. Despite efforts, the Indus script has not been deciphered yet. According to historians it was probably written from right to left, but they some times run in alternate directions (boustrophedonic). Since most of the symbols are used on seals, their mirror image impression on clay or ceramics must be considered for interpretation. American philologist Michael Witzel believes that the symbols are nonlinguistic signs, emblems for families, clans, gods or religious concepts. Russian scholar Yuri Knorozov, based on computer analysis, suggested that a Dravidian language (spoken in India and Sri Lanka) is the most likely candidate for the underlying language of the script. Indian archeologist Shikaripura claimed to have deciphered in the script a Sanskritik reading of the numerals. He also has noticed striking similarities in the shape and form with the Phoenician letters, arguing that the Phoenician script evolved from the Harappa script. Other scholars found similarities with the Linear Elamite script, while the two languages were contemporary to each other. Researcher Rajeh Rao came to the conclusion that rather than simply indicating the ownership of property, Indus seals may have been used as proto-coins, as tokens, tablets and sealings, used for repetitive economic transactions and exchange of goods. Out of 110 symbols analysed by him, more than 50 were depicting a man silhouette in some kind of work. He concluded that multiple seals may have been in use in rationing and administration of labor. Considering the fact they were produced in the Vedic times, it is likely that such seals have been used to produce clay amulets, to grant the hunting of large animals. Chieftains would distribute amulets among his team, using symbols to mark tools, traps, means or dangers to encounter during the hunt.



Antic symbols and emblems

Among the best known symbols in the Ancient World, the columns are single pieces of stone, or built up with blocks, used in construction to transfer a compressive load, from a ceiling, a beam or a floor. Columns were increasing the space which could be spanned by a ceiling, allowing the entrance of light, and offering an alternative aesthetic to building exteriors. Early columns were in use from the Bronze Age (3000-1000 BC), mostly as a single central support for the roof. The Minoans used whole trunks of tree, turned upside down and painted, as in the Palace of Knossos. Stone columns began to replace the wood in the first centuries BC, carved in one piece. As the buildings became bigger, columns were constructed from separate drums, using a wooden dowel or a metal peg in the centre of each drum. Celebrated examples of this type may be seen in the Pantheon of Rome and on the Acropolis in Athens. In Egypt, columns stood on a base and carried sculpted decorations of leaves, while Persian columns often had animal figures, such as bulls to form their capitals, suggesting that the Persian desert was a savannah at that time. In the Greek world, Doric columns were wider at the bottom, with a simple capital but no base. Ionic columns stood on a base, with a capital shaped as a double scroll (volute). Corinthian columns were slimmer and taller, standing on a base, showing a rich decorated capital with flowers and leaves. The Romans introduced the Tuscan column, with no flutes, a simple base and capital. Remarkable examples are: Great Hypostyle Hall of Karnak, Hall of Hundred Columns at Persepolis, Caryatids at Erechteion in Athens, Temple of Apollo at Delphi, Temple of Baal at Palmyra. The Traian Column in Rome, over 30 meters in high, was decorated with nearly 200 meters of a continuous spiral frieze, depicting over 2500 figures, illustrating the emperor's victories in Dacia. In China, "huabiao" is a type of ceremonial column erected in front of palaces and tombs, decorated with a coiled dragon and auspicious clouds. Derived from the totemic poles of ancient tribes, during the Han Dynasty era, such columns became a symbol of long endurance and responsibility. Proeminent examples are at the Gate of Heavenly Peace Palace (Tiananmen). Famous examples of ancient columns in India are the pillars of Emperor Ashoka, erected from 268 to 232 BC, built inside the Buddhist monasteries, each carrying an inscription to commemorate one emperor's visit. Bearing the symbol of power, Indian columns were culminated on the top with a statue, representing a very powerful animal: elephant, bull, lion.



A dominant feature of the Ancient World was related to buildings reserved for spiritual or religious activities, called: temples (Rome, Greek, Egypt, Confucianism), basilica (Christianity), mosques (Islam), synagogues (Judaism), mandir (India), monastery (Buddhism), gurdwara (Sikhism), derasar (Jainism), agiary (Zoroastrianism), daoguan (Taoism), jinja (Shintoism). In most cases, such buildings were considered by believers to be the house of one or more deities, a place where offerings of some sort were made in order to ensure personal peace and welfare. One such temple, called a sanctuary, was the First Temple of Solomon in Jerusalem, constructed around 950 BC. Most Ancient Greek temples were rectangular, 30-80 meters in

length, with 4-8 exterior posts and pillars supporting the pediment in a disposition called "distyle in antis" (two columns in between antae). Other temples, referred to as "tholos", were circular in shape. All famous Greek Temples were dedicated to gods: Zeus (Olympia, Athens, Akragas), Hera (Corcyra, Olympia, Paestum, Selinunte, Akragas, Paestum, Samos), Apollon (Corinth, Delphi, Bassae, Delos, Syracuse, Selinunte, Didymaeus), Poseidon (Corinth, Cape Sounion), Artemis (Cocyr, Ephesus), Aphaea (Aegina), Hephaestos (Athens), Nemesis (Rhamnos), Athena (Athens, Delphi, Paestum, Priene, Syracuse), Asclepius (Epidauros), Concordia (Akragas), Dionysus (Teos), Demeter (Naxos, Antheia). The Ancient Roman Temples were also dedicated to Roman divinities, or Roman emperors: Pantheon (Rome), Jupiter (Rome, Baalbek, Damascus), Mars (Rome), Saturn (Rome), Hercules (Rome), Minerva (Rome), Vesta (Rome), Venus (Rome), Fortuna (Palestrina), Diana (Rome), Isis (Rome), Janus (Rome), Bacchus (Baalbek), Bellona (Rome), Bona Dea (Rome), Portunus (Rome), Caesar (Rome), Augustus (Pozzuoli, Vienne, Barcelona), Antoninus (Rome), Hadrian (Rome), Claudius (Colchester), Vespasian (Rome). The Mesopotamian temples were structures made of sun baked bricks of mud, called "Ziggurat", having the form of a terraced pyramid: Great Ziggurat of Ur, Ziggurat of Aqar Ouf, Chogha Zanbil Ziggurat, Sialk Ziggurat. Egyptian temples were built for the official worship of gods, or in commemoration of the pharaohs. The greatest temples of Egypt are those of: Luxor, Karnak, Philae, Edfu, Seti, Hatshepsut, Kom Obo, Dendera, Abu Simbel, Derr, Abydos, Esna, Amada, Gerf Hussein, Quertassi, Dakka, Kalabasha, Maharraqa, Taffeh, Wadi es Sebu. The oldest mosques were built in the 7th century: Al-Haram Mecca, Al-Aqsa Jerusalem, Quba Medina, Massawa Eritrea, Al Nejashi Ethiopia, Masjid al Qiblatayan Somalia, Amr ibn al-As Cairo, Kairouan Tunisia, Sidi Ghanim Algeria, Jawatha Saudi Arabia, Sana'a Yemen, Masjid Mazin Oman, Aleppo Syria, Umayyad Syria, Kufa Iraq, Isfahan Iran, Bukhara Uzbekistan. In India, a Mandir, or a Hindu temple, incorporates all elements of the Hindu cosmos: dharma (righteousness), karma (deed), kama (desire), artha (purpose), moksa (liberation). All Ancient Hindu Temple involves a raised platform, with or without a symbol, under a tree or an umbrella, or inside a pillared pavilion. Brick temples were built with royal sponsorship during the Gupta Dynasty (5th century): Tigawa, Deogarh, Nachna, Bhitargaon, Sirpur, Rajim, Gujarat. Some other 150 Hindu Temples build in sandstone have survived at Aihole, with the Lad Khan Temple being the oldest. In China, Buddhism was introduced during the Western and Eastern Han Dynasties (200 BC- 220 AD). Many Buddhist temples and monasteries have seen almost two thousand years of development in philosophy, literature, art, politics, medicine and material culture. The best known ones are: Qiyun Pagoda Luoyang, Famen Temple Baoji, Songshan Mountain Zhengzhou, Jokhang Chengguan Lhasa, Hanging Temple Hengshan Mountain Datong, Wenshu Monastery Chengdu, Lingyin Temple Hangzhou, Tiantai Temple Mount Jiuhua, Yongquan Temple Fuzhou, Pagoda Dunhuang, Liurong Temple, Tiefs Temple, Songyue Pagoda. In Japan, Buddhism arrived in the 6th century, while the first temple build was Asuka-dera, in the capital Asuka. A temple surviving from the 7th century is the Horyu-ji Pagoda, in Nara. Other 5 temples of the Asuka period (Hokki-ji), and 20 from the Nara period (Yakushi-ji) are now National Treasures of Japan. In Central America, gigantic pyramids were interpreted by modern historians to be temples honouring gods. Famous Aztec examples are: Santa Cecilia Acatitlan, Tenayauca and Tenochtitlan. Impressive Mayan pyramids are: Altun Ha, Bonampak, Calakmul, Chichen Itza, Coba, Edzna, El Mirador, Mayapan, Tazumal, Tikal, Tonina, Uxmal, Xunantunich.



An important symbol of power, was the helmet, worn to protect the head in battle, and to distinguish the leaders among men at parade. One of the earliest types was made in leather, cuirassated all around with rows of boar tusks, running in alternate directions. It was known in the Mycenaean world starting with the 17th century BC. A description of such a helmet appears in Homer's Iliad, passed down from generations to family members. Another primitive type was the Akkadian type, the best known example being the gold helmet of King Kish, found in a private grave. In China, the earliest type was the Shang bronze helmet, reserved for high ranked nobles. Regular soldiers used for protection shields made of wood or bamboo. Other bronze types were the Zhou Dynasty helmet (1000 BC), the Western Zhou helmet (770 BC), and the Warring States bronze type (260 BC). In Vedic India, helmets were mentioned under the name of Shirastrana, while Indra was described as a golden helmeted hero. Also a primitive type was the Horned helmet, in use around the 12th century BC. Typical examples are the Vesko helmets, found in Denmark, dating around 900 BC. In Japan, some of the Samurai armor incorporated a horned helmet, or a crested helmet. The Phrygian helmet, also known as the Thracian helmet, distinguished by a high and forward inclined apex, was in use in Thrace, Dacia and Magna Greece. Another Dacian helmet of the Scythian type, was found in Romania at: Agighiol, Pereteu, Iron Gates and Cotofenesti. It is distinguishable by its ornaments: "apotropaic eyes", to double the vision, and stags with eight legs, to double the speed of the warrior. The Illyrian type was an ancient bronze helmet developed during the 8th century BC, covering in one piece the entire head, but open faced. In the fifth and fourth centuries BC, bronze helmets were popular in Greece, especially the Chalcidian type, so called because it was depicted on pottery from the city of Chalcis. It consisted of: one hemispherical dome, in one piece, a pair of cheek pieces and a neck guard, sometimes entirely in one piece. By the time of Alexander the Great this type was still in use by his hoplites. The Corinthian helmet, made by bronze, in one piece, covered the entire head and face, with slits for eyes and mouth. It remained in use until the end of the first century AD. The Attic helmet was similar to the Chalcidian type, but was elaborately decorated with an integral crest of feathers. It was used as an artistic motif to depict generals, emperors and pretorians. Also called the Roman type, it was popular in Italy. A more common Roman helmet, called galea, used by inferior soldiers, had a conical or round shape, with a raised central knob and a protruding neck guard, as well as cheek plates. The late types of Roman helmet were made in iron, costly decorated with silver, gold and glass gems. For example, the Deurne helmet recorded 368 grams of silver. Emperors Constantine I and Valens I also recorded value, using only precious stones instead of ordinary gems.



Classical antiquity is commonly associated with the mastering of metals, mostly bronze, iron, gold and silver. The most important people of antiquity were the kings, of: Greece, Rome, Thrace, Dacia, Huns, Britons, Egypt, Numidia, Nubia, Canaan, Anatolia, Mesopotamia, Persia, India, China, Japan. To distinguish their rank and function, kings used to wear a specific mark, insignia, or emblem: spearhead for Greeks, aquila for Romans, lion for Persians, falcon for Egyptians, staff for Hebrews, dove for Assyrians, wolf for Dacians, bull for Indians, dragon for Chinese. The oldest records of gold ornamental objects came from Egypt, where jewellery possessed by Egyptian kings were safely guarded in the pyramids, for many centuries. For example,

the pair of gold and lapis lazuli bracelets, belonging to Pharaoh Rameses II, decorated with granulation and a double headed duck, the symbol greed in food. The Lydian kings had great wealth in gold, they were the first kings to hammer coins, with a lion head on the front face. At Rome, the wealth of Caesar Croesus has become proverbial, while in Lydia the Karun Treasure, composed of 363 artifacts has also been associated with the general. A famous artefact is the acorn gold necklace, symbol of prosperity, power and spiritual growth. In Achaemenid Persia a rhyton in the shape of a horse protome was the symbol of power, a nice example being displayed at Erebuni Museum, in Armenia. In Schytia, the Ural Mountains supplied gold for the ancient peoples. A famous deposit of Bulgar, Sassanian, Turkic and Avarian golden objects is in the Pereshchepina Treasure, discovered in Ukraine, composed of more than 800 pieces, including a ring with monogram. In the Dacian fields a famous gold treasure discovered at Sannicolau Mare was associated with, King Attila the Hun, while hordes from Pietroasele, Apahida and Simleu Silvaniei, presented crosses, symbols of early christianity, more often associated with Rome or Byzantium. In Britain, the Celtic races wrought many beautiful gold ornaments. A notorious found is the Staffordshire Hoard, composed of more than 1500 items, mostly sword fittings and decorative parts of weaponry, casted with rubies. In Imperial China, gold and silver ingots, called "sycee", were in use for local exchange since the Qin Dynasty, in 3rd century AD. Exquisite craftsmanship can also be observed in the gilt silver bowl with a dragon-fish in high relief, dated to Tang Dynasty (8th century AD). The dragon-fish (Scleropages Formosus) is regarded by the Asians as a Geomantic and Majestic fish, a symbol of luck, wealth and prosperity. A fabled octagonal mirror belongin to first emperor, Jimmu, as part of royal regalia, in one of the Three Sacred Treasures. In India, the temples were housing a veritable cornucopia for the jeweller's art. Initially, objects were crafted solely with the purpose of adorning the idol with figures of gods and goddesses, in gold, rubies and emeralds. All jewelry were asigned supernatural potency. A good example is in the Navaratna necklace, casted with nine types of precious stones, to symbolize the nine gods of the Hindu universe. In Africa, representative royal ornaments were discovered in the tumulus cemetery of el-Zuma, in Upper Nubia, from the Early Makuria royal tombs. The royal regalia were polished gemstones (cabochons), while decorative items were: beads, pendants, earrings and a ring, all in metal, ivory, ostrich eggshell, faience and precious stones.



Amun-Ra (Amon, Ammon, Amen) was the chief deity of the Egyptian Empire, identified in Greece with Zeus, the Sun god, transcendental (self-created), the champion of the poor or troubled, the patron god of Thebes, represented as a sphere, with or without rays. Touched by the Sun, people and animals became bearers of Ra, bearers of his power, kings of their kind. For example, with his velocity and flight at high altitude, the falcon was the bearer of Ra, the king of the sky, the king of birds. Ra was also believed to rule in all parts of the created world, including the Earth and the underworld. The sun was the giver of life (via his breath), controlling the ripening of crops. By night he was thought to travel in the underworld, to Atet, only to reappear in the very next morning, as nothing had happened. Ra was also pictured in connection with different other pictograms: ram, goose, beetle, phoenix, heron, serpent, bull, cat, lion...and many others. But Ra was a merciless god, with rays just as deadly as a poisonous snake. One of the oldest complex symbols, also used outside Egypt, was the winged sun, a sphere with wings flanked by two cobras (Uraeus). The

Winged Sun was a symbol for Divinity, Royalty, Power, Protection and Eternity, present on every funerary stela of the pharaohs in the Ptolemaic Period. The chief cultural center of Ra was Iunu, the Palace of Pillars, known to the Greeks as Heliopolis, today in the suburbs of Cairo. Acts of worship included hymns, prayers and spells, in order to help him overcome Apep (Apophis), the deity who embodied darkness and chaos. His other great temple, in Thebes, known as the Karnak Temple, included one of the largest obelisks known, weighting 328 tonnes and standing 29 meters tall. Ancient Egyptian civilization have produced other 1500 deities known by name. Some of the major deities were: Aker (earth), Anhur (war), Anubis (dead), Bat (cow), Hapi (flood), Hathor (motherhood), Hatmehit (fish), Horus (kingship), Imentet (afterlife), Isis (magic), Khonsu (Moon), Nefertum (blossom), Neper (grain), Osiris (resurrection), Ptah (craftsmen), Renenutet (agriculture), Set (chaos), Shu (wind), Sopdu (sky), Tefnut (moisture), Wadjet (cobra). An entire language could be articulated, by using only names of some gods. In the ancient Egyptian writing, there are some 27 distinct hieroglyphs depicting royalty, usually a human silhouette with a sun on his head, all for the equivalent of the letter C in our alphabet.



The oldest writing system using lines to form letters was produced by the Cretans from, 1800 to 1450 BC, currently known under the name of "Linear A". This ancient script used hundreds of signs, believed to represent syllabic, ideographic or semantic values. Numbers in a decimal system were represented by vertical dashes (digits), tens by horizontal dashes, hundreds by circles and thousands by circles with rays. Texts were written on wet clay tablets, using a stylus to cut the lines, up to 3000 signs on a single tablet. Clay tablets have been unearthed chiefly in Crete, but also in Turkey, Aegean Islands and Israel, suggesting they were used in trade for some accounting purposes. The extant corpus includes 1 427 fragments, totalling 7362 to 7396 signs. Linear A signs were also identified on various media, such as stone tablets, gold and silver hairpins and ceramics. There were numerous attempts to decipher the Linear A inscriptions, but none was totally convincing. Another writing system, descendent from the Linear A, was the so called "Linear B", found mainly in the palace archives at Knossos (4360 tablets), Cydonia, Pylos (1087 tablets), Thebes (337 tablets), Mycenae (73 tablets), Tiryns (27 tablets). Linear B consists of 87 syllabic signs and over 100 ideographic signs used to symbolize objects or commodities. English philologists Michael Ventris and John Chadwick developed a grid for the phonetic values of numerous signs, other values remained unknown because of scarcity of evidence concerning them. Signs expressing an object or a unit measure, called ideograms, were never used in sentences to form words, but typically at the end of a line, before a number, to identify to which object the number applies. Inscriptions in Linear B have been found on clay tablets, vases and other various vessels (170 inscriptions). The earliest Linear B inscription was estimated by the discoverer, archeologist Arthur Evans, to date around 1400 BC. Since there are thousands of tablets, and only a small number of different "hands" have been identified, 66 in Knossos and 45 in Pylos, it is possible that the script was confined to an administrative context, used only by a guild of professional scribes who served the royal palaces. If knowledge was transferred from father to son, it results that this type of writing was in use for at least 900 - 1000 years. The tablets have been also in use to account some religious activities. Texts deciphered from tablets contain recordings such as: "oil delivered from Amnisos for this year", "oil

distributed by Knossos and Amnisos to divinities", "honey given to all the gods", "14 slaves of the priestess on account of gold", "divinities getting gold vessels, men and women", "banquet material for Poseidon".



Another writing system in active use in early Bronze Age, from 3200 BC to 200 AD, was developed in Ancient Near East, mostly in Mesopotamia, known today as the Cuneiform script. The name is derived from the Latin word "cuneus" for wedge or wedge shape. Originally developed for the Sumerian language, over the course of history cuneiform was adapted to write in at least 15 ancient Arabic and Semitic languages, including: Akkadian, Aramaic, Hittite, Eblaite, Elamite, Hurrian, Luwian, Persian, Palaic, Urartian. The oldest Akkadian texts were dated around 26th century BC, while the latest known cuneiform tablet is from 75 AD. The earliest Sumerian king whose name appears on cuneiform tablets is Enmebaragesi of Kish (Merabasi 2600 BC), the penultimate king of the first dynasty of Kish. It is estimated that half a million tablets inscribed with cuneiforms are held in museums across the world, but only a few have been published. The largest collection belong to the British Museum (London), with some 130 000 tablets. Other great collections are held in Berlin, Paris, Istanbul, Baghdad, Yale Connecticut, Penn Library Pennsylvania. Pre-cuneiform symbols were developed by progressive simplification of archaic pictograms. Over more than two millennia, the cuneiform script underwent considerable changes. Abstract glyphs were used to replace the pictural ones, then simplified signs were used to replace the abstract glyphs. The direction of writing was from top to bottom and from right to left. Most of the clay tablets hardened only by drying under the Sun, but some of them were fired in kilns, to bake them hard and so provide a permanent record. Some tablets were left moist and recycled, as for the purpose of learning the signs. Some other tablets preserved, were burnt accidentally, only when attacking armies burned the palaces where they were kept. It seems that the cuneiform script has developed in parallel to Egyptian hieroglyphs and Cretan Linear A and B. Inter-relations in between ancient civilizations may have resulted in some influences, but none of them brought the writing system from the other. The cuneiform script was widely in use for commemorative monuments and stelae. Semitic languages employed a number of new signs, syllabic equivalents for the specific sounds. The most famous scriptures, the ones that ultimately led to the decipherment of the script, were the trilingual Behistun inscriptions. Commissioned by the Achaemenid Kings, these inscriptions were made in Old Persian, Babylonian and Elamite languages. Hittite cuneiform is an adaptation of the cuneiform writing to the Hittite language, with an Akkadian logographic spelling added to the script. From the 10th to the 6th century BC, cuneiform writing was further simplified and each character relied more heavily on wedges and square angles. From the 6th century BC, the Akkadian language was marginalized by Aramaic, written in the Aramaic alphabet, but the cuneiform script remained in use until the 3rd century AD.



The earliest known alphabetic system of writing was the Proto-Sinaitic script, attested in Late Bronze Age in the Sinai peninsula and in the Canaan region of the Near East. A direct continuation of this script was the Phoenician alphabet, consisting of 22 consonant letters, leaving vowel sounds implicit. The Phoenician alphabet was used to write Canaanite Semitic languages, such as: Phoenician, Hebrew, Moabite, Ammonite, Edomite and Old Aramaic. The Phoenician merchants spread their writing system across the Mediterranean world, where it was adopted and modified by many other cultures. Incised with a stylus, the Phoenician letters are mostly angular and straight, usually written right to left, though some texts alternate directions (boustrophedon). Early inscriptions were found on arrowheads in the Palestinian town of al-Khader, near Bethlehem, dated to 1100 BC. Other Phoenician inscriptions were identified on old seals, medals and coins. Beginning with the 9th century BC, Phoenician alphabet thrived, including adaptations for Greek, Italic and Anatolian scripts. Its most attractive innovation was its phonetic nature, one symbol for one sound, which meant only a few dozen symbols to learn. Its simplicity allowed adaptations to multiple languages, and also allowed slaves to learn how to write (able to copy but unable to compose texts). According to Herodotus, the Phoenician prince Cadmus adapted it to form the Greek Alphabet and introduced it to the Greeks. Notable inscriptions for the Phoenician script are: Ahirom sarcophagus, Byblos (850 BC), Nora Stone, Sardinia (800 BC), Karatepe inscriptions, Turkey (8th century BC), Cineköy inscriptions, Adana Turkey (8th century BC), Pyrgi Tablets, Latium (500 BC), Eshmunazar II sarcophagus, Persia (5th century BC), Bodashtart inscriptions, Persia (4th century BC). The Phoenician alphabet was at first believed to be a direct variation of Egyptian Hieroglyphs. The alphabet was first deciphered in 1758, by a French scholar, Jean Jaques Barthelemy (1716-1795), specialised in theology and oriental languages. Phoenicians used a system of acrophony to name letters. A word was chosen for each initial consonant sound. For example: alpha from alp - ox and beta from bet - house. The Phoenician numeral system consisted of simple vertical lines from 1 to 9, a horizontal line for 10 and a z shaped sign for 20. Larger multiples of ten were formed by grouping the appropriate signs for 20s and 10s. A several glyph existed for 100. Any symbol could be multiplied by a preceding numeral. The system did not contain any symbol for zero. The ancient Aramaic alphabet became a distinct script from the Phoenician alphabet in 8th century BC. It was used to write in the Aramaic language, the official language in the Assyrian Empire. Around 500 BC, under King Darius I (522-486 BC), Old Aramaic was also adopted by the Persians as the vehicle for written communication between different peoples and languages in the Empire. Lately, Imperial Aramaic was highly standardised and led to gradual adoption of the Aramaic alphabet for writing in Hebrew.



In China, the earliest type of writing was the Oracle bone script, starting with the 2nd millennium BC. Characters were carved in animal bones or turtle plastrons. About 150 000 inscribed objects were found at the Yinxu site, where the latest significant discovery (1993) is the Huayuanzhuang storage of 1608 pieces, of which 579 were inscribed. They record pyromantic divinations of at least nine kings of the Shang dynasty (1600-1046 BC). Bones from animal scapula (former tools), would be thrown into fires and the cracks would be interpreted to divine the future. Using symbolic characters carved into the bones, the shaman would address questions to gods, such as: "will it rain?". Sometimes, cracks and smoke would provide the right answer. The common Chinese term for the script is "jiaguwen", also referred to as the Shang script. Compared with the earlier pictographic Oracle bone script, the Shang script is clearly greatly simplified, rounded forms are often converted to rectilinear ones. It is known that the Shang people also wrote with brush and ink, since written graphs have been found on pottery, shell and bone, jade or other stone items. They also wrote on bamboo stripes, writing the characters in vertical columns, from top to bottom. In some instances the characters were turned 90 degrees, to better fit on tall, narrow slats. Vertical columns were ordered from right to left, a pattern also found later on bronze inscriptions. Despite the pictorial nature of the oracle bone script, it was fully functional, able to record the Ancient Chinese language in its entirety. The old, pictographic symbols were representing words (23 %), such as "bee", "swine" or "dog", but phonetic loan graphs (11 %), semantic compounds (27 %) and associative compounds (32 %) were also present. A graph inverted horizontally generally was easily recognized as the same word, while the additional components did not change the meaning. There are 30 000 distinct characters found from all the bone fragments, interpreted as around 4 000 individual characters in various forms. The majority of these still remain undeciphered, although scholars believe they can decipher between 1 500 and 2 000 of these characters. Since some characters exist only in oracle bone script, there is no way to trace their evolution to the modern script. Among the major scholars making a significant contribution to the study of early Chinese writing is epigrapher Luo Zhenyu (1866-1940), who collected over 30 000 oracle bones, published in several volumes, and identified the names of the Shang kings. Directly derived from the oracle bone script was the bronzeware script. Inscriptions were cast or engraved in ritual bronzes such as "zhong" bells and chaudirons from the Shang dynasty. There were different types of ritual bronze vessels: Ding, Dui, Gu, Guang, Gui, Hu, Jia, Jue, Yi, You and Zun. Of the 12 000 inscribed bronzes extant today, some 3 000 date from the Shang dynasty. Certain characters have been identified as clan names or emblems. For example, the tomb of general Fu Hao, dated 1200 BC, contained some 200 bronze vessels, with 109 inscriptions including his name. Each of the larger ones was used to prepare meal for a pack of some 40 warriors. Another script derived from the oracle bones was the seal script, consisting of some 3 300 characters. It was common in the latter half of the first millennium BC, when the Qin variant became standard and was adopted as the formal script of all China, during the Qin dynasty (221-206 BC). A notable calligrapher in the era was Chancellor Li Si (280-208 BC), philosopher and politician. A variant of the seal script was the clerical script, developed in the same period, used in recording affairs related to slaves (subdued).



The Greek alphabet has been in use since the 9th century BC, and it was the earliest known alphabetic script to have distinct letters for vowels, as well as for consonants. In the early times, many local variants existed, but in the 4th century BC the Euclidian alphabet had become standard, with twentyfour letters, ordered from A (alpha) to Q (omega). The acrophonic sounds for the Greek alphabet were: alpha, beta, gamma, delta, epsilon, zeta, eta, theta, iota, kappa, lambda, mu, nu, xi, omicron, pi, rho, sigma, tau, upsilon, phi, chi, psi, omega. The Greek numerals were decimal, assigned to the first nine letters of the alphabet, and each multiple of 10 to 90 was assigned to the next nine letters of the alphabet. The next letters were assigned to multiples of 100 to 900. By about 200 BC, a system of diacritical marks was invented, representing tone accents and the length of vowels A, I and Y. This innovation has been credited to Aristophanes of Byzantium (257-185 BC). By the time of late antiquity and Byzantine period, two different handwriting had developed, one consisting of large upright letter glyphs, the other a cursive script that used slanted interconnected glyphs and many ligatures. Greek was originally written predominantly from right to left, until the classical period, when the left to right writing direction became the norm. Alternating lines were also in use (boustrophedon), especially for inscriptions in stone. Ancient fragments of Greek inscriptions may range from simple names to full texts, and may occur on stone slabs, pottery or ornaments. Between 1825 and 1860, German antiquarian August Bockh had published the *Corpus Inscriptionum Graecarum*. His work was continued by the Prussian Academy of Science, under the name of *Inscriptiones Graecae*. So far, 49 fascicles have been published, in several editions. The work is divided by regions: Attica, Aegina, Laconia, Arcadia, Boetia, Aetolia, Thessaly, Epirus, Macedonia, Thrace, Scythia, Heraclea, Sicily. Common examples of such inscriptions are: decrees, honours to people or arhontes, treaties, terms of alliance, regulations, arbitration, privileges, contributors, lists of magistrates, list of victories, lease of public land, dedications, poems. For example, in 273 BC, during the archonship of Glaukippos, the Council and People of Athens decided: "since the managers sacrificed all the sacrifices to Zeus Soter and Athena Soteira... to praise the managers Epikydes, Kason, Proson, Charippos, Dromeas, Menekles ... and to crown each of them with a foliage crown for their piety to the gods... ". Another example from around 200 BC, is a poem dedicated to Dionysios, associated with the temple of Dionysiasts: "This sanctuary, O Lord, Dionysios erected here for you, and a fragrant sanctuary (temenos), and statues in your likeness, and everything else, not thinking that he might increase his wealth in his home as much as to revere your customs, O Bacchos. In return, Dionysos, be appeased and may you grant safety to this house and family, and to your entire society (thiassos)". Another famous example is the inscription on the Serpent Column, with the list of the Greek States which took part in the Persian War. Once in Delphi, the column was relocated by Emperor Constantine I, in the year 324 AD, in front of the Hippodrome of Constantinople.



The Latin script, also known as Roman script, originated in the 7th century BC, having strong similarities with the Etruscan alphabet. The archaic alphabet only had 21 letters: A, B, C, D, D, E, F, Z, H, I, K, L, M, N, O, P, Q, R, S, T, V, X. After the conquest of Greece, letters Y and G were adopted by the Romans. The Roman numerals are formed using some of the letters, with a fixed numerical value assigned, such as: I (1), V(5), X (10), L (50), C (100), D (500), M (1000). To form numbers, the values of letters are added, one by one. Numerals 4 and 9 are formed in an inverted fashion, by subtracting the lesser value from the larger one. For example, the numbers from 1 to 10 are: I, II, III, IV, V, VI, VII, VIII, IX, X. Examples of subtractions are: XL (40), XC (90), CD (400), CM (900). Legend says that Mercury invented the first letters from the flight of the cranes. Another legend is mentioned by Gaius Julius Hyginus (64-17 BC), librarian to Emperor Augustus, in one of his fables, saying that priestess Carmentis, from the Apollo Temple in Cimmerium, altered 15 letters from the Greek alphabet to produce the Latin alphabet, 60 years before the Trojan War. Still, there is no other historically sound basis to this tale. Roman cursive letters were used by merchants writing business accounts, or by patrician children to learn the alphabet. The cursive script used many ligatures and some letters are hard to recognize. Beginning with the 4th century AD, capital letters were used at the beginning of the sentences. Numerous European scripts evolved from the Latin script, such as: Visigothic script (Spain), Beneventan script (Italy), Merovingian script (France). All Latin inscriptions from the whole territory of the Roman Empire were collected, ordered systematically and geographically, under the name of Corpus Inscriptionum Latinarum. Founded by German historian and archaeologist Christian Theodor Mommsen (1817-1903), the collection was continued and published by the Berlin-Brandenburg Academy of Sciences and Humanities. The current status consists of 17 volumes in about 70 parts, for approximately 180 000 inscriptions. Volumes II to XIV are divided geographically: Hispania, Asia, Pompeiana, Gallia, Urbis Romae, Britannia, Africa, Calabria, Sicilia, Etruria, Gallia Narbonensis, Germania. Volume XVI is reserved for Diplomata militaria and volume XVII for Militaria Imperii Romani. Common topics on Roman inscriptions were related to: altars, funerary monuments, honorific monuments, roads and milestones, aqueducts, baths, horse racing, freedmen. All Latin inscriptions use abbreviated words and dots between letters, to indicate word breaks. In order to read the full text all the words need to be expanded. Various lists of common abbreviations have been published. For the rest of the text the reader must be fluent in Latin. For example, a milestone on Via Traiana Nova states: "IMP CAES DIVI NERVAE F NERVA TRAIANUS AVG GERM DACICUS PONT MAX TRIB POT XII IMP VI COS V P P VIAM NOVAM TRAIAN A VOLSINIS AD FINES CLVSINORUN FECIT XVII". An example, from a funerary inscription in Rome, for a horse trainer, states: "D M CLAVDIA HELICE FEC L AVILL DIONYSIO COND GR RVSSATAE CONIVG DIGNISSI" (To the gods of afterlife: Claudia Helice erected this for Lucius Avillus Dionysius, trainer of the Red Team, her most worthy spouse).



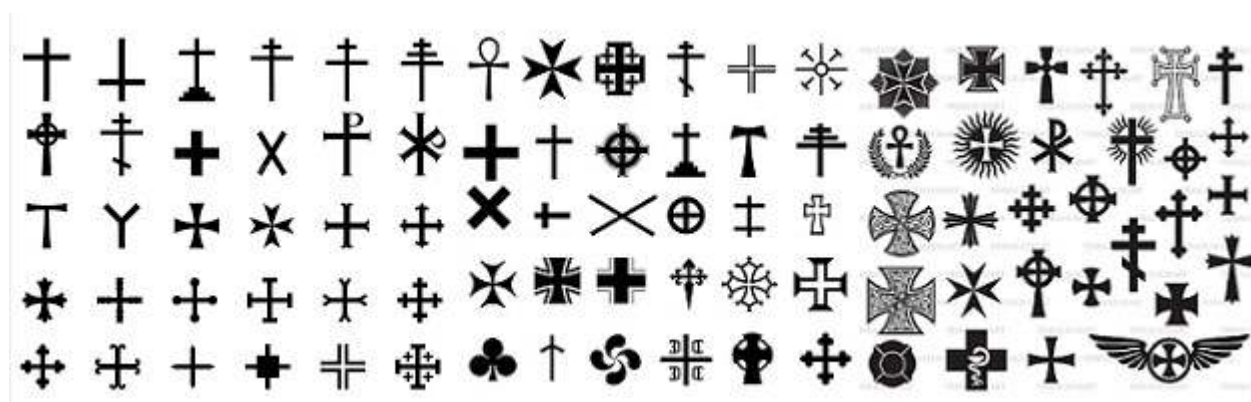
Military flags were in extensive use in the Ancient World, as a honoured symbol of a military unit, closely defended in combat. A flag lost in battle was a great shame, equivalent to the dismantling of that unit. The military standard of Ancient Roman army was called "vexillum", from the Latin word "vexare" meaning to hurt, to humiliate. The only existing Roman vexillum, dating from the 3rd century AD, is now preserved in Russia, at the Pushkin Museum of Fine Arts, in Moscow. Sometimes the Roman flag was only a red piece of cloth with the golden letters SPQR, standing for "Senatus Populusque Romanus" (Senate and People of Rome). The flag was the main standard in cavalry units, meant to keep the riders close to one another during combat. The Roman legion standard was called an aquila, carried by a special soldier known as an aquilifer. No legionary eagles are known to survive modern times, but numerous artistic representations were carved on ancient monuments, including the Trajan's Column or the Arch of Constantine. Since 73 BC up to 378 AD, there are known only 16 battles where Aquilae were lost, resulting in heavy punishment and decimation of that units. An emblem most associated with the Byzantine Empire, present on its military flags, was the double headed eagle, a traditional Anatolian motif dating to Hittite times. From the 6th century on, the main Byzantine battle standard was the bandon, a large triangular flag, single or double tailed, in various colours, but mainly in red, white and blue. The Scythian, Sarmatian and Dacian cavalry units carried a different standard, called a "draco", or dragon, made of colored cloths stitched together to look like a snake, with a wolf head, containing several metal tongues. During the charge, inflated by the wind, the draco made a sort of hissing sound, frightening the enemy. The draco appears on Trajan's Column during the war of 101-102 AD, also depicted on coins of Roman Emperors: Antoninus Pius (138-161 AD), Decius (249-251 AD), Claudius Gothicus (268-270 AD), Aurelian (270-275 AD). Old paintings of ancient China military flags show a red standard, with a golden dragon heavily embroidered on it. In China, the dragon is a symbol of imperial authority and a symbol for the Royal Family. The dragon body is from snake, the mane is from horse, the claw is from hawk, the nose is from pig, the horn is from deer. It results that the dragon tribe was the result of mixing together: snake tribe, horse tribe, hawk tribe, pig tribe and deer tribe, a common symbol for all tribes. Another ancestral symbol, present on Tang Dynasty flags, was presenting the Sun merged with the Moon, surrounded by black rays. The national flag of Japan is a rectangular white banner, with a red sun in center, commonly known as Hinomaru. It is believed that the Emperor is a direct descendant of the sun goddess Amaterasu, therefore the sun is a symbol of the Imperial Family, and a symbol of Japan. In 607 AD, in a letter sent by the Emperor of Japan to Chinese Emperor Yang of Sui, his land was referred as "the land of the rising sun". In feudal Japan, flags were extensively used in military communication. Massive flags, called Uma-jirushi (horse insignia) were used to identify the feudal lords, called "daimyo". Common war banners, called Hata-jirushi, were simple streamers attached to a shaft by a horizontal cross-piece. In India, the Vedic literary corpus has numerous references to flags, denoted by various terms, among prized possessions of the ancient kings. They were not only used in battle, but even during festivals and celebrations. The common name was "pataka", and every deity in the Indian Pantheon had a flag or an emblem: Shiva (bull), Vishnu (eagle), Indra (sword).



Christian symbols and emblems

The Christian cross is the symbol of martyrdom, a representation of the crucifixion of Jesus, a symbol of Christianity. Christian crosses are widely used in churches, bibles, heraldy, personal jewellery, on hilltops and in Christian cemeteries. In history, the cross symbol was first mentioned in writing by Octavius, in the 2nd century AD, in one of his early writings in defense of Christianity. In the 3rd century, theologian Clement of Alexandria used for the cross the expression "the Lord's sign" when referring to Jesus. Beginning with that time, the making of a cross sign upon the forehead and the chest was regarded as a talisman against the powers of demons. Ever since, Christians also used to swear by the power of the cross. In present time, Christians are expected to wear a cross neckless at all times, ordinarily given to them at their baptism. When a figure of Christ is affixed to the cross, the term crucifix is often used, also referred as the "corpus Dei". There are numerous variants from the basic form, such as: Greek cross (four arms of equal length), Latin cross (a cross with a longer descending arm), Byzantine cross (upright cross with outwardly widening ends), Patriarchal or Archiepiscopal Cross (a Latin cross with two crossbars near the top, a double cross), Papal cross (a Latin cross with three bars near the top, a triple cross), Cross of Lorraine (one vertical bar and two horizontal bars, two barred cross), Sacred Heart (a Latin cross also featuring flames and a crown of thorns), Cross of Salem or Pontifical Cross (is a Patriarchal cross with an additional crossbar below the main crossbar), Monogrammatic Cross or Staurogram (a superposition of the letters P and T, present in New Testament manuscripts), Chi Rho or Chrismon (a superposition of the letters X and P, also known as a christogram), Stepped cross or Calvary Cross (a Latin cross resting on a base with several steps), Jerusalem Cross or Crusader's Cross (a large cross with a smaller cross in each of its angles), Ringed cross or Celtic cross (a cross featuring a ring or nimbus), Forked cross or Crucifixus dolorosus (a cross in the form of the letter Y, used in German Rhineland). Also in connection with Christianity, there is a large variety of Saints crosses. Examples are: Cross of Saint Peter (a cross with the crossbeam placed near the foot, a head down cross), Saint Francis's and Saint Anthony's cross (a T shaped cross, tau cross), Saint Andrew's cross (an X shaped cross, saltire or crux decussata), Saint George's cross (a red cross on white background with the crossbar longer than the vertical bar), Saint Clement's cross (a superposition of the cross upon an anchor), Saint Gilbert's cross (a cross that is borne diagonally), Cross of Saint James or the Santiago cross (combines cross fleury with cross moline, missionary cross), Saint Julian's cross (a cross crosslet tilted at 45 degrees, missionary cross), Saint Philip's cross (a sideways cross), Cross of Saint Florian (a cross with large curved arcs between points, firefighters cross), Cross of Saint John (a Latin cross widening only at the ends of its outside arms). There are also numerous confessional or regional variants: Maltese cross, Armenian cross, Georgian cross, Syrian cross, Canterbury cross, Celtic cross, Coptic cross, Huguenot cross, Maronite

cross, Nestorian cross, Occitan cross, Carolingian cross, Rose cross, Serbian cross, Macedonian cross, Nordic cross, Marian cross.



In the centre of each Christian congregation stands a temple, also known as a church or a house of worship. In the Slavic languages the church is called tserkov while the building as a temple of God is called khram. In Greek, the words ekklesia and naos are preferred. For the Latin World the words abbey, basilica, cathedral and chapel are in common use for the place of worship. In the New Testament, the word ekklesia appears for 114 times, the oldest being the in Gospel of Mathew with reference to the Acts of the Apostles. The first and simplest church buildings were, and still are, rectangular dwellings made of wood. Starting with the 4th century, congregations sought to construct buildings that were both permanent and aesthetically pleasing. Within any parish, the local church was the oldest building, larger and taller than any other structure, in the middle of the town or village. The first churches were built in extent of the ancient temples, often as a transformation of such a temple. The requirements of liturgy demanded that there would be two main spaces, one for the priest (altar) and the other for the congregation (nave). Additional buildings were added, such as towers, chapels, vestiaires or mortuary chapels. The additional chambers may have been part of the original plan, sometimes, but in many cases they were the result of a long architectural history, spanning over centuries. The first Christian church ever was the Cenacle, at the site of the Last Supper in Jerusalem. The oldest church in Europe was the Temple of Augustus and Livia, in Vienna, built in the first century AD, transformed into a Christian Church at the begining of the 6th century. The Saint Peter's Basilica in the Vatican City, was founded in 322 AD by Emperor Constantine the Great, at the burial site of Saint Peter. Other famous Christian Churches erected in the First Millenium were: Cathedral of Saint Dominus in Split (305 AD), Rotunda of Saint George Thessaloniki (306 AD), Santi Cosma e Damiano Rome (309 AD), Archbasilica of Saint John Lateran in Rome (324 AD), Panagia Ekatonpilianii Parikia (326 AD), Monastery of Paromeos Egypt (335 AD), Church of the Holy Sepulchre Jerusalem (335 AD), Church of Saint George Sofia (337 AD), Church of the Nativity Bethlehem (339 AD), Santa Maria Trastevere Rome (340 AD), Cathedral of Trier Germany (340 AD), Basilica of Saint Pierre Metz (380 AD), Hagia Irene Istanbul (4th century), San Giovanni Evangelista Ravenna (424 AD), Santa Maria Maggiore Rome (432 AD), Monastery of Stoudios Istanbul (462 AD), Etchmiadzin Cathedral in Armenia (484 AD), Hagia Sophia Istanbul (532 AD), Basilica of Saint Servatius Maastricht (550 en), Santa Maria de Melque Spain (668 AD), Escomb Church Durham England (675 AD), Church of Saint John Kerch Ukraine (717 AD), Saint Patrick Duleek Ireland (724 AD), Oviedo Cathedral Spain (781 AD), Aachen Cathedral Germany (805 AD), Hildesheim Cathedral Germany (872 AD), Saint Sophia Ohrid (889 AD), Saint Margaret Koppany Slovakia (9th century). A cathedral is a church housing the seat of a bishop, in ancient times the largest building in that region. A chapel is a place of prayer and worship that is usually relatively small. A chapel may be inside a church, connected to a church, inside a monastery or a cemetery, adjacent to a road bridge, within a castle, at a royal or noble court, or at a private location belonging to a Christian family.



Another powerful Christian symbol is the Christian monasticism, a devotional practice of ascetism, for believers who have dedicated their lives to Christian worship. At first, Christian monks did not live in monasteries, but rather they lived alone, as solitaries. In time, monks formed communities, to further their ability to observe ascetic life, under a certain rule. Famous Christian monastic rules were: Rule of St. Pachomius, Rule of St. Basil, Rule of Saint Benedict, Rule of Saint Anthony the Great, Rule of Saint Augustine, Rule of Saint Dominic, Rule of Saint Francisc, Rule of Saint Bernard. Guidelines for daily life were issued, and separate monasteries were created for men and women. Among the various obediences, copying the holy books was considered greater than fasting or prayer. From the secular point of view, a monastery was an industrial community that practised almost every kind of trade, with good quality in merchandise, at the lowest prices. In some communities, all the work was performed by the monks, in other, the work of tenant farmers was used for low graded work. Women's communities were normally much smaller and poorer, with the exception of those under the rule of an imperial egumen (ephories). A monastery complex comprised a number of buildings, including a church serving as an oratory, dormitory, cloister, refectory, library, infirmary, granges. Traditionally, monastic communities took charge of social services, such as education and healthcare. Most modern universities have attempted to emulate Christian monasticism as a model of common life and study. Communal meals, dormitory residences, elaborate rituals and dress, were all borrowed from the monastic tradition. Monasteries also aided in the development of agricultural techniques and wine production. Monastic centers thrive as to this day in the East Orthodox World, in countries such as: Mount Athos, Russia, Bulgaria, Romania, Serbia, North Macedonia, Greece, Georgia, Ethiopia, Holy Land. In the twelfth century, traditional monastic orders evolved into military orders, initially for the purpose of defending pilgrims. Such vindicative Christians, who served God through waging war, failed to achieve the spiritual merit expected, and the military orders progressively declined in the next centuries. After the foundation of Lutheran Churches, some monasteries were also found in the Lutheran lands, with Loccum Abbey and Amelungsborn Abbey in Lower Saxony having the longest tradition. A short list of the most famous Christian monasteries may include: Meteora (Greece), El Escorial (Spain), Saint Catherine (Egypt), Rila (Bulgaria), Monte Casino (Italy), Simonopetra (Mount Athos), Kiev Pechersk (Ukraine), Avignon (France), Alexander Nevsky (Russia), Westminster Abbey (England), Sumela (Turkey), Brandenburg (Germany), Cluny (France), Melk (Austria), Pec (Serbia), Gelati (Georgia), Neamt (Romania), Liege (Belgium), Ostrog (Serbia), Pannonhalma (Hungary), Valle de los Caidos (Spain), Alcobaca (Portugal), Kamenny (Russia), Corbie (France), New Jerusalem (Russia), Eibingen (Germany), Cambridge (England), Aalborg (Denmark), Altenburg (Austria), Saint Margaret (Hungary), Mariastein (Switzerland), Mont Saint Michele (France), Horezu (Romania), Pontigny (France), Ghent (Belgium), Szentgotthard (Hungary), Beuron (Germany), Durham (England), Montserrat (Spain), Premontre (France), Beuerberg (Germany), Goshavank (Armenia), Lavanttal (Austria), Barsana (Romania), Antwerp (Belgium), Esztergom (Hungary), Santa Skolastika (Malta), Saint Sava (Serbia), Tismana (Romania), Bellelay (Switzerland). And ... there are so many others.



With more than 2.6 billion followers, Christianity is the largest religion in the world, enjoying large communities in 157 countries and territories, all around the world. All Christians believe in: God the Father, Jesus Christ, the Holy Spirit, Eternal life, Resurrection, Day of Judgement, Salvation, the Holiness of the Church, and the Communion of all saints. Christians believe in the power of prayer, with seven fixed times beginning with sun rise and ending at bed time. The word of God, called the Scriptures, is a collection of religious manuscripts known as the Biblical canon, consisting in the Old Testament and the New Testament, together with other early manuscripts known as the "deuterocanonical books". The oldest texts included in the Old Testament were compiled in the 3rd century BC, followed by psalms, proverbs and narrative histories from the 2nd century BC. New texts about the life and teachings of Jesus were written in Greek, in the first century AD, accepted as a canon at the end of the second century AD. The first uniform Christian doctrine, called the Nicene Creed, was accomplished in the year 325 AD, at the Ecumenical Council of Nicaea (now Iznik Turkey), attended by 318 bishops from all around the known world. In 331 AD, Emperor Constantine the Great (306-337 AD) commissioned bishop Eusebius of Caesarea to deliver fifty Bibles for the Church of Constantinople, the first collection of books that formed the New Testament. The Greek content of the New Testament was fixed in 367 AD, under Athanasius the bishop of Alexandria. The list of books included in the Catholic Bible was established as a canon by the Council of Rome, in 382 AD, followed by that of Hippo in 393 AD, and Carthage in 397 AD. Between 385 and 405 AD, the Old Testament was translated into Vulgar Latin. Other some 300 codices, written on parchment between the 3rd and the 9th centuries, were later added to the New Testament, together with some 2900 minuscules. Starting with the 9th century, the grandest medieval Bibles were illuminated manuscripts, where text is supplemented by addition of decorated initials, borders and miniature illustrations. Remarkable biblical manuscripts from the 11th century are: St. Petersburg Codex (Russia), Codex Hierosolymitanus (Greek), Codex Marianus (Old Slavonic), Vysehrad Codex (King Vratislaus), Codex Zographensis (Old Slavonic), Arkhangelsk Gospel (Old Slavonic), Bamberg Apocalypse (Saxon), Harley Psalter (Canterbury). Notable illuminated psalters in the 12th century were: Copenhagen Psalter (King Canute VI), Eadwine Psalter (Canterbury monk), Hunterian Psalter (Scotland), Ingeborg Psalter (Chantilly, France), Melisende Psalter (Crusaders in Jerusalem), St. Albans Psalter (England), Winchester Psalter (Henry of Blois). Starting with the 10th century, the legendary monastic complex on Mount Athos has produced a collection of over 11 000 manuscripts, including 209 Greek and Georgian manuscripts of the Bible. The first protestant version of the Bible canon appeared in England, in 1382, with the Bible translation produced by John Wycliffe, of which some 250 manuscripts have survived. The first printed version of the Bible was a Latin Vulgate edition, produced in 1455, by a goldsmith, Johannes Gutenberg, in 180 copies, of which 49 are known to exist to present days. The first true protestant Bible was published in 1522, by theologian Martin Luther, as the first translation of the Bible into German. In response, the Council of Trent, in 1546, approved the present Catholic Bible canon, which includes the deuterocanonical books. The best English translation of the Bible for the Church of England was commissioned and published in 1611, by King James VI of Scotland (1567-1625), in blackletter typeface and on looseleaf paper. In 1662 this version of the Bible was authorized as the Book of Common Prayer. Other popular versions, in English, are: The American Standard Version (1901), Robert Moffat's Bible (Africa 1926), The Amplified Bible (1965), The Jerusalem Bible (1966), The New International Version (1979), The Message (2002), The Holy Gospel

(2018), EOB New Testament (2019). As to present days, there are 717 full translations of the Bible in different languages, worldwide.



In Christian theology, the Twelve Apostles, also known as the Twelve Disciples or simply the Twelve, were the primary disciples of Jesus, his closest followers and primary teachers of the gospel. After his resurrection, Jesus sent them to spread his teachings to all nations. The period of early Christianity during the lifetime of the apostles is called the Apostolic Age, when churches were established throughout the territories of the Roman Empire. The list of the Twelve Apostles as identified by the Bible, is: Peter, Andrew, James the Great, John, Philip, Bartholomew, Thomas, Matthew, James the Less, Thaddaeus, Simon and Judas. Every one of the apostles holds a holy symbol. Saint Peter holds a key, the symbol for the Keys of Heaven, and also a symbol of papal authority seen on papal coat of arms. The symbol for Saint Andrew is a saltire or an X shaped cross, in remembrance of his martyrdom on such a cross. The scallop shell is the symbol of Saint James the Great, believed to promote courage, strength and hope, also the symbol of the Camino de Santiago de Compostela and its pilgrims. The royal eagle is the symbol of Saint John the Evangelist, since he has taken up such wings when discussing the Word of God. Traditionally he is also represented with a book or a scroll, which stands for the Gospel he wrote. Another symbol associated with Saint John, is a chalice with a serpent emerging from it, as a reference to the legend in which he was chalanged to demonstrate the power of his faith by drinking a cup of poison. Saint Philip is associated with the Tau cross (crux commisa), representing an execution cross. Other symbols assigned to Philip include: a basket filled with bread, a spear with the patriarchal cross, a cross with a carpenter's square. Knives are the symbols associated to Saint Bartholomeu, alluding his martyrdom, when he was skinned alive in Albanopolis. Since he was killed by spear, the attribute of Saint Thomas is the spear, but he is also depicted with a square, due to his profession as a builder. A small angel standing at his left foot is often the symbol of Saint Matthew, but he may also be represented with a book or a halberd. The symbol of Saint James the Less is a fuller's club or a saw, since he was stoned, beaten and sawed in half. The best known symbol of Saint Jude Thaddeus is the Mandylion of Edessa, a piece of cloth with the face of Christ imprinted on it, the one he used to cure King Abgar. He is also represented sometimes with a medalion, a square rule or a club. Saint Simon is often represented with a fish lying on a book, a boat or an oar, all indicating that he was a former fisherman. The symbol of Judas Iscariot is a money purse with silver coins falling from it, the price of his betrayal. After his suicide, Judas was replaced by Matthias, associated with the lance used for his martyrdom. In an imitation of the Twelve Apostles tradition, many Royal Councils were composed of twelve members, with each member using for his seal the symbol of one of the apostles. Known examples are: the Conseil du Roi, in the 12th century France, Supremo Consejo de Castilla established under Queen Isabella in 1480, the Privy Council of England in the 16-th century.



Numerous other followers of Christ have led an exemplary life and symbols have been used to remember their story. Each saint is traditionally represented by a symbol and the study of such symbols in Christian art is part of a science called iconography. Symbols were particularly used for the benefit of the illiterate, so that they could recognize a scene or a personality. Some times, the symbols were used the other way around: the names of saints in letters were coding activities, dangers or messages. Orthodox images often contains inscriptions with the name of saints, so the Eastern repertoire of attributes is smaller than the Western one. Above all saints, Mary, mother of Jesus, is often portrayed wearing a blue robe. Her attributes include: an aura of 12 stars, sun, moon, heart pierced by sword, white lily, roses, rosary beads. She is also called: Our Lady of Good Counsel, Our Lady of Sorrows, Queen of Heaven, Mary Immaculate, Virgin of Mercy. A resumative list of sait symbols may include: Acatius (crown of thorns), Adalbert (spears), Agatha (tongs, bells, breasts on a plate), Agnes (lamb), Ambrose (bees, dove), Anne (door, book), Anthony (monk's habit), Augustine (dove, child, heart with a flame), Barbara (tower, cannon), Barnabas (walking stick, olive branch), Benedict (broken cup, raven, bell, staff, bush), Benno of Meissen (fish with keys in its mouth), Bernard of Clairvaux (pen, bees, Arma Christi), Bernardino of Sienna (three mitres), Blaise (wax, candles, iron comb), Boniface (oak, fox, fountain), Brendan the Navigator (whale), Bridget of Sweden (book, staff), Brigid of Kildare (cow, staff), Casimir of Poland (white lily, rosary), Catherine of Alexandria (breaking wheel), Catherine of Sienna (stigmata, cross, ring, lily), Cecilia (organ), Cerbonius (geese), Christopher (giant crudely dressed), Clare of Assisi (ostenstorium vessel), Clement (anchor, fish), Corbinian (bear), Crispin (shoes, millstones), Cyriacus (liturgical garments), Daniel (lions), David of Scotland (sceptre), Demetrius (armor), Denis (beheaded head), Dominic (rosary, star, dog with a torch), Dunstan (hammer), Edward the Confessor (nimbus), Eligius (hammer, anvil, horseshoe), Elias (mantle of the Carmelites, cave, chariot of fire), Elisabeth Hungary (alms, flowers, bread, pitcher), Emeric (sword, lily), Emilianus (robe of a hermit), Eustace (hunting clothes, stag, horn, oven), Felix of Burgundy (anchor), Florian (pitcher, pouring water over fire), Florinus (bottle, wine), Francis of Assisi (wolf, birds, fish, skull, stigmata), Francis Xavier (crucifix, bell, vessel, crab), Gabriel (trumpet, lantern, scepter, scroll), Gall (staff), Genesius (theatre mask), Genevive (lit candle, keys, herd, cattle), George (dragon, knight in armor), Gerard of Csanad (Bishop killed by a spear), Gertrude of Nivelles (crown, mouses and cats), Giles (Benedictine habit, deer), Gotthard (model of a church), Gregory the Great (papal tiara), Helena (crown and cross), Hilary of Poitiers (beard white and long), Hippolytus (horse harness), Hugh of Lincoln (swan), Hyacinth of Poland (statue of Virgin Mary), Ignatius of Loyola (chasuble, book, sword, cross), Irene of Rome (tending to Saint Sebastian), Irene of Tomar (palm branch), Isaiah (a scroll), Isidore (a peasant, an angel that plows the field), Jerome (cardinal vestments, skull, cross, books), Joanna (lamb), John Chrysostom (bees, dove, pen), John the Baptist (lamb, head on a platter), Joseph (Christ child, rod, white lily, carpentry square, mantle), Justin (axe, sword), Justina (palm branch, knife, unicorn), Kinga of Poland (crown), Knut of Denmark (royal insignia), Koloman (pilgrim hat, rope, book), Longinus (lance), Louis IX of France (fleur-de-lis, crown of thorns), Louis Bertrand (chalice with a snake), Louis of Toulouse (silk gloves), Lucia of Syracuse (robe of a virgin, eyes on a plate, lamp), Margaret (dragon, chains, cross, hammer), Martha (holy water, aspergillum), Martin of Tours (geese), Mary Magdalene (jar of ointment, skull, crucifix, red egg), Matilda (purse, alms), Maurice (armour, banner), Maurus (scale, spade, crutch),

Michel (scales, banner, sword, dragon), Monica (girdle, tears), Nicholas (purses, treasure chests, anchor, boat, children), Pope Nicholas (rooster), Onuphrius (old hermit with a crown at his feet), Pancras (sword, palm branch), Pantaleon (nailed hands), Patrick (cross, harp, serpent, demons, baptismal font, shamrock), Petronilla (dolphin), Philomena (anchor, palm branch, crown of roses, arrows), Raphael (fish, stick), Reparata (a banner with a red cross), Richard (overturned chalice), Rita of Cascia (roses, figs, thorn), Roch (angel), Sativola (scythe, well), Sava of Serbia (book), Seraphim of Sarov (peasant, hands crossed over chest), Sebastian (arrows, crown), Stephen (liturgical vestments, palm branch), Stephen of Hungary (orb and cross, sceptre, double cross), Teresa of Avila (pen, pierced heart, arrow), Theodore (crocodile), Thomas Aquinas (ostensorium, golden sun on his breast, dove, ox), Thomas Becket (sword), Thomas More (axe), Urban (papal tiara), Ursula (arrow, banner, cloak, shot with arrows), Valentine (birds, roses, priest vestment, crippled person, rooster, being beheaded, sword, holding sun), Venera (triple crown, book, palm branch), Verdiana (snakes), Victor of Marseilles (windmill), Vincent de Paul (children), Vitus (book, rooster, lion, bread, eagle, hare), Wenceslaus (crown, dagger), William of Montevergine (wolf, pastoral crook), Wolfgang of Regensburg (wolf), Xenia of Saint Petersburg (walking stick), Zachary (dove, olive branch), Zenobius (flowering tree), Zita (bag, keys).



Another group of wide spread religious symbols within the Christian Church are the Christograms (Monogramma Christi). A Christogram is a monogram or a combination of letters that forms an abbreviation for the name of Jesus Christ. Christograms were often displayed on military flags (vexillum) used by Christian armies. The oldest Christogram is the Chi-Rho, also known as chrismon, formed by superimposing the two Greek capital letters Chi (X) and Rho (P), the first two letters at the beginning of the word Christos. This symbol was used by Roman Emperor Constantine I (306-337 AD) as part of a military standard and granted him the victory in the battle of the Milvian Bridge (near Rome, 312 AD) against Emperor of Italy and North Africa, Maxentius (306-212 AD). Afterwards it became part of the official imperial insignia, emblazoned on helmets of Roman soldiers. In 353 AD, Emperor Maxentius was the first to use the Chi-Ro monogram on the reverse of his coins. Although formed of Greek characters, it is frequently found in Latin texts, signifying Christo, the dative form of Christus (belonging to Christ). In Gospel books the monogram is often almost submerged by decoration. In late antiquity, this Christogram was associated with the Crucifixion of Jesus and his resurrection. In the Merovingian period, the monogram Chi-Rho came to be used as part of royal cross signatures (signum manus), as an abbreviation of ICN (In Christi Nomine). Closely related to it is the IX monogram, often found as ancient burial inscriptions, including a Constantinople sarcophagus dated to the end of the 3rd century. It is formed by a combination of letter I for Iesus (Jesus) with X (Chi) for Christos. Another common Christogram was Tau-Rho, also known as the staurogram, used to abbreviate Stauros (the Cross) Christos, representing Christ on the Cross. It appeared in biblical manuscripts from the 4th century AD, alongside with Chi-Rho. The two letters, Tau and Rho can also be found separately as symbols on early Christian Ossuaries. The Latin most common Christogram was IHS (Iesus Hominum Salvator), used in Latin documents and inscriptions since the 7th century AD. The IHS monogram, with the H surmounted by a cross above three nails and surrounded by a Sun, is the emblem of the Jesuites, a tradition introduced by Saint

Ignatius of Loyla. A common version of it is the Latin abbreviation INRI (Iesus Nazarenus Rex Iudaeorum) usually placed above the crucified Jesus, to indicate the charges against him. In Eastern Christianity, the most widely used Christogram is the four letter abbreviation ICXC standing for Isous Hristos. It is sometimes rendered as IC XC NIKA, meaning Jesus Christ Conquers. A version of the IC XC monogram is ICHTHUS (fish) standing for: Iesus CHristos THEous Uios Soter (Jesus Christ, Son of God, Saviour).



Christian symbolism also includes archetypes, saint deeds, artwork, events or holy objects, understood by initiates only. Beginning with the 4th century, after legalization of Christianity in the Roman Empire, the Christian symbols have proliferated, excepting the iconoclast period of the 8th century, when they were under interdiction. One of the oldest pictural symbol of a good Christian was the Good Shepherd, often with a sheep on his shoulders. It is a representation found in the Catacombs of Rome, also a parable of the Lost Sheep. Since most of the slaves living in the Catacombs were former shepherds from Germany, Galia, Brittany, Illiria or Dacia, it was also a remembrance of their former freedom and imortal life. Another widespread symbol was the dove. According to Matthew, during the Baptism of Jesus the Holy Spirit descended like a dove and came to rest on Jesus. For this reason the dove became a symbol of Holy Spirit, but also of the Christian soul indwelt by the Holy Spirit. A peristerium, or Eucharistic dove, was used in medieval churches to keep the consecrated hosts of the Eucharist. Also the use of a dove with an olive branch, as a symbol of peace, originated with the early Christians, associated with the olive branch which the dove brought with it when it returned to the ark of Noah. Early Christians also used a dove image on their sepulchres to represent the ascension of eternal soul to Heavens. The peacock was believed by early Christians to be the symbol of immortality, since the flesh of the peacock would not decay after death. The eyes in the peacock tail feathers symbolizes the all-seeing God. Also, a peacock drinking from a vase is regarded as a Christian believer drinking from the waters of eternal life. In Christian iconography the peacock is often depicted next to the Tree of Life. Christians also adopted the anchor as a symbol of hope in future existence, a symbol of safety. The anchored cross also symbolize steadfastness, calm and composure, security in sea voyages. Inscriptions dating from the first century Rome, in the catacomb of Saint Domitilla, use anchor as a symbol along with Noah's ark, The Good Shepherd, Adam and Eve, Jesus with the apostles. Saint Clement's cross, or Mariner's Cross is and anchor cross in reference to the way Pope Clement I (first century AD) was martyred, being tied to an anchor and thrown from a boat into the Black Sea. The Onkerman Cave Monastery marks the supposed place of Clement's burial in the Crimea. Saint Cyril (826-869 AD) found his relics in that place, buried with an anchor, on dry land. In Ireland, the shamrock is said to have been used by Saint Patrick to illustrate the Christian doctrine of Holy Trinity as one God existing in three coequal, coeternal, consubstantial persons: God the Father, God the Son and God the Holy Spirit. Another image of Christian Trinity was the Eye of Providence, an eye surrounded by a triangle, commonly used in late Renaissance European iconography to depict God's omnipresence.



In the Byzantine Orthodox Christian tradition the word iconography is used for a branch of art history that studies religious images. When referring to icons, the word iconology is sometimes preferred. The first icons are said to have come into existence miraculously (acheiropoieta), like the image of Jesus on the Mandylion of Edessa. The job of early artists was only to copy them with as little deviation as possible, not to lose their potential to produce wonders or perform miracles, upon petition by believers. Theologically, all icons are considered to be sacred, miraculous in nature, being means of spiritual communion between heavenly and earthly realms. The most common subjects include Christ, Mary, saints and angels, supposed to carry the prayer's thought to God. Christian tradition states that Saint Luke the Evangelist was the first icon painter, said to have painted pictures of the Virgin Mary and Child, in particular the Hodegetria (Theotokos) holding the Child Jesus, standing in full length. The original painting (now lost), was displayed in the Monastery of Panaghia, in Constantinople. Numerous modern copies are most venerated in Russia. Saint Irenaeus (130-202 AD) says that early Christians produced their painted images maintaining the likeness of Christ, as it was made by Pilate at the time Jesus lived. Until the 4th century, icons were not to be placed in churches, so that they would not become objects of worship and adoration. After Emperor Constantine extended official toleration of Christianity icons became widespread among the faithful. Ownership and richness of private icons was according to wealth. Paintings of martyrs and their deeds began to appear in the 6th century, mostly criticized by learned writers for pointing to false gods. Opposition to images and their misuse grew, and finally resulted in the iconoclastic period, starting with the Council in Constantinople in 754. The icons were restored in 843, by Empress Regent Theodora. Almost everything within an icon has a symbolic aspect. For the illiterate, icons served as a visible gospel. Holiness is depicted by halos and wings. Colour plays an important role as well. Gold represents the radiance of Heaven, red the divine life, blue is the color of human life, white the Uncreated Light of God. Most icons also incorporate some calligraphic text, naming the person or event depicted. In the Eastern Orthodox view, to kiss an icon of Christ means to show love towards Christ Jesus himself. Icons are often illuminated with a candle of beeswax, or a jar of olive oil with a wick. Russian icons are typically paintings on wood, often small. A wall of icons, called iconostasis, is used to separate the nave of the church from the sanctuary. In Romania, icons painted as reversed image on glass are common in Transylvania, centered by the Nicula Monastery, produced by naive peasants. Some of the world's most prominent iconographers were: Theophanes the Greek (1340-1410), Andrei Rublev (1360-1430), Daniil Chyorny (1360-1430), Dionisius (1440-1502), Bogdan Saltanov (1630-1703), Simion Ushakov (1626-1686). Famous icon collections are to be found at: The State Tretyakov Gallery (Moscow, Russia), The Monastery of St. Catherine (Mount Sinai, Egypt), Church of Transfiguration (Novgorod, Russia), Cefalu Cathedral (Sicily, Italy), Cathedral of Santa Maria Assunta (Venice, Italy), Church of Christ in Chora (Istanbul, Turkey), Hagia Sophia (Istanbul, Turkey), The Metropolitan Museum of Art (New York, US), The Victoria and Albert Museum (London, UK), The British Museum (London, UK), The Museum of Art (Novgorod, Russia), Glass Icons Museum (Sibiel, Romania).



Even more symbols are abundant in mural paintings, pieces of artwork applied directly on a wall, especially associated with the fresco technique, where the pigments are applied to a thin layer of wet plaste, into which they sink. In the beginning, compositions were sketched on the underlayer, never seen, in a red pigment called sinopia. Later, new techniques for transferring paper drawings on the wall were developed. Drawings were enlarged to scale and paper was pricked with numerous points on the lines, than black powder was sprayed to produce small dots. To create the illusion of depth, artists such as Michelangelo and Raphael used to scrape indentations into certain areas of the plaster, to accent certain areas over others. For example the eyes in some portraits, to seem deeper and more pensive. A different type of mural painting, called sicco, done on dry plater, require a binding medium to attach the pigments to the wall, such as egg, glue or oil. Generally fresco works are more durable than secco and can be recovered even after scrapping the exterior surface. Even more durable murals are the mosaics, where a pattern or image is made of small regular or irregular pieces of colored stone, glass or ceramic, held in place by plaster. The earliest series of mural paintings were found in various catacombs from Rome, Naples, or Cappadocia. About the 4th century, Christ was represented as a beardless youth, with a lamb on his shoulders. In the 5th and 6th century, in the Byzantine art, the old naturalism was replaced by stiff sacred types, superior in dignity. In the next centuries, the favourite subjects for mural and ceiling paintings were scenes from the Old Testament, such as the sacrifice of Isaac, Johan and the whale or Moses striking the rock. Other themes were events from the life of Christ, such as the Last Supper. From the 10th century figures of saints appeared, together with the miracles they performed. Examples are in the catacom of Saint Callixtus, in the lower church of Saint Clemente in Rome, on the walls of the Tre Fontane Church, in the Capella of Saint Urbano in Caffarella. The Italian Renaissance saw the most proeminent use of fresco, when Romanesque churches were richly painted, with both decorative and educational roles (for the illiterate). In Denmark, some 600 churches were painted in a technique called kalkmalerier. A remarkable example is the interior of the Sistine Chapel, built within the Vatican by Pope Sixtus IV and painted by several leading paintes, such as: Sandro Boticelli, Domenico Ghirlandaio, Pietro Perugino, Raphael, Michelangelo. In France, the best site for Romanescue murals is the abbey church of Saint Savin sur Gartempe. For Spain, the most remarcable mural paintings, dating from the 12th century, are in Catalonia, at Solsona, Vich, Gerona or Barcelona. In the Eastern part of Europe, the capital of mural painting is in Romania, where more than a dozen monasteries were completely covered with frescoes, inside and outside. Remarkable examples are the monastic foundations at: Voronet (1487), Arbore (1503), Humor (1530), Moldovita (1532), Sucevita (1600). In Russia a notable example is at the Tikhvin Monastery of the Dormition of the Mother of God, founded in 1560. In modern times, a corpus of the first half of 19th century mural paintings from Bulgaria contains 52 monuments, including those of: Rila Monastery, Bachkovo Monastery, Trojan Monastery or Preobrazhenski Monastery. Famuos examples of mosaics adorn the church of Hagia Sophia, in Istanbul, since the reign of Justin II (565-578 AD), next to the Imperial Gate mosaic dated to late 9th century. Other famous mosaics are exposed at: San Vitale Basilica in Ravenna, Field Cathedral of The Polish Army in Warsaw, also in Rome, Tarragona, Milan, Thessaloniki, Hosios Loukas Monastery, Nea Moni Monastery, Cefalu Cathedral in Sicily, Saint Mark Basilica in Venice.



Some very powerful symbols of Christian life are represented by liturgical objects, costly objects made of gold, silver and precious gems, housed in the treasuries of churches. A short list of such objects used for Eucharist may include: 1. the chalice - a vessel which holds the wine that becomes the Precious Blood of Christ 2. the ciborium - a golden vessel with a lid used for the distribution of Hosts 3. the purificator - a small rectangular cloth used for wiping the chalice 4. the altar cloth - a rectangular white cloth that covers the altar 5. altar candles - must be natural candles of bee wax to signify the light (presence) of Christ 6. the paten - a golden plate that holds the bread that becomes the Sacred Body of Christ 7. the pyx - a small closing vessel used to bring the Blessed Sacrament out of the church 8. bells - rung during the calling down of the Holy Spirit to consecrate the bread and wine 9. the aspersorium - a bucket used to carry holy water for sprinkling 10. the thurible - used for carrying and burning incense 11. sacred oils of Chrism (mir) - used to clean the dead 12. the Roman Missal - a book containing the ceremonial instructions and prayers for the celebration of Mass 13. the Gospels - a book from which the Gospel reading is proclaimed 14. the alb - a full length white garment worn by the priest and deacon, symbol of pure life 15. the dalmatic - a distinctive vestment of the deacon 16. the stole - a long strip of fabric worn around the neck 17. black cassock and white surplice - worn by altar servers 18. the chasuble - worn by the priest over his vestments 19. the cope - a cape like vestment worn during processions 20. the sanctuary lamp - a candle, often red that burns near the tabernacle 21. the aspergillum - a sprinkler for casting holy water 22. the incense boat - holds the incense before is placed in the tabernacle 23. the sacrarium - a drain in the sacristy used for disposing of holy water. One of the richest Church treasuries was housed at the Abbey Church of Saint Denis, destroyed during the French Revolution, but a series of engraving with a visual inventory was produced in 1706 by Dom Michel Felibien in his "Histoire de l'Abbaye Royale de Saint Denys en France". Another famous collection is held at the Byzantine and Christian Museum in Athens. Vessels and instruments for the Byzantine Liturgy made in Moscow in 1679, are now in the treasury of the Hermitage Museum in Saint Petersburg. Another fine collection of Russian religious pieces is the Russian Liturgical Gallery in the Hillwood Estate Museum and Gardens, Washington DC. A permanent exhibition of liturgical objects is also housed in the Cathedral of San Vincente de Roda de Isabena (Spain). A large collection of liturgical manuscripts and Books for the Mass is organized by The British Library, while manuscripts containing music for liturgy are organized by the University of Cambridge. In Romania, liturgical objects are exposed at the Patriarchal Palace Museum, at the National Museum Cotroceni and by most of the monasterial museums, such as: Stavropoleos, Antim, Cernica, Pangarati, Viforata, Neamt, Secu, Probota, Pasarea, Barsana, Putna, Sinaia, Agapia, Varatec, Caldarusani, Dragomirna.



Flags and banners are a common presence in Christian processions since the time of the Byzantine Empire, when silk and heavy embroidery made the appanage of holy faces. The religious flags and banners are used to symbolize the Church Militant, the victorious triumph of Christ over the world, sin and devil. The Russian name for such a banner is "khorugv", the Polish name is "choragiew", while the Romanian name is "prapur". The cloth is often pointed, swallow tailed or has several streamers coming down from it. Sometimes it may be fringed around the edges. It is suspended from a crossbar, attached to a long vertical pole. At the top of the pole usually there is a cross. More rarely, banners can be made of metalwork or carved wood. When not being carried in a religious procession, banners are usually displayed in the church. Since this banners are intended for religious use and not for secular, they are normally blessed when first brought into the church. After the flag was sprinkled with holy water it is placed in its stand by the either side of the iconostas. The banner on the right side often has a mandylion with the face of Jesus Christ, while the one on the left side has an icon of Theotokos. Numerous other banners will reproduce the face of Saint Nicholas, other saints and angels. Banners are used in all church processions, except the procession of Great Saturday, when the Epitaphios is carried, a large embroidered cloth bearing an image of the dead body of Christ. In a procession, the banners usually comes in line right after the Cross, representing the faithful in their pilgrimage to the kingdom of heaven. On Good Friday the banners have black cloth tied arund their borders, indicating mourning over the death of Christ. At Pascha, these black borders are replaced by white ones, bearing the triumphal words "Christ is Risen". The Procession Path (ambitus templi) is a route taken by processions on solemn days in large churches to celebrate the entrance in the church. In the Eastern Orthodox Church, outdoors procession are common on: Pascha, Bright Week, Great Saturday, Theophany, Paraklesis, Lity, Great Thursday, Funeral, or at the Consecration of the Church. The oldest religious banner was a military flag displaying the Chi-Rho symbol, after Byzantine Emperor Constantine claimed to have had a vision that he was fighting under the protection of God. The Kingdom of Georgia, in 337 AD, was the first Christian state to adopt a flag with the symbol of the cross. Since the 6th century, the insigne on the Imperial Bizantine flag used a tetragrammatic cross, a gold or silver cross with four letters "B", one in each corner. Christian battle flags appeared in the Crusader era, starting with the Knights Templar flag using a red cross on white background. The Scandinavian cross flag originated as a symbol of Christianity during the Kalmar Union (1397-1523), when a flag with a red cross and yellow body was hoisted by troops during various wars. The story goes that during the Livornian Crusade, in 1219, such a flag fell from the sky and filled the heartd of the Danish with courage, spurring them to victory. Ever since, numerous states have adopted a cross on their national flag. Well known examples are: Vatican City, United Kingdom, Greece, Georgia, Switzerland, Slovakia, Spain, Portugal, San Marino, Denmark, Sweden, Norway, Iceland, Finland, Faroe Islands.



The numerous documents produced by members of the church resulted in a need to seal them, in order to ensure that the receiver knew where it had come from. As early as the 6th century, Popes were fixing large lead or gold seals to their edicts, known as "bullae" or "papal bull". The majority of the great bulls now in existence are confirmations of property or protection accorded to monasteries and religious institutions. Since the 12th century papal bulls carried seals with heads of Saint Peter and Saint Paul on one side and pope's name on the other, with the letters PP for "Pastor Pastorum". Later, the use of seals increased inside the Church, as the role of Bishops increased in affairs of state, finances or ecclesiastical property. Episcopal seals were oval in shape, carved with figures of saints, or of the Bishop himself. In the 13th century, seals became more and more elaborate, with scenes of religious activities, especially involving Christ and the Virgin Mary. Coat of arms were adopted by the Church by the mid of 13th century to be placed on buildings, monuments, flags and clothing. The Church seals and coat of arms did not required a person to be literate in order to recognize and read the message it stood for. For example, The Holy Trinity was represented on coat of arms by three Bishop's mitres, or three crowns. Other common symbols were Saint Peter's keys and Saint Paul's sword. A collection of 233 of Scottish Bishop seals was published in 1850 by Henry Laing, in a catalogue of 2608 Scottish seals. Another series of engraved plates of episcopal seals was published between 1816 and 1840 by Robert Surtees, in his *History and Antiques of the County Palatine of Durham*. They started in the 11th century with the seal of William of Saint Carillef, the Norman-French bishop of Durham (1081-1096) adviser to William the Conqueror, and ended in the 16th century with the seal of Cuthbert Tunstall (1474-1559), Prince Bishop of Durham (1530-1550) under four kings: Henry VIII, Edward VI, Mary I and Elisabeth I. Examples of seal design are: silver three boar heads, gold two lions passant azure, silver cross patonce azure, gold double tailed lion rampant vert, two lions passant, a cross between four doves gold, a dove standing on a ball between the horns of the mitre, a cross between three stars. Ecclesiastical heraldy differs from secular heraldy in the use of special insignia around the shield to indicate rank. The most prominent example is the red hat for Cardinals, also known as galero. Other insignia may include: processional cross, the episcopal mitre, a crosier, a mantle. Ecclesiastical heraldy developed significantly in the 17th century, while the full system of emblems around the shield was regulated only in 1905, by the Letter of Pope Pius X "Inter multiplices curas". A motto usually appears below the shield, as a statement of belief. Examples: "sola gratia tua", "nihil sine Deo", "vincit agnus noster", "post tenebras lux", "vincit qui partitur", "ardens sed virens". The Seven Seals of God from the Bible's Book of Revelation are symbolic seals that secure our world. The opening of such seals marks the Second Coming of the Christ and the begining of The Apocalypse. Therefore, the great secrets hiddens since the foundation of Earth, and our lips on the matter, must remain sealed.



Feudal symbols and emblems

The Crown, is a traditional form of head adornment, or hat, worn by monarchs. A crown is also an emblem of a sovereign state, usually a monarchy, but also used by some republics. A specific type of crown, called a coronet, is employed in heraldy, under strict rules. There are numerous other types of crown, of less symbolic value: nuptial crown worn by a bride, also called a "coronal", carnival crowns, crown of thorns for Christian ceremonies. Before crowns, ornamental headbands called "diadema" had been worn by the Pharaohs of Egypt, Achaemenid Persian Emperors and Roman Caesars, to mark their power. In modern days, diadems are worn by female members of royalty and persons with a distinguished position in society, on special events. The golden crown was first adopted by Roman Emperor Flavius Valerius Constantinus (306-337 AD). Afterwards, the crown was worn by all subsequent emperors of the Roman Empire, kings or despots. A radiant crown, called "corona radiata" (like the Statue of Liberty) was worn by Roman Emperors as part of a cult dedicated to Sol Invictus, the sun God. The oldest extant Christian Crown in Europe is the Iron Crown of Lombardy, used by the Holy Roman Empire and the Kingdom of Italy. Other famous Imperial Crowns adorned the heads of the rulers in: Russia, China, Japan, India, Persia, Brasil, Bulgaria, France, Indonesia, Nepal, Polynesia. The list of Royal Crowns has tens of entries, since every monarchy in the world had its own special crown. In present times, in Europe only the British Monarchy continues the tradition, holding their crown as a national symbol. Some of the crowns are impressive works of jewelry. Examples: 1. The Imperial State Crown of Great Britain is decorated with 2868 diamonds, 273 pearls, 17 sapphires, 11 emeralds and 5 rubies, while The Crown Jewels are represented by 142 objects decorated with 23 578 precious stones 2. The Imperial Crown of Russia weights 4 kg in gold and is decorated with 4936 diamonds, 74 pearls and one red spinel 3. The crown of King George XII of Georgia, made of gold, is decorated with 145 diamonds, 58 rubies, 24 emeralds and 16 amethysts. Less important, but more numerous are the coronets, small crowns consisting of ornaments fixed on a metal ring. The coronets are not used as an adornment, but as a rank symbol, worn for a royal coronation along with coronation robes. Dukes were the first individuals authorised to wear coronets, followed by marquesses (15th century), earls (16th century), viscounts and barons (17th century). Example for the English peers (in other countries there are variants of the insignia): Princes Coronet (crosses, strawberry leaves and fleurs-de-lis), Duke Coronet (eight large strawberry leaves), Marquess Coronet (four strawberry leaves and four silver pearls), Earl Coronet (eight smaller strawberry leaves and eight smaller silver pearls raised on stalks), Viscount Coronet (sixteen large silver pearls touching one another), Baron Coronet (six large silver pearls not touching one another).



The feudal system was a combination of legal, economic and military customs among the three estates of the realm: the nobility, the clergy and the peasantry. All such customs were bound by a system of manorialism, including a fortified manor house in which the lord and his dependents lived, a rural estate and a population of labourers. The manor originated in the Roman villa of the late Roman Empire, and usually included a great hall where manorial courts, communal meals or great banquets were held. Most manor houses also contained a "solar room", mostly on an upper story, designed as the family private living and sleeping quarters, within castles often called the "Lords and Ladies chamber". Smaller than the great hall, the solar was a room of comfort and status, usually including a fireplace, decorative woodwork and tapestries. The Lord of the house was often a member of the nobility, a judicial person, an abbot or a military commander. The power of the lord was exercised through various intermediaries, including a bailiff, an administrative deputy. Most manors consisted of three classes of land: 1. demesne, the land directly controlled by the lord and used for the benefit of his household 2. dependent serf holdings carrying the obligation for some specified labour services 3. free peasant land, with no such obligations but subjected to manorial jurisdiction and custom. Additional sources of income included charges for the use of a: mill, bakery, wine press or saw mill. Dependent holdings were held nominally by arrangement of lord and tenant, in most cases hereditary, with a payment made to the lord on each succession of another member of the family. Villein land could not be abandoned, or passed to a third party, without the lord's permission and a customary payment. The villeins enjoyed legal rights, subjected to local custom. Land which was neither let to tenants nor formed part of the demesne was known as manorial waste, while common land where all members of the community had right of passage was known as lord's waste. Most of the Christian monasteries, especially the Carolingian monasteries, shared all the essential features of a manorial estate, saved that the monks only served God as their Lord. Numerous medieval manor houses have survived to modern times. Some representative examples are: Denmark (Berritzgaard, Borglum Abbey, Glorup, Krogerup, Nyso), Estonia (Haakhof, Essemaggi, Aya, Albu, Atla, Herkull, Joosu, Kida, Kosch, Rosenhagen, Maart, Peddast), France (Kerazan, Milandes, Clap, Dur-Ecu, Mathan, Mezarnou, Motte), Germany (Bothmer, Essenrode, Glucksburg, Gut Krummbek, Gut Wellingsbuttel, Schloss Ahrensburg, Rittergut Kurbitz, Villa Haas), England (Abbey Sutton Courtenay, Alford, Ascott, Avebury, Barkham, Bucknell, Clevedon Court, Halsway, Ightham Mote, Owlpen, Selly, Snowhill, Wilderhope, Woolsthorpe), Scotland (Haddo House, Lingo House, Monboddo

House, Muchalls), Netherlands (Huis Doorn, Slot Heemstede), Norway (Austratt, Damsgard, Frogner, Store Milde Hovedgard), Poland (Czerniejewo, Nieborow, Owinska, Racot, Swierklaniec, Zelazowa Wola), Portugal (Solar da Madre de Deus, Solar de Mateus, Solar de Sezim), Romania (Golescu, Mocioni, Wesseleny, Hagianoff, Marghiloman, Cantacuzino, Negruzzi, Octavian Goga, Bethlen, Laszay Filip), Russia (Abramtsevo, Grebnevo, Meyendorf, Muranovo, Ostankino, Gatchina, Rozhdestveno, Strelna, Tarkhany, Yasnaya Polyana), Spain (Cortijo de Miraflores, Cortijo Jurado, Pazo de Meiras), Sweden (Charlottenborg, Elleholms, Harpsund, Ovravid, Skarva, Strom), United States (Arlington, Berkely, Boone Hall, Evelynton, Gunston Hall, Orton, Filoli, Mount Vernon, Nemours, Pennsbury, Statford Hall, Westover).



An outstanding symbol of the feudal life was the castle, a fortified manor house built by the nobility, royalty or military orders for public defense against intruders. Urban castles were built to control the local population and important travel routes, while rural castles were protecting the income resulted from fertile land, mills and water sources. The word castle was derived from the Latin "castellum", a diminutive from "castrum", meaning a sacred place. For example, some 36 early castles were established in England, between 1066 and 1087, by the Norman invaders, for defensive purposes. A castle could act as a stronghold and prison, but also as a place where a knight or a feudal lord would entertain his peers. The most strongly defended part of a castle was it's great tower, called a "keep" (turre) or "donjon", as the last place of refuge, surrounded by a fortified enclosure called a "bailey". Barracks for a garrison, stables, workshops and storage facilities were found in the bailey. Water was supplied by a well or a cistern. One or more curtain walls were defensive walls enclosing the bailey. A typical wall could be 12 m tall and 3 m thick, although sizes varied greatly between castles. External walls were studded with towers to allow a cross-fire along the wall. In between the walls, horses, animals and sometimes the dependant peasants found protection against the enemy. A gatehouse was often developed to control the traffic flow inside the castle. Typically, there were one or more portcullises to block or at least lengthened the passage through the gatehouse. When there was a ditch surrounding the castle, dry or filled with water, there was also a drawbridge before the gatehouse, some times continued by a stone bridge. Building a castle required the permission of the king, or other high authority. In 864, King Charles the Bald of West Francia, was the first documented king to prohibit and destroy the "castella" constructed without his permission. In some countries, such as Switzeland, the monarch had little control over lords, and as a result more than 4 000 castles were built in the last nine hundred years. A special type of castles with an emphasise on the curtain walls, built for military operations, were the Crusader castles, built by Military Orders: Knights Hospitaller, Knights Templar, Teutonic Knights. Afterwards, concentric castles were widely copied across Europe, by kings and knights who had been on Crusade. Begining with the 14th century, as gunpowder was introduced in Europe, castles were adapted to allow small artillery pieces to fire from the towers. In response to the asault cannons, the walls were built thicker and the round towers were preffered. Around 1500, in Italy, the angled bastion was developed, evolving into the star forts. In total, some 75 000 to 100 000 castels were built in Western Europe, of which some 14 000 in German speaking areas. Numerous feudal castles have withheld the times, with some outstanding examples: Austria (Burg Liechtenstein, Hohensalzburg, Burg Kreuzenstein, Burg Hochosterwitz), Croatia (Veliki Tabor, Nehaj Fortress, Varazdin, Dubrovnik), Denmark (Kronborg), England

(Arundel, Bodiam, Dover, Herstmonceaux, Howard, Tattershall, Tower of London, Windsor), Estonia (Tallinn, Narva, Koluvere), France (Amboise, Carcassone, Chalmazel, Chambord, Chaumont, Fougères, Josselin, Koenigsbourg, Pierrefonds, Saint Chartier, Sully, Tarascon, Vincennes, Vitre), Germany (Altenburg, Burg Cochem, Burg Querfurt, Cadolzburg, Ludinghausen, Neuschwanstein, Marksburg, Quedlingburg, Sigmaringen, Wernigerode), Hungary (Bory, Sarvar, Siklos), Italy (Apulia, Fenis, Napoli, Torrecchia, Verona, Vignola), Lithuania (Kaunas, Trakai), Poland (Krasieczyn, Ksiaz, Kwidzyn, Malbork, Reszel, Wawel), Portugal (Almourol), Romania (Bran, Carei, Fagaras, Hunedoara, Peles), Russia (Kremlin, Nowgorod, Vyborg), Scotland (Glamis, Inverary, Stirling), Slovakia (Bratislava, Bojnice, Orava, Smolenice), Slovenia (Bled, Brdo, Ljubljana, Mirna, Podsreda, Velenje, Zuzemberk), Spain (Alcazar, Alhambra, Aljaferia, Valladolid, Zaragoza), Sweden (Gripsholm, Trolle Ljungy, Upsalla, Vittskovle), Switzerland (Chillon, Neuchatel), Ukraine (Kamienec Podolski, Palanok, Popov, Svirzh).



Another development of the feudal lords were the botanical gardens and dendrological parks, designed not only to fulfil the needs for food, but for pure pleasure and joy. Various vegetables and fruit trees were present, but the gardens were filled with flower beds, topiary plants, sprinkling fountains, benches and furniture, intended to provide comfortable seating for leisure time in cool shadows. In his book, called "Capitulare de villis vel curtis imperii", Emperor Charlemagne was expecting to find nearly a hundred different sorts of herbs, vegetables, nuts and fruits, including the "sempervivum tectorum" (devil's beard) recommended to be grown on the ardesian roof of the gardener's houses (for protection against lightning strikes). Dominican monasteries were the leading forum in matters of gardening. Sometime in the 13-th century, Dominican friar Albertus Magnus (1200-1280) wrote a book called "De Vegetabilibus et Plantis", where he described a vast amount of earlier herbals and a description for a leisure garden. Another inspiring book was "Liber ruralium commodorum" (The book of rural comfort), completed in 1306 by Piero de Crescenzi, a retired Bolognese lawyer. There are over 100 extant manuscripts of this book, in Latin, Italian, French and German, produced in the 14th century. It was the first secular book to be printed in 1471, in Augsburg, with more than 57 new editions in the next century. The treatise is divided in twelve books, describing: the best location for a farm, the properties of plants, pruning and grafting, sowing fields, soil types, the use of fertilizer, viticulture, arboriculture, 133 different types of herbs, vegetables, the use of meadows and groves and how to create them through human intervention, types of pleasure gardens and how to construct them, domesticated animals and techniques for hunting the wild ones, a calendar for agricultural works. In many of the French versions, a nobleman with a book in his hand is shown instructing a man, as they observe peasants engaged in the activities described in the book. The description for a small pleasure garden is identical with the one of Albertus Magnus, but this book also includes descriptions for larger gardens, meant for Kings and Princes. Probably the best example are the Gardens of Versailles, ordered by King Louis XIV, covering 800 hectares of land, with 200 000 trees, 210 000 flowers, 50 fountains, 620 water jets and a water canal 5.5 km long. In the 16th century, gardening had turned from monasteries and elite to less noble residences and castles. In early days, plant cultivation took place in the castle's courtyard and around the castle walls. Within medieval cities, greenery was first nurtured around churches, monasteries and cemeteries, while most of the gardening was produced outside the city walls. One relevant example for

pleasure gardens was the "Tulip mania" in the 17th century Netherland, when tulips were bred as a status symbol for rich people. As the noble families grew larger and richer, so did their pleasure gardens, turning into botanical gardens and dendrological parks. Every well behaved noble was supposed to accumulate vast knowledge in botany, horticulture and silviculture. An early example is the Botanical Garden in Padua, established in 1545 by the Republic of Venice, upon demand of the medical school at the University of Padua. Other examples are in the medieval Botanical Gardens at: Tubingen (1535), Pisa (1544), Firenze (1545), Valencia (1567), Bologna (1568), Leipzig (1580), Jena (1586), Leiden (1587), Heidelberg (1593), Paris (1597), Oxford (1621), Amsterdam (1638), Uppsala (1655), Berlin (1672). An early dendrological park was founded in the year 1700 at Simeria (Romania), covering 70 hectares, near the Gyulay Castle. Other notable examples are located in: Sochi (Russia), Kurnik (Poland), Kew (England), Nikitsky (Crimea), Sofiiivka (Ukraine), Bila Tserkva (Ukraine), Skinderikis (Lithuania), Shekviteli (Georgia).



Another defintory symbol of the feudal life consisted in associations of artisans and merchants called "guilds". Guilds usually depended on grants, from monarch, or from city governments, to enforce the flow of trade to their exclusive members. A binding oath was sworn among the members to support one another in adversity, to kill specific enemies, to back one another in feuds or in business ventures. A lasting legacy of traditional guilds are the guildhalls, used as meeting-places. In German burg-cities, each guild was also responsible for building and maintaing one of the defensive towers in a stronghold, with guild members fighting the enemy under a single flag. Known as "collegium", in Roman times, organised groups of merchants were specialized in a particular craft, such as the "corpus naviculariorum" specialized din building ships. In medieval times, such associations went by many different names, including: fraternity, brotherhood, college, company, corporation, fellowship, livery, society, natie, consualdo, gremios, hansa, gildenhuis, corps de metiers. The first usage of the name "guild" was in the "gilda mercatoria", operating in France, at St. Omer, in the 11th century. The London first Guildhall was established around 1120. In the Low Countries, there were guilds in every city, with elaborate and often ornate buildings, to demonstrate their status. Once a year the members would gather in the guildhouse for a communal meal, and occasionally they were called for meetings on important matters. Each guildhall was marked by a coat of arms, hanging from the facade of the building. A short list of medieval guilds must include: blacksmiths, bakers, butchers, brewers, cordwainers, shoemakers, weavers, tailors, bricklayers, wallers, merchants, skimmers, saddlers, tanners, milners, barbers, glovers, goldsmiths, masons, paintes, curriers, shipwrights. By the 13th century, there were no less then 100 guilds in Paris, and by the 14th century their number had risen to 350 guilds. In England the City of London Corporation included more than 110 guilds, reffered now as livery companies, since that survived to our days. In Germany, there were 100 guilds in Hamburg, 80 guilds in Cologne and 70 guilds in Lubeck. In Italy, greater and lesser artisanal guilds were openly distinguished in 7 to 12 "arti maggiori" and 14 "arti minori", with the most important in the guild for judges and notaries, who also served as arbitrators in the disputes of other guilds. Other major guilds were the wool, silk and money guilds. The top of the list for the lesser guilds was occupied by the metal workers, with many different guilds: farriers, knife-makers, locksmiths, chain-forgers, nail-makers, armourers, helmet makers, eschuteron makers, harness polishers. All guilds enjoyed certain priviledges, overseen by local authorities, predecursors of the modern patent and trademark

system. The guilds also maintained funds in order to support infirm or elderly members, as well as widows and orphans of guild members, funeral benefits and travel allowances. European guilds imposed long standardized periods of apprenticeship and made it difficult for non-members to gain access to materials or knowledge, or to sell into certain markets. The power of the guilds survived until the 19th century, with the industrialization and modernization era, when most of their trade secrets were revealed and ridiculized.



The most important object denoting the authority of a feudal lord or a wealthy merchant was his seal, a device designed to make an impression in wax, clay or paper. They were used to authenticate a document, or to prevent interference with a package or envelope. In ancient times, for similar purposes, traders used round balls of clay, called "bulla", stamped with a unique sign for identification. In early feudal times, such clay bullae evolved to be made of lead, or sometimes of gold, as the Golden Bulls issued by the Byzantine Emperors, Holy Roman Emperors and Popes. With lesser nobles, seals were carved in decorative stones, ivory or bronze, to be impressed in sealing wax, a material made of 2/3 bee wax and 1/3 resin extracted from European Larch tree, coloured in red with vermilion or lead minium. From the 16th century, the sealing wax also contained various proportions of shellac, turpentine, chalk or plaster. By 1866, many other colours were available, using: mica (gold), cobalt oxide (blue), cracking tar (black), lead carbonate (white), mercuric sulphate (yellow), bronze oxide (green). Since the 10th century, wax seals were being used at first by Royal and Bishopric chancelaries, gradually moving down to great magnates and petty knights. By the middle of the 13th century, seals were also used by merchants and corporate bodies, including cathedral chapters, monasteries or municipalities. In the Middle Ages, the majority of the seals were pendent, hanging loose, rather than parchments applied directly to the face of the paper. In case of important transactions, the seals of all parties as well as all witnesses might have been attached to the document. For example, a charter issued to settle a dispute, 20 May 1412, in King's Lynn Borough Archives (Norfolk), has fifty-eight small seals on eight long tags. The majority of seals were circular, but ovals, triangles, shield-shaped, rectangular and other patterns of seals are also known. As a rule, seals of women and ecclesiastics were given an almond shape (pointed oval). The design usually comprised a graphic emblem and/or some text: the seal of...the name, initials, sigillum, or a short motto. In the latest centuries, architects, surveyors and professional engineers used seals affixed on contract documents, to identify the licensed professional who supervised some work. Smaller version of seals were the signet rings, often with a family coat of arms or their initials, in extensive use from the 13th to the 17th century. Some notable examples of medieval seals are: the seal of Emperor Heinrich II of Germany (1002-1024), the seal of William the Conqueror (1066-1087), the seal of Exeter town (1180), the silver seal of Isabella of Hainault, Queen of France (1180-1190), the seal of Merton Priory (1241), the silver seal of Robert Fitzwalter (13th century), the seal of Thomas Arundel, Archbishop of Canterbury (1396). The scholarly discipline that studies seals is known as sigillography, with interest in both the artistic design and the legal, administrative or social context in which they were used. The first published treaties dedicated to seals included: "De anulis signatoriis antiquorum", Giorgio Longo (1615), "Sigilla comitum Flandriae", Olivier de Wree (1639), "De sigillorum prisco et novo jure tractus", Theodorus Heopink (1642), "De re diplomatica", Jean Mabillon (1681), "De veteribus Germanorum aliarumque nationum sigillis", Johann Michael Heineccius (1710).



Writing was the main ability that distinguished the noble class members from their subdues. Although there were slaves trained to work as calligraphers, they were under severe oath to respect the secrecy. Most of them were able to make perfect copies of a text, but unable to compose one. For centuries, common people were banned from learning the letters. In ancient times, letters were used mainly for brief documents and commemorative monuments. As letters and books became more and more common, a new style of writing was required, to make the work easier. One such script, developed by Latin and Greek scribes, was the Uncial script, using only majuscules, developed from Roman capital letters. Taking advantage of the parchment neat surfaces, the new script was characterized by simple round letters, produced in a single stroke, as opposed to the angular, multistroke ones. The oldest example is the "Papyrus Oxyrhynchus", a short fragment in Latin, dated to the 3rd century, about the Macedonian wars. In this fragment, all the letters are disconnected from each other and word separation is not used. Around 600 AD characters became more complex, with ascending and descending lines, added as major alterations. Uncial script was in use particularly for copies of the Bible, with more than 500 surviving copies up to modern days. Due to its extremely widespread use, there were many different styles, such as: Byzantine, African, Italian, French, Spanish, Irish, English. Codex Vaticanus, dated to the 4th century, is one of the oldest copies of the Bible, written on 759 leaves of vellum. Other valuable codices were: Codex Sinaiticus, Codex Alexandrinus, Codex Ephraemi, Codex Bezae Cantabrigiensis. Another wonderful example of a rare book is Codex Petropolitanus Purpureus, containing the four Gospels written in silver letters on 231 purple parchment leaves, measuring 32 x 27 cm. The manuscript originated in the imperial scriptorium of Constantinople, but was dismembered by crusaders in the 12th century. A variant of the Uncial script, called "Insular script" was in use in Ireland and England. In England, the Uncial script was brought from Rome, to the Canterbury Abbey, by Saint Augustine, the first Archbishop of Canterbury, founder of St. Augustine's Abbey. Saint Columbanus took the script back to Italy, to Bobbia Abbey (Abbazia di San Colombano), while other missionaries took it in Germany, to the Abbey of Fulda (Abbatia Fuldensis), where the library held some 2000 manuscripts. The insular variants were developed in Ireland, in the 7th century, and remained in use as late as the 19th century. Works written in Insular script commonly use large initial letters, surrounded by red ink dots. Letters following the initial letter often diminish gradually in size, until the normal size is reached. Insular script was used mainly for Latin religious books, but also for any kind of book, such as: Book of Kells (the four Gospels), The Cathach of St. Columba (psalter), Ambrosiana Orosius (chronicon), Durham Gospels, Book of Durrow (Gospel), Lindisfarne Gospels, Codex Sangallensis (Gospels of St. Gall), Codex Ardmachanus (Book of Armagh). The Insular script was influential in the development of Carolingian minuscule, used in the Holy Roman Empire between 800 to 1200. Created in France, by the monks of the Corbie Abbey, the Carolingian minuscule was uniform, with rounded shapes, with clear capital letters and spaces between words. Examples are: Gospels of Lothair (9th century), Commentary of St. Augustine (823 AD), Commentaries of Bede (852 AD), Rabanus Maurus (918 AD), Sacramentarium (10th century), Lives of Saints (11th century), Valerius Maximus (1167 AD), Homilies of Origen (1163 AD), Historia Scholastica (1192 AD), Legenda Aurea (1312 AD).



In an early phase of the feudal system new alphabets were invented in order to translate, write and spread the liturgical books, in languages used by Nordic people such as Slavs and Germans. In 862, Prince Ratislav of Great Moravia (846-870) had asked the Byzantine Emperor Michael III Amorian (840-867) for some holy books, in order to bring his people to the Byzantine rite. As a result, under the guidance of Patriarch Photios, two brother monks, Saint Cyril and Saint Methodius, from Mount Athos, were sent in a mission to learn the language of the natives and spread Christianity. In the same year, Bulgaria was brought under the Byzantine rule and rite, by the force of arms. Since the Greek and Latin alphabets did not include letters for numerous sounds present in the Slavic language, the monks decided to invent a new script, called "glagolitic". The name was derived from the Slavonic word "glagolu", meaning pronunciation. With this respect, they added 41 new letters to the Greek alphabet, one for each of the non-Greek sounds and ligatures. Glagolitic numerals were in fact letters in the script, with values assigned in alphabetical order: a=1, b=2 ...and so forth, with glyphs for the ones, tens and hundreds. To distinguish numbers from text, numerals were set apart with dots, or a mark placed over the numbers. The new alphabet was in use in Moravia from 863 to 886, until the new bishop of Nitra banned the script and jailed the 200 students in the Moravian Academy. Among the students were two monks, Saint Clement of Ohrid and Saint Naum of Preslav, who brought the new alphabet and the books to Bulgaria, where they were received and accepted by Tsar Boris I of Bulgaria (852-889). Two literary schools were established there, at Ohrid and Preslav, where the Glagolitic script remained in use until the 12th century. In time, in the 10th century, the Glagolitic was modified by late students, reduced to 33 letters and renamed as Cyrillic. At the end of the 10th century, the Cyrillic alphabet became the church language in Kievan Rus, and started to spread in all Russian territories known as "Old Church Slavonic". The core corpus of Old Church Slavonic manuscripts is usually referred to as canon, and includes: Kiev Missal, Codex Zographensis, Codex Marianus, Codex Assemanius, Psalterium Sinaiticum, Euchologium Sinaiticum, Glagolita Clozianus, Ohrid Folios, Rila Folios, The Book of Saint Sava, Codex Supralisensis, Enina Apostle, Hilandar Folios, Macedonian Folio, Sluck Psalter. The Cyrillic script remained in use unchanged until the 18th century, when Tsar Peter the Great reduced some letters to form the new Civil Russian alphabet, much easier for printing with primitive machines. The Geometry text book of Alexei Perovici, in 1708, was the first book to be printed in civil Russian alphabet. In present times, countries such as: Russia, Ukraine, Belarus, Bulgaria, Macedonia, Kazakhstan, with a total population of more than 250 million people, still use Cyrillic as the official script for their national languages.



The Gothic alphabet was invented in the 4th century in Bulgaria, at Nicopolis, by a bishop called Ulfilas (Wulfila), in order to translate the Bible from Greek into the Gothic language. His work is mentioned in five ancient manuscripts, but the letter names were first recorded in Codex Vindobonensis in the year 795, a manuscript compiled by bishop Arno from Salzburg (750-821), including correspondence with English scholar Alcuin of York, master at the Palace School of Charlemagne in Aachen, who perfected the Carolingian minuscule. There are 27 letters, of which 20 were taken directly from the Greek alphabet or modified from Latin. All letters were also assigned numerical values, written between dots or with an overline when used as numerals. In kingdoms such as Germany, Austria, French, Hungary, England, Poland, Denmark, Norway and Sweden, the Gothic alphabet was used in the development of a new script, known as the "Gothic script", "Textura", "Fraktur" or "Blackletter". The new script evolved from the calligraphic standard, known as "Caroline minuscule", developed around the year 770 AD, at the scriptorium of the Benedictine monks of Corbie Abbey. The Carolingian minuscule script was created from the Latin script, under the patronage of Emperor Charlemagne (768-774), who had a keen interest in learning, using to keep tablets under his pillow. In the 12th century, as new universities were created, producing new books for grammar, history, law and business, there was an ever increasing demand in new books to be multiplied quickly. The new script aimed to be cursive, easy to read and write, destined for de luxe manuscripts. The Gothic script was mainly characterized by an angularity of its strokes, the breaking of the curves, uniformity, regularity and rhythm in the signs. The letters were straight, sharp, with thick lines, asking for a lot of ink, hence the name of "blackletters". A variant of the Gothic script was the Visigothic script, perfected in the Visigothic kingdom of Hispania, in the 9th to 11th centuries. The calligraphic form of the Gothic letters, called "textualis", or "textura", were carved by typographer Johannes Gutenberg, in 1452 to 1455, when he printed the 42-lines Bible. About 180 copies were printed on paper, and some on vellum. As a reward, Archbishop Adolph von Nassau had given him the title of Hofmann (gentleman of the court), that included an annual stipend, 2180 liters of grain and 2000 liters of wine. A variant of blackletters, evolved from Textualis, were called "Schwabacher", since they were used in 1529 by friar Martin Luther when he published the "Articles of Schwabach" as his confession of faith. But the oldest incunable printed with Schwabacher types dates from 1485, when editor Anton Koberger (1440-1513) published the "Nuremberg Chronicle". Schwabacher letters were also used by printmaker Albrecht Durer (1471-1528) in 1493, for his series of "Apocalypse with Pictures" depicting scenes from the Book of Revelation. Another variant of blackletters, called "Fraktur", became most common in the 16th century. The Fraktur type includes the scharfes S (Eszett) and vowels with umlauts. Fraktur was designed by typographer Hieronymus Andreae, when Emperor Maximilian I (1459-1519) commissioned the design of his Triumphal Arch to be printed. A series of Emperor Maximilian works were then published by Johann Schonsperger, including: Gebetbuch of 1513 (Book of Prayer), Theuerdank (poem 1517). Other famous books printed with Fraktur typeletters were: Gustav Vasa's Bible from 1541, Ceska marianska muzika by Adam Vaclav (1647), the Polish alphabet (16th century). In modern times blackletters are still in use sporadically, and there is Unicode support for Mathematical Fraktur and Mathematical Bold Fraktur characters.



Imperial symbols and emblems

An empire is a political unit of several territories and peoples, usually created by conquest, divided between a dominant center and subordinate peripheries. The head of state is an Emperor acting as a supreme ruler. The earliest known empire appeared in Egypt, around 3200 BC. Another early empire was the Akkadian Empire of Mesopotamia, around 2400 BC. In China, Xia Dynasty ruled from 2070 BC to 1600 BC, followed by the Shang Empire ruled by the Yin Dynasty, from 1500 BC to 1100 BC. In India, the Maurya Empire was ruled by the Mauryan Dynasty from 321 to 185 BC. In Europe, the Roman Empire waged wars and issued laws from 27 BC to 1453 AD. From 1491, the Spanish Empire was the first to include colonies from America, followed by the British Empire, spanning over several continents, including America, Africa and Australia. A short list of the largest empires of all times, measured in millions of square kilometers, include: British Empire (35.3), Mongol Empire (24), Russian Empire (22.8), Great Qing Empire of China (14.7), Spanish Empire (13.7), French Colonial Empire (11.5), Abbasid Caliphate (11.1), Empire of Brazil (8.3), Empire of Japan (7.4), Turkic Khaganate (6), Ottoman Empire (5.2), Roman Empire (5), First Mexican Empire (4.4), Mughal Empire (4), Italian Empire (3.8), German Colonial Empire (3.1), Danish Empire (3), Byzantine Empire (2.8), Belgian Colonial Empire (2.4), Inca Empire (2.0), Mali Empire (1.1), Aztec Empire (0.22). With regard of the timeline, the territories with the longest period of political government, called "imperial", were: Japan (2680 years), Persia (2600 years), India (2300 years), China (2200 years), Egypt (2000 years), Roman Empire (1500 years). The main symbol of an empire is territory, as the geographic region under the jurisdiction of a sovereign state. According to the circumscription theory of American anthropologist Robert Leonard Carneiro, the rigidity of the borders contributes to the durability of the political structures. No wonder that the Chinese Empire, famous for the Chinese Wall, was among the most durable empires, along with insular Japan. In a comparative study of the Roman and Chinese Empires, the Chinese Empire recovered from all falls, while the fall of Rome was fatal to the Roman Empire. In contrast, overseas expansion of the European empires was short lived, mainly due to a constant battle of imperial powers against each other. In modern times, the international relations determining the balance of power have changed in terms of political, economical or military influence, evolving to so called "Virtual Spaces" claimed simultaneously by more than one competitors. Such "virtual" empires do coexist, each claiming to bring "The Garden of Paradise" and the "Heaven of Civilization". Will the whole world unite under a single law, in an "Empire of Reason", or will it find its ruins in an endless war of races, and "smart weapons" ?



Every emperor ruled from a capital city, over a number of vassal kings, and each of those kings ruled from a Royal Palace. In the Holy Roman Empire of the High Middle Ages, all such palaces were named "Kaiserpfalz" (imperial palace) and served as temporary or secondary seats of power. In rare occasions, the term was also extended for palaces built by a bishop or a territorial lord who provided his entourage and lodging to the emperor, a duty called "Gastungspflicht" (hosting). Like peer lords in France and England, German emperors did not rule from only one palace, but used to maintain personal contact with his kings in a so called "itinerant kingship", as if there would be many emperors but only one justice. Known itineraries of emperors suggest that the monarch rarely would stay longer than a few weeks in any such palace. Accommodations were generally built at intervals of 30-40 kilometers, a day's journey by horse at that time, and many of them were not grand palaces, but castles, fortified hunting lodges or large manor houses (Gutshofe), known as "villa regia" or "curtis regia". Minimal requirements for such a building included: a large palace with a Great Hall (Aula Regia), an imperial chapel and an estate. Each palace was administered by a Count Palatine who executed jurisdiction on emperor's behalf. One of the most important of them would eventually rise to the title of Prince Elector. The dignity of an elector carried great prestige and was considered to be second only to that of the Emperor. In 1257 there were 7 electors, three ecclesiastical (Archbishop of Mainz, Trier and Cologne) and four secular (King of Bohemia, Count Palatine of Rhine, Duke of Saxony, Margrave of Brandenburg). Two more electors were added in the 17th century (Bavaria, Hanover) and five more in the 19th century (Baden, Regensburg, Salzburg, Wurttemberg, Hesse). Each Imperial Elector would present an emblem of his Imperial High Office (a coat of arms). Some of the palaces were also known after their function. Examples: Winter Palaces (Winterpfalzen), Festive Palaces (Festtagspfalzen), or Easter Palaces (Osterpfalzen). A good example and a favourite imperial residence, was the Goslar Imperial Palace, erected in 1005 by Holy Roman Emperor Heinrich II (973-1024), exploiting the rich ore deposits in nearby Rammelsberg. The palace was composed by a Kaiserhaus 54 meters long and 18 meters wide, two story high, containing two rooms on each floor of 47 meters long and 15 meters wide. The collegiate church, dedicated to St. Simon and St. Jude, was consecrated in 1051 by Archbishop Hermann of Cologne. Around 1150 a Cathedral Porch was added, which preserved to this day, the only surviving throne of a Holy Emperor. Others buildings include: Palace Chapel of St. Ulrich, The Church of Our Lady (Sancte Mariae Virginis), Curia buildings, the Parish Church of St. Thomas. The list of Imperial Palaces (Reichsburg) in the Holy Roman Empire is very long. Some selected examples are: Aachen, Ansbach, Annweiler, Augsburg, Bamberg, Brunswick, Cham, Cochem, Cologne, Erfurt, Erlenbach bei Dahn, Derenburg, Freyburg, Friedberg, Fulda, Giebichenstein, Goslar, Harburg, Harzburg, Haut Koenigsbourg, Heiligenstadt, Herzberg, Hildesheim, Hornburg, Ingelheim, Ingolstadt, Kassel, Konigsberg, Konstanz, Landau, Leising, Limburg, Magdeburg, Markgroningen, Meissen, Muhlhausen, Munster, Munzenberg, Nanstein, Naumburg, Nuremberg, Passau, Quedlinburg, Regensburg, Schoningen, Schonau, Speyer, Steinhaleben, Trier, Untergruppenbach, Walbeck, Walldorf, Weisenau, Weissenburg, Wetzlar, Wiesbaden, Worms, Wurzburg, Wurzen.



An outstanding example of power is in the Imperial Palace of China in Beijing, a palace complex known as The Forbidden City, residence of the Celestial Emperor. Extended on 72 hectares, the Palace includes: an Ancestral Temple, 980 buildings encompassing 8886 rooms and 22 hectares of gardens. It was constructed with one million workers, between 1406 to 1420, as a winter residence for Emperor Zhu Di Ming (Yongle 1360-1424). For the next 500 years it has been in use as residence for 24 emperors of China, 14 of the Ming dynasty and 10 of the Qing dynasty. Material used in construction included rare essence wood, like logs of precious Phoebe zhennan wood (nanmu) found only in the jungles of South-Western China and large blocks of marble from quarries near Beijing. In 1925 it was established as the National Palace Museum with a collection of 1.86 million pieces of art, including 50 000 paintings, 340 000 ceramics, 30 000 jade pieces, seals, steles, sculptures, inscribed wares, bronze wares, enamel objects. Designed to be the centre of the ancient city of Beijing, the Palace is surrounded by a 7.9 meters high and 6-8 meters wide wall, enclosed in a larger walled area, called the Imperial City, consisting of imperial gardens. There are four gates, one on each side of the squared wall: South Median Gate, North Gate of Divine Might, West Glorious Gate, East Glorious Gate. Inside the perimeter, another gate called The Gate of Supreme Harmony leads to the Hall of Supreme Harmony, measuring 95 by 48 meters, the ceremonial center of the imperial power, with the imperial throne covered in gold. The entire area is decorated with a dragon motif, while the Dragon Throne, made of red sandalwood, has five dragons coiled around the handrests. The Hall of Supreme Harmony was the place for enthronements, investitures, imperial weddings and imperial courts. Imperial examination, a test administered for selecting candidates for the state bureaucracy were held behind, in the Hall of Perserving Harmony. More than 100 000 candidates registered for the prefectural examinations each year, while the number of degree holders ranged from 5 000 to 10 000. The exam could extend up to three days and consisted of eight literary compositions on eight distinct sections. Exact quotes from the classics were required, using the regular script called "zhengshu" or "kaiti". A poetry section was added during the Tang dynasty requiring the candidate to write a 300-400 characters "fu" rhapsody and a "shi" poem in five character. Candidates were also required to master the Chinese military texts. At the center of the Inner Court there are three halls, official residences of the Emperor and Emperess: Palace of Heavenly Purity (audience hall for the Grand Council), Hall of Union (the seals room) and Palace of Earthly Tranquility (Emperess's bedroom). Another smaller residence was the Hall of Mental Cultivation, where the emperor would hold private meetings and audiences with ministers, from behind a silk screen curtain. To the West and East of the main buildings were 12 palaces for the imperial consorts (Concubines), the places where emperors were born and grew up, where the daily life of the imperial family took place. Each palace and each concubine was hosting one of the roads to perfection: Palace of Eternal Longevity, Hall of Supreme Principle, Palace of Eternal Spring, Palace of Earthly Honour, Palace of Gathering Elegance, Palace of Universal Happiness (in the Western wing) and Palace of Great Benevolence, Palace of Heavenly Grace, Palace of Accumulated Purity, Palace of Prolonged Happiness, Palace of Great Brilliance, Palace of Eternal Harmony (in the Eastern wing).



The greatness of Russian autocracy is emphasised in the Grand Kremlin Palace in Moscow (Bolshoy Kremlyovskiy Dvorets), built from 1837 to 1848 on the estate of the Grand Princes as residence for the Great Tsar of Russia. The palace is 124 meters long and 47 meters high, covering a total area of 25 000 square meters. The edilitar complex consists of more palaces, including the older Terem Palace and nine churches. The five reception halls in the Grand Palace are named for the orders of the Russian Empire: St. George (for diplomatic receptions), St. Vladimir (for international treaties), St. Alexander (meetings), St. Andrew (conferences) and St. Catherine (the throne hall of Catherine the Great). A modern building, known as Kremlin Palace of Congresses, added in 1961, is used for political meetings, official and popular concerts. This new palace has additional 800 rooms with 40 000 square meters and an auditorium with 6 000 seats. The central square of the palace, called Sobornaya Square, is facing there cathedrals: Cathedral of the Dormition, Cathedral of the Archangel and Cathedral of the Annunciation. Two more churches and a small palace are also placed in the square, while the tallest structure is the Bell Tower of Ivan the Great, with a total height of 81 meters, erected in 1505. The Bell Tower contains 22 bells, with the largest one called Espenski Bell, weighting 65.5 tons. The Cathedral of the Dormition, regarded as the mother chruuch of Russia, was constructed in 1479 by Grand Tsar Ivan the Great. From 1547 to 1896, all coronations of Russian monarchs took place in this catherdal. Most of the Patriarchs of the Russian Orthodox Church were buried inside, and since 1990 periodic religious services are held before a huge iconostasis that dates from 1547. The Cathedral of the Archangel was constructed in 1505 to be the main necropolis of the Tsars of Russia. Most victories of the Russian military were celebrated in the Cathedral of the Archangel. The smaller Cathedral of the Annunciation was the personal chapel for the Muscovite Tsars, guarded by the personal confessor of the royal family. Built in 1489, as part of the great plan designed by Tsar Ivan the Great, the church has four side chapels, each with a dome, for a total of nine domes, all covered in gold. Behind the altar, a large silver reliquary contains the remains of about 50 saints. The Palace of the Facets has a main hall of about 500 square meters, used by the Muscovite Tsars as the main banquet reception hall, where coronations, feasts and state ceremonies took place. The Terem Palace was the main residence of the Russian Tsars, rebuilt in 1636 by Tsar Mikhail Feodorovich Romanov, consisting of five stories. The third story was occupied by the Tsarina and her children, while the fourth one contained the private apartments of the Tsar. In the upper story the Boyar Duma used to hold their meetings. All buildings are surrounded by a fortified complex, called The Kremlin, with walls 5 to 19 meters high and 3.5 to 6.5 meters thick. There are twenty towers, with the highest called Troitskaya 80 meters in heigh. In present times, the Grand Kremlin Palace is the current residence of the Russian President, where official events are held.



As the former capital of powerful empires, Istanbul is home to many glorious palaces that carry characteristics of those empires. In the 15th and 16th centuries, the main residence of the Ottoman Sultans was in the Topkapi Palace, built beginning with the year 1459 by the order from Sultan Mehmed the Conqueror. The palace complex consists of four main courtyards and many smaller buildings. Since 1923 it was transformed into a large museum with hundreds of rooms for a collection of clothing, weapons, armor, miniatures, religious relics and illuminated manuscripts. Overlooking the Golden Horn, where the Bosphorus Strait meets the Marmara Sea, the complex covers more than 600 000 square meters and it is bordered by Gulhane Park, a large flower park. Many of the smaller summer palaces, pavilions, kiosks and other structures at the shore have disappeared over time. At the entrance stands the Imperial Gate, covered in marble, adorned with the tughras of Sultans Mehmed II and Abdul Aziz. In the First Courtyard, known as the Parade Court, stands the Imperial Mint, the Byzantine church of Hagia Irene and various fountains. A second large gate called The Gate of Salutation leads into the Second Courtyard known as the Divan Square, surrounded by the former palace hospital, bakery, kitchens, Janissary quarters, stables, Hamam (bath), a mosque, the imperial Harem and Divan (Imperial Council). In the ten domed buildings of the kitchens, 800 cooks prepared food for about 4000 people. The porcelain collection includes some 25 000 pieces of Chinese, Japanese and European porcelain. In the Divan chamber the Grand Vizier held meetings, while the Sultan or the Valide Sultan were able to follow deliberations from behind a window with a golden grill, part of the Tower of Justice. The Gate of Felicity marks the entrance to the Third Courtyard, known as the Inner Court, formed by private and residential areas of the palace. No one could pass this gate without authority from the Sultan. Even the Grand Visier was granted authorisation only on specified days, under special conditions. The Third Courtyard included the Audience Chamber, Privy Chamber, the treasury, the harem, the library and quarters of the page boys. Inside the Audience Chamber is the main throne room, where the walls were lined with blue, white and turquoise tiles. Gifts presented by ambassadors were placed near a fountain with the inscription "the fountainhead of generosity, justice and the sea of beneficence". In the Eastern side, the Dormitory of the Expeditionary Force houses an Imperial Wardrobe Collection, made up of more than 2500 garments and kaftans of the Sultans. The Imperial Treasury was housed in the Conqueror's Pavilion, a two floors building with service rooms and four apartments. At present, The Imperial Treasury is a vast collection of artworks, jewelry, heirlooms and money. Among exhibits are two candleholders in solid gold, each weighing 48 kg and mounted with 6666 cut diamonds. The gold ceremonial Bayram Throne, mounted with tourmalines, was made in 1585, ordered for Sultan Murad III. The Enderun Library walls are decorated with blue tulips, dating from the Tulip Period (1703-1730), where the books on Islamic law and theology were stored in cupboards. The collection includes more than 3500 manuscripts and 13 500 old Turkish, Arabic, Greek and Persian books. The Mosque of the Agas is the largest mosque in the palace. The Privy Chamber houses what is considered to be the most sacred relics of the Muslim world, the cloak of Muhammad: two swords, a bow, one autographed letter, together with swords of the first four Caliphs. Even the Sultan was permitted entrance only once a year. The Imperial Harem contained 400 rooms in a series of buildings and structures, occupied by the queen mother, consorts, princes and concubines, favourites as well as eunuchs guarding them. The Imperial Hall with the sultan's throne, the largest hall in the palace, served for the entertainment of the Harem, wedding ceremonies and religious festivals. The Fourth Courtyard, known as the

Imperial Sofa, was the private sanctuary of the sultan and his family, including: the Circumcision Room, Yerevan Kiosk, Baghdad Kiosk, Iftar Kiosk, Terrace Kiosk, Grand Kiosk, Tower of the Head Tutor (Chief Physician), a Stone Throne and the Terrace Mosque.



The residence of the Emperors of Japan is in the Tokyo Imperial Palace, composed of several buildings and gardens, covering 287 000 square meters. The oldest structure was the Edo Castle, built in 1457 by a samurai, later a Buddhist priest, known as Ota Dokan Sukenaga. In 1605, Tokugawa Ieyasu, the first shogun of the Tokugawa Shogunate, at the head of 50 000 men, supervised the building of a massive project with a central donjon and a castle with 38 gates. The main audience hall was in the central part of the palace, with a floor space of 737 square meters. The ramparts were 20 meters high and the outer walls were 12 meters high. A fire consumed the old Edo Castle in 1873 and a new palace, called the Fukiage Palace, was completed in 1993, in reinforced concrete. With an area of 24 175 square meters, the new palace consists of the Seidan (Main Buildings) with: six wings, 62 rooms (including residential apartments), 32 office rooms, and a wing dedicated to guest receptions. An important building is the Imperial Household Agency, keeping the Privy Seal (official seal of the Emperor) and the State Seal of Japan. The largest building in the Imperial Palace is the Chowaden Reception Hall, where members of the imperial family appear to the people. Each New Year and Emperor's Birthday, the public is permitted to enter through the Nakamon inner gate and to gather in the Kyuden Totei Plaza for a short speech. The Tokagakudo (Peach Blossom Music Hall) is a reinforced concrete building, of 1254 square meters, with an octagon shaped hall, built in honour of Empress Kojun Nagako (1903-1989). An old traditional building is Suwa no Chaya, a teahouse, where in the Edo period a "geisha" would entertain the emperor with traditional dances, songs and poetry. Another small building is the Museum of the Imperial Collections, with more than 9800 pieces of art donated by the Imperial Family. Most of the objects are Nihonga paintings, on paper or silk, calligraphic art, sculptures and crafts. There is also a Saineikan Dojo, a place for immersive learning meditation, used in the field of martial arts, with a literal meaning of "place of the Tao" (the natural order of the universe, or the way of the law). A total of 210 000 square meters is occupied by the East Gardens. In between cherry blossom trees, in the East Gardens had survived the Fujimi Yagura, one of the watch towers of the old Edo Palace (closed to the public). Other green areas are: the Fukiage Garden, Ninomaru Garden with trees donated from every prefecture, Kokyo Gaien Gardens, and Kitanomaru Park, a public park located North to the Imperial Palace. As official residence of the Emperor and Empress of Japan, the Imperial Park and its gardens are off limits to the public.



An emblem for the Indian Maharajahs is the City Palace of Jaipur, built in 1727 by Maharaja Sawai Jai Singh II (1681-1743), ruler of the Kingdom of Amber, later to become the capital of the state Rajasthan. Until 1949 the palace was the ceremonial and administrative seat of the state. The palace complex was then transformed into a museum and up to our days continues to be the residence for the Jaipur Royal Family. The most prominent structures in the complex are: Chandra Mahal, Mubarak Mahal, Shri Govind Dev Temple and the City Palace Museum. There are three main gates to the palace: Udai Pol, Virendra Pol and Tripolia Pol (reserved for the royal family). Chandra Mahal is a large building with seven floors, including Sukh Niwas (House of Pleasure), Sabha Niwas (Hall of Audience), Sileh Khana (Arms and Armour Gallery) and Shri Niwas (Crowning Pavilion). In the Hall of Private Audience (Diwan-e-Khas) royal festivals and celebrations were performed. Two huge silver vessels 1.6 meters high, each with a capacity of 4000 liters are in display there. They were commissioned by Maharaja Sawai Madho Singh to carry the holy water of Ganges during his trip to England, in 1902. They were made each from 14 000 melted silver coins, without soldering. The Mubarak Mahal was a building destined for receiving foreign guests, now transformed in the Textile Gallery of the museum, with administrative offices and a library. The City palace is housing a Painting and Photography Gallery with more than 3000 paintings, including Mughal and Deccani paintings, religious and secular paintings, illustrated manuscripts, small and large scale portraits, nature studies, paper cut collages. The Photography collection consists of 6500 photographic prints, 1941 glass plate negatives and photographic equipment. The Govind Dev Ji Temple is dedicated to Lord Krishna, the god of protection, compassion, tenderness and love. In this temple, religious rituals are performed seven times a day, times when the deity is unveiled. In the Victorian Era, an English Clock was installed in the Clock Tower, to introduce a little punctuality into the court proceedings. Another impressive palace in the town of Jaipur is the Hawa Mahal, built in 1799, from red and pink sandstone, by the Maharaja Sawai Pratap Singh, the grandson of Maharaja Sawai Jai Singh. The palace presents a honeycomb exterior with 953 small windows, decorated with an intricate latticework in stone. The palace is a five story pyramidal shaped monument, 50 meters high, with each room in different coloured marble and a carved porthole opening to the street. A two storey imperial door leads to a large courtyard, housing an archeological museum. Because of the elegance of the interior and the cooling effect of the breeze passing through the small windows, Hawa Mahal was the favourite resort of the Maharajas.



Built in 1703, for John Sheffield the 1st Duke of Buckingham (1648-1721) Lord President of the Council, the Buckingham Palace has been in private ownership, until 1761, when it was acquired by King George III (1738-1820) for his wife, Queen Charlotte. In 1837 Queen Victoria (1819-1901) took residence in the palace to bring it to the head of the British Empire. The Palace has 775 rooms, with a front of 355 meters, by 120 meters deep and 24 meters high, for some 77 000 square meters of floorspace. The palace includes a post office, a cinema hall, a swimming pool, a jeweller's workshop and a doctor's surgery. The Throne Room, built in 1854, hosted spectacular balls in the reign of Queen Victoria. Now it is opened for the general public and international political figures, but only on certain occasions, which include state banquets, the conferring of knighthoods and other awards. Other rooms of public importance are: The Music Room, the Picture Gallery with works by Rembrandt, van Dyck, Rubens and Vermeer, The Green Room (anteroom to the throne), The Guard Room (with marble statues of the Royal Family), The Bow Room, The Yellow Drawing Room, The Chinese Luncheon Room. There are also rooms that were specially decorated and named after the year for the state visit of an emperor, such is Room 1844 for Tsar Nicholas I of Russia, and Room 1855 for Emperor Napoleon III of France. Former dress code for the state ceremonials includes military uniforms or knee breeches for men, evening dress and tiaras or feathers for women. In present days there is no official dress code but decency is strictly required. The Garden at Buckingham Palace covers 17 hectares and includes: a heliport, a lake, and a tennis court. In the garden, annual garden parties are held by the Queen each summer. A fashionable promenade, bordered by trees, 0.93 km long, covered in red iron oxide, is connecting the Buckingham Palace to the Trafalgar Square. It is used for military parades, on ceremonial occasions. Numerous other palaces, castles and houses owned by the Crown are hosting members of the British Royal Family. Famous examples are: Windsor Castle in Berkshire (the Queen), Palace of Holyroodhouse in Edinburgh (the Queen), Balmoral Castle in Aberdeenshire (the Queen), Hillsborough Castle in Northern Ireland (the Queen), Kensington Palace London (the Duke of Cambridge). Formal Royal Residences include: Allerton Castle in Yorkshire, Palace of Beaulieu Essex, Caernarfon Castle in Wales, Dublin Castle, Edinburgh Castle, Kew Palace London, Tower of London, Castle of Mey in Scotland, The Royal Pavilion Brighton, Stirling Castle, Theobalds Palace, The Palace of Westminster London.



In France, the royal and imperial Palais des Tuileries, together with the Louvre Imperial Library were completely destroyed in 1871, by the order of Jules Bergeret, the military commander of the Paris Commune. The empty site of the palace became part of what is now Tuileries Gardens, an extension of the Louvre Palace, a former royal residence between 14th to 18th century, now the world's most visited museum. The complex occupies 40 hectares with different buildings hosting 615 797 objects and 35 000 works of art, exhibited over an area of 72 735 square meters. There are eight curatorial departments: Egyptian Antiquities (50 000 pieces), Near Eastern Antiquities (Sumer, Persia), Greek, Etruscan and Roman, Islamic Art (9 000 objects), Sculptures, Decorative Arts, Paintings, Prints and drawings. But the palace that best emphasize the pride of the Bourbon Kings is the Palace of Versailles, with more than 15 million visitors every year. The palace started in 1623 by King Louis XIII as a simple hunting lodge, replaced by a small chateau in 1634. Louis XIV expanded the palace, while kings Louis XV and Louis XVI made interior alterations. It was the favourite residence for kings, a place to inspire vanity in every French heart. After a series of nighttime festivals in its gardens, by 1687 Versailles Palace was the "de facto" capital of France, where foreign embassies were received. The Royal Apartments occupied the main floor, with seven rooms for the king and seven rooms for the queen. In the king's appartement, each room was dedicated to one of the known planets and their associated Roman deity: Sun (Apollo), Moon (Diana), Mercury, Venus, Mars, Jupiter, Saturn. The rooms were decorated by the French artist Charles LeBrun with allegories depicting the heroic actions of the king. In the queen's apartment, French architect Louis le Vau designed the following suite of rooms: Chapel, Salle de gardes, Antichambre, Chambre, Grand cabinet, Oratory, Petit Cabinet, decorated with allegories of heroines from the antique past. In between the two apartments the 73 meters long Hall of Mirrors was built in 1678, doubled in size by its 578 mirrors facing the 17 opposite windows. The Royal Chapel of Versailles, 40 meters high, in French Baroque style, was completed in 1710. The Royal Opera of Versailles was inaugurated in 1770, as part of royal wedding of future King Louis XVI to Archduchess of Austria, Marie Antionette. A South Ministers' Wing was added in 1679 the house the government's administrative services (some 4000 people). The estate of Versailles Palace covers an area of 800 hectares, with the park and gardens. At its greatest extent, the estate included 15 000 hectares of hunting ground (Grand parc) and 1 700 hectares of gardens (Petit Parc). Also, five subsidiary structures located near the Palace of Versailles were: the Menagerie, the Pavillon de la Lanterne, the Trianon de Porcelaine, the Grand Trianon and the Petit Trianon.



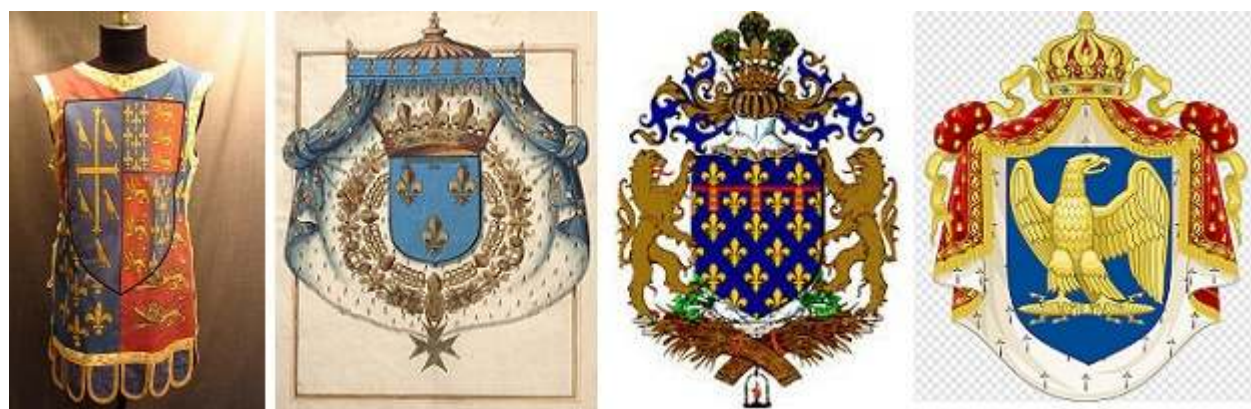
Heraldic symbols and emblems

Coat of arms (cote a armer) is an ansamble of symbols with a heraldic visual design, traditionally unique to an individual person, family, state, organization, school or corporation. The coat of arms is the central part of an armorial achievement, a full dispaly of all the components to which the bearer is entitled, his achievement due to birth, marriage or chilvaric deeds. Other components of the heraldic achievemnet are: Crest, Torse, Mantling, Helm, Coronet, Supporters, Motto, Order, Badge. Coats of arms came into general use in Europe in the 12th century and systematic heraldy had developed by the 13th century. Exactly who had a right to use arms, by law or social convention, varied from country to country. Some nations, such as England and Scotland, still maintain the same heraldic authorities in the present day. The word blazon (blason) defines a formal description of a coat of arms, from which the reader can reconstruct the appropriate image. Blazon is also the specialized language in which a blazon is written, with its own vocabulary, grammar and syntax, while blazonry is the art of creating a blazon. The French word blason defines a shield, or more appropriate the painting on the shield to depict the owner's insignia. The main conventions are as follows: 1. Every coat of arms begins with the field (the background color). The colors can be: metallic (gold, silver), enamel (azure, black-sable, red-gules, vert, purple) or fures (hermine, contre hermine, vair, vaire). If the field is complex, the variation is described, followed by tinctures and subfields (there may be up to 9 sub-fields), begining with the coat of arms dexter upper one. 2. Than comes the description of the principal ordinary (a simple geometrical figure bounded by straight lines). Examples of ordinaries are: cross, pale, fess, bend, chevron, saltire, chief, bordure, pile 3. The principal ordinary (or charge) is followed by any other charges placed on or around it. For example a bird or a beast. Countercharged means that a field is divided in two, with colours in reverse. 4. A quartered (composite) shield is blazoned one quarter at a time, proceeding by rows, from top dexter to base sinister. 5. A tincture is named explicitly only once within a given blazon if found in different places, by ordering the elements. Example: Argent, two chevrons and a lion passant on a wavy field. 6. It is common to print all heraldic blazons in italic, to indicate a quasi-foreign language. For example, the 1867 blazon of Transylvania blazons like this: Fess Azure and Or over all a Bar Gules in the chief a demi Eagle Sable displayed ad dextre of the Sun-in-splendor and senestre of a Crescent Argent in Base seven Towers three and four Gules. Many words in heraldy are in French or of French origin and the adjectives are normally placed after nouns rather than before. In modern times, every country in Europe has a national coat of arms (national emblem) and so does most of the countries in Africa, America, Asia or Oceania.



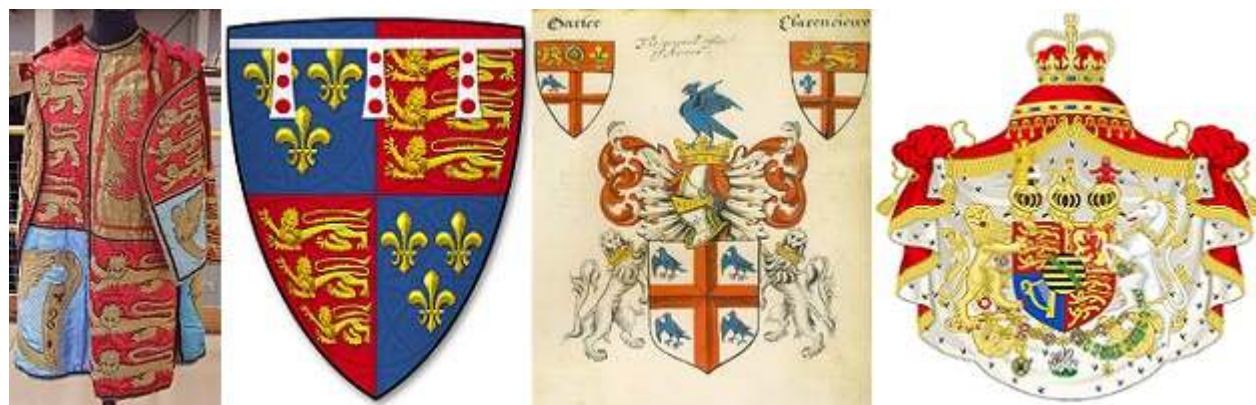
France had a considerable history in the use of heraldic symbols, in organizing regulated personel. A herald (heraut) was an official employed to oversee state ceremonial, precedance and use of armorial

bearings, to make proclamations, carry official messages and oversee tournaments. A herald is an officer of arms, ranking between pursuivant and king of arms. All orders of chivalry had had heralds attached to them. A herald would wear a surcoat, called tabard, decorated with the coat of arms of his master. Many other of the terms in heraldry come from France. French heraldy has a set system of crown and coronets ranking: Baron, Vidame (Vice dominus), Vicomte, Comte, Comte et Pair de France, Marquis, Marquis et Pair de France, Duc, Duc et pair de France, Prince du Sang, Fils de France, Dauphin, Roi. The House of Peers (Chambre des Pairs) as the great vassals of the king, was appointed by the king without limit on their numbers, their peerages were for life. A list of 154 peers was drawn on June 1814, beginning with the three ecclesiastical peers: Archbishop of Reims, Bishops of Langers and Chalons. The fleur-de-lys is particularly associated with the French monarchy and it is an enduring symbol of France. All cities in France still have coats of arms, intertwined with local traditions over history. Each region of France has its own coat of arm, also tens of the departments use a distinct coat of arms. Along with a new system of titles of nobility, The First French Empire also introduced a new system of heraldy. Napoleonic heraldy was based on traditional heraldy but with a stronger sense of hierarchy, while toques (high hats) replaced the coronets. The toques were surmounted by ostrich feathers: 7 for dukes, 5 for counts, 3 for barons, 1 for knights. The number of lambrequins was also regulated: 3 for dukes, 2 for counts, 1 for barons, none for knights. Napoleonic heraldy also used additional marks in the shield to indicate official functions and positions. Military barons and counts had a sword on their quarter, members of the Conseil d'Etat had a chequy (chess table), ministers had a lion's head, prefects had a wall beneath and oak branch, mayors had a wall, landowners had a wheat stalk, judges had a balance, members of Academies had a palm. A decree of 3 March 1810 states: "The name, arms and livery shall pass from the father to all sons" although the distinctive marks of the title could only pass to the son who inherited it. The genealogy of French Royal Family also displays the coats of arms used by various members and branches. A few representative examples are: House of Vermandois 1167 (chequy or and azure), House of Dreux 1345 (chequy or and azure a bordure gules), House of Courtenay 1285 (or three torteaux), Philippe II of Courtenay 1165 to 1223 (France as azure fleurs-de-lys or), House of Artois 1472 (France and gules a semy of castles or), House of Anjou 1265 (France a bordure gules), House of Bourbon 1283 to 1316 (France on a bend gules three lions argent), House of Valois 1313 (France a bordure gules ingrailed), Second House of Anjou 1246 (France on a bordure gules castles or), Second House of Bourgogne 1338 to 1380 (Azure three fleurs-de-lys or). The historical coat of arms of France, used from 1211 to 1792 was Azure fleur-de-lys or with a simplified version of Azure three fleurs-de-lys. The arms of the First French Empire of Napoleon was featuring and eagle, Crown of Napoleon and inset with golden bees as in the tomb of King Childeric I. The eagle was also restored during the Second French Empire of Emperor Napoleon III. In present days, a "Commission nationale d'heraldique" is the advisory body under the French Ministry of Culture on all heraldic issues.



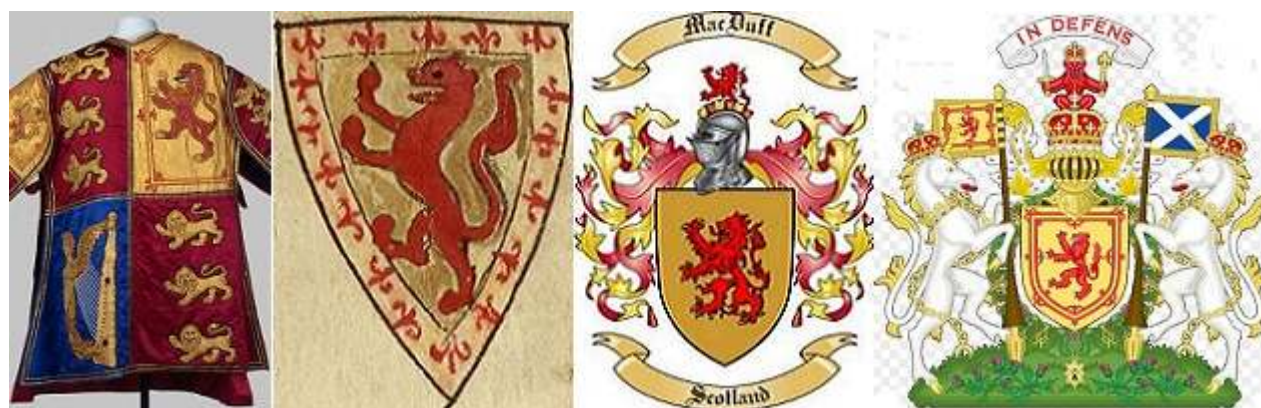
Coats of arms in England are regulated and granted to individuals by the king of arms of the College of Arms, a royal corporation consisting of professional officers of arms. The heralds are appointed by the British Sovereign and are delegated authority to act on behalf of the Crown in all matters of heraldy. Founded by royal charter in 1484, by king Richard III of York, the College of Arms is one of the few remaining official heraldic authorities in Europe. Male members of a holder may also display arms, subjected to a system of

cadency marks. Features displayed on the coat of arms may also be subject to a practice known as "canting arms", using a visual pun or rebus to represent bearer's name. The lion is the most common charge in England, particularly in Royal heraldry. King Henry I of England was the first to grant a lion to his son-in-law, Geoffrey Plantagenet, Count of Anjou, the initiator of the Plantagenet dynasty. Heraldry became popular among the knights on the first and second crusades, to gain a technical language and a system of classification under King Henry III. In 1345, the High Court of Chivalry, known as the Curia Militaris, was created, with jurisdiction over matters of heraldry. The court has been in existence ever since, and the sole judge is now the hereditary Earl Marshal of England, the Duke of Norfolk, the premier duke in the peerage of England. In 1411, Thomas Arundel, Archbishop of Canterbury, was an early example of bishops impaling their personal arms with those of their sees. The position of herald was well defined in 1420, when William Bruges was appointed by King Henry V to be Garter King of Arms. Garter is the principal adviser to the sovereign with respect to ceremonial and heraldry, he also serves as King of Arms of the Order of the Garter, his seal and signature appear on all grants of arms made by the college. Eschuteron of the College is: argent, a cross gules between four doves azure. In 1441, King Henry VI grants arms to King's College Cambridge and in 1449 to Eton College, the earliest examples of academic heraldry in England. The system of adding marks of cadency was introduced in 1500 by Garter John Wrythe. Gloucester had obtained the first civic arms to be granted in England in 1538. The English and Scottish royal arms were combined for the first time by King James VI Stuart in 1603. In 1672 the office of Earl Marshal was made hereditary to the Dukes of Norfolk. By creating the Kingdom of Great Britain, in 1707, England and Scotland retained their separate heraldry laws and authorities. The first Manual of Heraldry was published in 1863, by Charles Boutell, followed in 1889 by A Dictionary of Heraldry published by Charles Elvin. In 1895, Arthur Fox-Davies had published his Armorial Families, followed in 1909 by his Complete Guide to Heraldry. The Royal Air Force obtained a grant of arms in 1924. The Society of Heraldic Antiquaries was established in 1947. The rules for women's arms, inter alia, were revised in 1995 and 1997. Married women may now bear their arms on shields, with a mark of difference consisting of a lozenge (a diamond shaped charge). Women do not display war-like crest, daughters bear their father's arms. Wives and widows may bear their husband's arms. The English system of cadency includes the following charges, to be displayed by the first to the ninth son: label of three points, crescent, mullet, martlet, annulet, fleur-de-lys, rose, cross moline, double quatrefoil. On The Royal Coat of Arms, the shield is quartered, depicting in the first and fourth quarters the three lions passant guardant of England, in the second the rampant lion and a double tressure flory-counter-flory of Scotland, and in the third a harp for Ireland. The coat also features the motto of English monarchs: "Dieu et mon droit" (God at my right). Almost every town council, city council and major educational establishment has an official armorial bearing. The Most Noble Order of the Garter, founded in 1348 by King Edward III, is an order of chivalry dedicated to the image and arms of Saint George, England's patron saint.



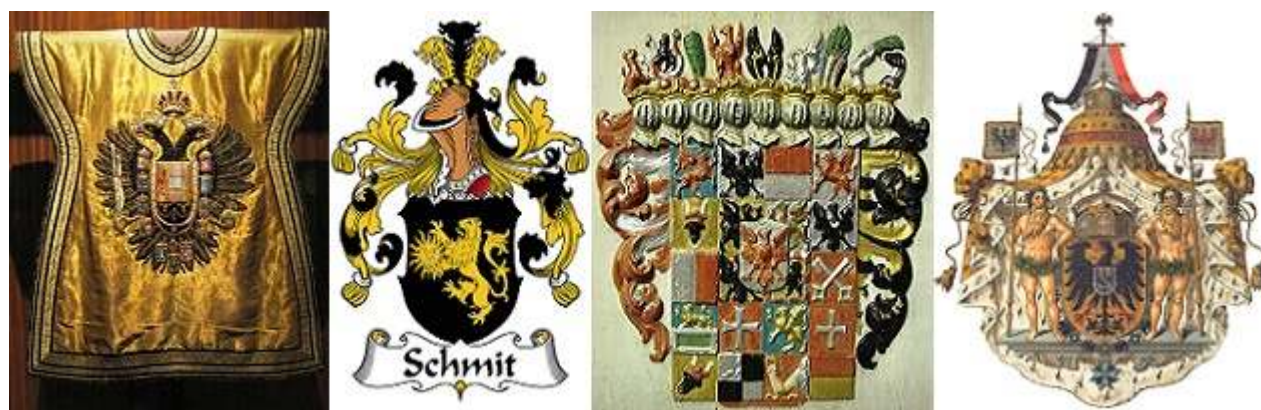
Heraldry in Scotland has its own distinctive features, and its heraldic executive is separate from that of the rest of the United Kingdom. The Right Honourable the Lord Lyon King of Arms, the head of the Lyon Court, is the most junior of the Great Officers of State and is the Scottish official for regulating heraldry, issuing new grants of arms. The Court of the Lord Lyon is a standing court of law, but not a royal corporation such as the

College of Arms in England or the High Court of Chivalry. It is fully integrated into the Scottish legal system, having a dedicated prosecutor, known as a procurator fiscal. Established in 1532, The Lyon Court is directly responsible for the establishment of the rights to arms and pedigree and granting of Diplomas of Nobility (Diploma Stemmatis). The Public Register of All Arms and Bearings in Scotland dates from 1672 and also includes the clan tartans requested by all clan chiefs. The Lord Lyon also asserts the right to decide who is Head of the Clan or Chief of the Family. Scottish heraldry operates under the supposition that all those who share the surname are related, however distantly. Where a coat of arms for the head of the family already exists, new grants to individuals with the same surname will be variations of those arms. As a result, the basic coats of arms are relatively few in number, but in numerous differenced versions. Surnames were for a long time used only by the gentry and when assumed to lower orders the clansman took the name of his chief. The earliest existing examples of Scottish heraldry are Stewart coats of arms, from seals of the last half of the 12th century. In Scotland the cadency system for the cadet branches is served by a series of bordures surrounding the shield of specified colors and designs, known as the Stodart System. The Stodart System includes marks for five generations and first to 6th son or senior daughter, totaling in 35 different marks, using black, gold-yellow, red and magenta colors. The scroll on which the motto is displayed is almost always positioned above the crest and are considered a component of the grant, not subjected to be altered or changed. Badges are awarded only to peers, the baronage, clan chiefs and chieftains or older landed houses. Corporate bodies, such as local governments, schools, companies or sport clubs may also obtain badges, to represent a significant body of adherents. In traditional heraldic practice coats of arms pass through the male line. If there are no surviving sons, the woman is a heraldic heiress, but only the eldest surviving daughter can transmit her father's arms to her descendents. In Scotland every quarter of a shield can be quartered again, up to a limited sixteen quarterings. The oldest book in Scotland on heraldry is the *Gelre Armorial*, compiled before 1396 by Claes Heinenzoon, a Dutch herald in service to the Duke of Guelders. The book displays some 1800 coats of arms from all over Europe, in color. Important works on Scottish heraldry were: *The Science of Heraldry* (1680) by George Mackenzie of Rosehaugh and *A System of Heraldry* (1722) by Alexander Nisbet. The civic heraldry in Scotland started in the 15th century with the arms of Dundee. The royal arms of Scotland feature a red rampant lion with blue tongue and claws situated within a red double border decorated with fleurs-de-lys. Above the crest is the slogan "In Defens", a contraction of "In My Defens God Me Defend". Surrounding the shield is the collar of the Most Ancient and Most Noble Order of the Thistle, an order of chivalry founded in 1687 by King James VII, consisting of sixteen members of the Royal Family. The supporters are two crowned and chained unicorns. A form of these arms was first used by King William the Lion in the 12th century.



German heraldic style is a major tradition within European heraldry, different from the Gallo-British, Latin or Eastern heraldry, but strongly influenced by the style and customs of the Scandinavian countries. Together, German and Nordic heraldry are often referred to as German-Nordic heraldry. In the Germanic tradition, furs are rarely present, there are multiple crests, the stars have six points and the beasts may be colored with patterns (barry, bendy, paly, chequy). The most prominent among the beasts are the eagle and the lion, where the eagle was the symbol of the Holy Roman Empire while the lion was the symbol for feudal lords. Nobles began using armorial seals in the 12th century, while heraldry spread to burgher class in the 13th century. For

instance, the coat of arms of Hesse and Thuringia depict a lion barry argent and gules. Since 1401, Emperor Sigismund of Luxemburg codified that the eagle of the emperor should have two heads, while that of kings should have only one. In Medieval Germany the single headed eagle represented the House of Hohenzollern, while the lion came to represent the House of Hohenstaufen and the House of Welf. Helmets were almost always included as indicative of bearer's social status. Open helmets were reserved for nobility, while burgher arms were only allowed a closed helmet. The Prince-Bishops used a mitre in place of a helmet, while princes of the empire used a coronet. Multiple helmets each bearing a crest are frequent. For example the arms of the last margraves of Branenburg and Ansbach consist of a shield topped with nine, up to fifteen helmets and crests. When supporters are present, they may include human, animal or legendary creatures which typically flank the head shield. Mottoes were seldom used, mostly referring to God: Gott mit uns (God with us), In deinem Licht sehen wir das Licht (In Thy light we see the light), In Gott ist meine Zuversicht (In God is my confidence), Gott allein die Ehr (To God alone the glory). All German states and city states have coats of arms, known to bear a large open crown over the shield. For example, since the 14th century, the coat of arms of Berlin depicts a black bear upon a white shield. The seal of Bremen featured a key, the symbol of Saint Peter, while the coat of arms of Hamburg featured two stars over a castle, upon a red shield. The Armorial Wijnbergen is a medieval French roll of arms, dated around 1270, that includes 256 coats of arms of the vassals of King Louis IX of France and his crusaders, of which 168 arms of German nobles. The tilting helmet was prescribed for burgher arms and non-nobles, while the barred helmet was restricted to those tourneying. Doctors in law or theology enjoyed the same standings as the nobility. The coat of arms of Germany displays a black eagle with a red beak, a red tongue and red feet on a golden field. Known as Bundesadler or Reichsadler, it is one of the oldest coats of arms in the world. It is believed to have been used in 800, by the Holy Roman Emperor Charlemagne, derived from the Roman army standard, the Aquila. A double headed eagle is attributed in the Chronica Majora (1250) as the arms of Roman Emperor Frederick II. From the 12th century, the Emperors also used a personal coat of arms separated from the imperial arms.



In the Nordic countries, Swedish heraldry has a shared history with both Finnish and Danish heraldry, heavily influenced by German heraldry and Hanseatic League heraldry. The Dano-Norwegian union kings also granted common features in the nobility and personal arms. The first achievements of arms, from the 13th century, were seals, used commonly by churches, local governments and institutions. In Sweden, heraldic arms were first granted by the Royal Council (kungliga kansliet), but this role was turned in 1660 to the College of Antiquities (antikvitetskollegiet). The office of National Herald (Riksheraldiker) was responsible for preparing the royal arms prior to 1953, when it was replaced by a State Herald (Statsheraldiker). There are 290 municipalities in Sweden, each with its own coat of arms. The National Arms of Sweden (stora riksvapnet) originated in 1448, being created by King Karl Knutsson as follows: a shield azure, quartered by a cross Or with outbent arms, and an inescutcheon containing the dynastic arms of the Royal House. In the first and fourth fields three open crowns Or, placed two above one. In the second and third fields three sinisterbendwise streams argent, a lion crowned with an open crown Or armed gules. The inescutcheon includes the arms for the House of Vasa (a vasa Or) and the House of Bernadotte (a bridge Argent, an eagle Or). In Norway, the arms were at first self-assumed and not a privilege for nobles, until nobility was granted

by the union kings. Unlike Sweden, the use of helmets was not reserved for the nobility, but coronets and supporters were. There is no special Norwegian heraldic authority, but the government uses the National Archives for granting municipal arms. The first Norwegian cities to be granted arms were: Kristiansand (1643), Halden (1665), Molde (1742), Holmestrand (1898), Lillehammer (1898). The Norwegian Heraldry Society is a private organisation founded in 1969, located in Oslo. The National Coat of Arms of Norway has its origin in the 13th century, in King Olaf II Haraldsson, the Eternal King of Norway, also being present on the medieval seal of King Eric II (1285). It is blazoned: Gules, a lion rampant Or, crowned Or, holding an axe Or with a blade argent. In Denmark, heraldy first appeared among the warrior class, while the first burgher arms dates from 1320. Up to 80 % of Danish private coats of arms were burgher arms. The kings tried to introduce the French system of rank helmets, but these rules were largely ignored, even in royal patents. Also, many noble families ignored the basic rules for tincture and drawing. Canting coats of arms have been very popular in Danish heraldy. Official Danish coats of arms are protected by the Danish law, while the National Heraldic Consultance is an officer under the Danish National Archive, but he has no jurisdiction over private coats of arms. The National Coat of Arms in Denmark consists of: Or, three lions passant in pale azure crowned and armed Or langued gules, nine hearts gules. The oldest depiction is from the seal of King Canute VI in 1194, while the tincture was documented in the Armorial Gerle from 1370. Since the early reign of the Oldenburg Dynasty, two woodwooses act as supporters. The oldest known coat of arms in Finland is a seal of Bertold, commander of Hame Castle in 1297. Arms of the Grand Duchy of Finland were created in 1581 as: Gules, a lion crowned Or rampant striking with a sword Argent on his armoured dexter arm, trampling on a sabre Argent, surmounted with nine roses Argent. After a common past with Sweden, burgher arms become popular in the 17th and 18th centuries, due to merchants, priests, officers and magistrates. The Heraldic Society of Finland contains 1356 arms. Each President of Finland needs a coat of arms as member of Order of the Seraphim in Sweden or Order of the Elephant in Denmark.



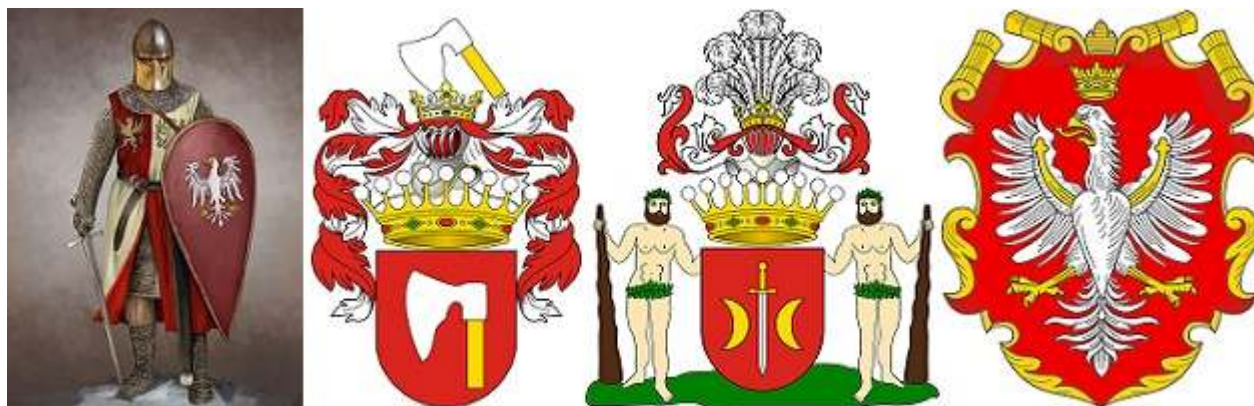
Ancient rulers in Russia used a variety of symbols on their seals to represent their authority. The symbols were inherited from father to son, but with some minor modifications, similar to the Turco-Mongolian "tamgas" (tribe emblems). Mythical animals, angels and knights were also used in the Rus principalities, under some Byzantine influence. In the Grand Principality of Moscow, the two headed eagle was the sign of pretense after the marriage of Tsar Ivan III Vasilyevich (1462) to Princess Sophia Palaiologina. Another seal commonly used in Moscow, known as "yezdes", was depicting a horseman (Saint George) killing a dragon, first found in the seal of Grand Prince Vasili I of Moscow (1390). Both symbols are present on the modern Coat of Arms of Russia: Gules, a double headed imperial eagle, twice imperially crowned, grasping in the dexter claw an imperial sceptre and in the sinister claw an imperial orb, all Or. In chief the imperial crown of the Order of St. Andrew, Or. Eschuteron Gules with an image of St. George in complete armour Argent, upon a dragon crawling Or, pierced with a spear Argent. With the establishment of Moscow Patriarchate, in 1589, a patriarchal cross was added between the heads of the eagle. In the Imperial Russia, the use of coats of arms was not regulated but they were common only among the upper classes and rare among the non-nobles. On 24 July 1882, after the approval by Tzar Alexander III, the greater coat of arms was approved, crowned with the helmet of Great Prince Alexander Nevsky and flanked by the archangels Michael and Gabriel. The

inscription on the canopy stands for: "God with us". Around the central composition are placed fifteen coats of arms of the various territories of the Russian Empire, of which nine on a laurel and oak wreath and six upper eschutrons as small flags. During the reign of Tzar Peter the Great the newly established Order of Saint Andrew was added around the central eschuteron. Established in honour of the first apostol of Jesus and patron saint of Russia, the Order of Saint Andrew was bestowed in a single class, awarded for the most outstanding civilian or military merit. Also the eagles color was changed from golden to black. In 1730, Tzar Nicholas I adopted a variant of the eagle. Arms of Kazan, Astrakhan and Siberia were added on its left wing and those of Poland, Taurica and Finland on the right one. The Soviet Union was the first state to use a socialist style emblem beginning with 1922. Hammer and sickle, the five points red stars, wreath of grain, the rising sun, gears, electricity pylons, books and tools were the favourite symbols in the socialist style of heraldry. The State emblem of the USSR was composed by a sickle and hammer on a globe depicted in the rays of the sun and framed by ears of wheat, with the inscription; "Proletarians of the world, unite", in six languages: Russian, Ukrainian, Belarusian, Georgian, Armenian, Azerbaijani. At the top of the emblem a five pointed star. In 1936, five more languages were added to the inscription: Turkmen, Uzbek, Kazach, Kyrgyz and Tajik. Estonian, Latvian, Lithuanian, Moldavian and Finish languages were added in 1946. Similar coat of arms were adopted for all the republics in the Soviet Union. The present coat of arms was adopted in 1993 by a decree signed by President Boris Yeltsin.



In Poland, a heraldic clan (rod herbowy) comprised all the noble (szlachta) bearers of the same coat of arms. The members of a heraldic clan were not necessarily linked by consanguinity, but also were based on fellowship and brotherhood. Rulers often hired free warriors and mercenaries to form their military units, called *druzyna*. The knightly class in Poland was under the *chilvaric law* (*ius militare*) and under the local law (*iure polonico*). Examples of such heraldic clans were: Clan Odrowaz, Clan Ostoja, Clan Abdank, Clan Jelito, Clan Sulimirski, Clan Topor. The leader of the clan, called *starosta* or *starszyna* had judicial and military power over the members, although his power was often exercised with an assembly of elders. Heraldic symbols began to be used in Poland in the 13th century, while the term for a coat of arms, *herb*, was used for the first time in 1415, at the Royal Office, derived from the Czech *erb* and German *erbe* for heritage. At that time, 47 Polish noble clans were already in use of coat of arms. There was no heraldic authority in Poland or in the Polish-Lithuanian Commonwealth. One of the oldest coat of arms, used by several noble families was Topor, blazoned as: Gules, axe Argent. The crest is in the form of an axe embedded in the helm, Argent. Notable bearers of this coat of arms were the families of: Okulicz, Grabowski, Norwid, Ossolinski, Szolayski, Teczynski, Tarlo, Trepka, Zabiello, Bogdanowicz, Matuszewski, Jakubowski. It was also in use by several municipalities, such as: Krajenski, Opole Lubelskie, Rymanowa, Stawisk, Chyrowa, Toporow, Zaklikow, Klimontow, Konskowola, Zegocin. The Ostoja Clan coat of arms was used by families spread in a wide territory including: Pomerania, Prussia, Slovakia, Hungary, Romania, Lithuania, Belarus, Ukraine. It was blazoned: Gules, between an increscent and descrescent a cross in pale point downwards, all Or. On a helmet a dragon Sable, exhaling fire Gules, on two crescents pointing up, Or. Mantling Sable, lined Or. Notable bearers were: Hanek Chelmski, Stibor of Stiboricz, Mikolaj Blociszewski, Jan de Jani, Michal Sedziwoj, Marcin Szyszkowski, Krzysztof Boguszewski, Ostoja Danielewicz, Kazimierz Siemenowicz, Jan Czczot,

Mieczyslaw Karłowicz, Stefan Mokrzecki, Włodzimierz Zagórski, Bronisław Bohatyrewicz, Adam Kozłowiecki, Zbigniew Scibor Rylski. The total number of medieval coat of arms was relatively low, around 160, so it became customary to refer to noblemen by their coat of arms in a cognomen fashion. For example, Jan Jelita Zamoyski, member of the Jelita clan. A characteristic of Polish heraldry is the abundance of gules fields (nearly half), with azure coming in a distant second position. Typical features include horseshoes, arrows, Maltese crosses, scythes, stars and crescents. There are also many purely geometrical shapes, derived from the Sarmatian tamgas. Notable burger coat of arms are found in the cities of: Warsaw, Krakow, Poznan, Malbork, Gdansk, Luban. The coat of arms of Poland is blazoned: Gules, an eagle Argent, armed, crowned and beaked Or, langued Argent. According to legend, the White Eagle emblem originated when legendary knight Lech saw a white eagle's nest and the bird under the red setting sun and decided to settle there. He named the place Gniezdno (nest), the first capital of the kingdom. The eagle appeared on coins for the first time during the reign of King Bolesław I the Brave (992-1025), to become the symbol of the Piast Dynasty.



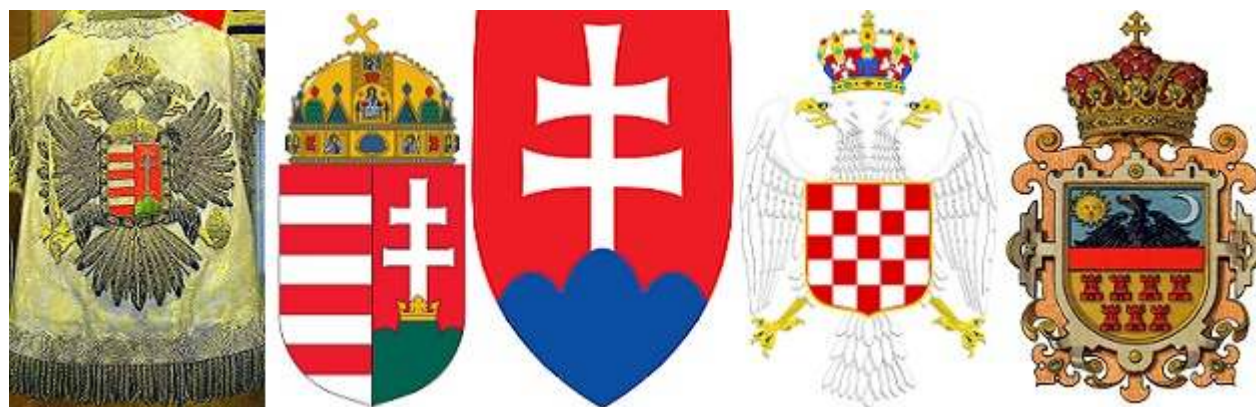
The heraldic history of Ukraine begins in the 12th century with the coat of arms of Ruthenia: a lion rampant Or, on a heater shield Azure. It first appeared on the seal of King Yuriĭ Boleslav (1323-1340), together with an inscription in Latin: "Sigillum Domini Georgi Regis Rusie". At the end of the 16th century the emblem of the Zaporizhian Host replaced the lion, blazoned: Azure, a Cossack with a musket, Or. On the initiative of Count Pyotr Rumyantsev, in 1767 the Cossack Hetman was replaced by the Russian double-headed eagle, only to be restored in 1918. The coat of arms of the region of Kiev and Grand Duchy or Ruthenia featured Archangel Michael with a golden sword and shield, on a blue shield. On March 1919, the Ukrainian Soviet Socialist Republic adopted a new coat of arms, blazoned: Baroque red shield with golden rising sun, hammer and sickle and the Motto: "Workers of the world, unite!". In modern times, each of the 27 oblasts, autonomous republics and cities of Ukraine displays a distinct coat of arms: Crimea, Cherkasy, Chernihiv, Chernivtsi, Dnipropetrovsk, Donetsk, Ivano-Frankivsk, Kharkiv, Kherson, Khmelnytskyi, Kyev, Kirovohrad, Luhansk, Lviv, Nykolaiv, Poltava, Rivne, Sevastopol, Sumy, Ternopil, Vinnytsia, Volyn, Zakarpattia, Zaporizhia, Zhytomyr. Typical features include: gryphon, wreath of wheat, double headed eagle, bridge, Cossack, cornucopia, sun, Saint George killing the dragon, horse, bear, sword, bow and arrows, key, Archangel Michael, cross, anchor. The National Coat of Arms of Ukraine is blazoned: Azure, a tryzub Or (a golden trident on an azure shield). The tryzub (trident) is an old symbol in Ukraine present on the seals of the Rurikid Dynasty in the Kyivan Rus kingdom, beginning with Sviatoslav the Brave (945 AD). Tryzub was first stamped on gold and silver coins by Prince Volodymyr the Great (980-1015), passed on to his sons, Svyatopolk Vladimirovich (1015-1019) and Yaroslav the Wise (1019-1054). Many historians agree that tryzub was in fact not depicting a trident, but the Holy Trinity, while others proposed a falcon falling. The present coat of arms was adopted on 19 February 1992 to be present on the Presidential Standard of Ukraine. The Greater coat of arms also includes a crown of Yaroslav the Wise as crest, plus a Ruthenian lion crowned Or and a Cossack with a musket Or as supporters. The coat of arms of Lithuania consists of a mounted armoured knight, known as Vytis, or Pogon (Pahonia), blazoned: Gules, an armoured knight holding in his dexter hand a sword, Argent, a shield Azure on his sinister hand charged with a double cross, Or. The horse, saddles, straps and belts, Azure. It was first adopted in the early 15th century, by the Grand Duke Vytautas the

Great (1392-1430) and the Gediminid Dynasty. The double cross was adopted by Grand Duke Wladislaw Jagiello (1382-1434) after his marriage to Queen Jadwiga of Poland, daughter of King Louis of Hungary. The Columns of Gediminas were another national symbol of Lithuania, believed to symbolize the Trakai Peninsula Castle Gates, built around 1370 by Kestutis, Duke of Trakai. Notable bearers of the Lithuanian coat of arms were the families of: Czartoryski, Sanguszko, Chowanski, Trubetskoy, Golitsyn.



At the border of the Holy Roman Empire, the Hungarian heraldy generally follows the German style in its artistic forms, but with a distinct character and disrespect to the French rules, normally classified as Eastern European heraldy. Popular symbols were: griffin, bear, sun, moon, stars, horses, men on horseback, swords, a green dragon with a red cross. The color of the field was often blue, representing the sky, while numerous arms also had a green trimount (a mountain with three tops). The crest was often replaced by a coronet, while the mantle was often a combination of more than two tinctures. Instead of individual arms, Hungarian heraldy rather employs a clan system with more than one family or warriors under the same symbol. For example, during the 16th and 17th centuries, sometimes a hole garrison of 80 to 120 soldiers was raised to nobiliary rank, being granted one coat of arms for all of them. Each of the new ennobled was supposed to rise a small army of his own. The National Coat of Arms of Hungary is blazoned: Barry of eight Gules and Argent, impaling Gules, on a trimount Vert a ducal coronet Or issuing therefore a Patriarchal cross Argent. The red stripes are the symbol of the Arpadian Dynasty. They first appear in 1202 on the seal of King Emeric. The white stripes are symbols for the rivers Danube, Tisza, Drava and Szava. The double cross first appeared on coins minted in 1235, under King Bela IV, a symbol for his relations with the Byzantine Empire. The Trimount was first used with the double cross in 1270, on the seal of King Stephen V. The crown above the coat appeared in 1464 on the seal of King Matthias Corvinus. The use of the modern version of the coat of arms became regular during the reign of Emperess Maria Theresa Habsburg (1740-1780). With a similar history and evolution the National Coat of Arms of Slovakia is blazoned: Gules, a mount of three peaks Azure, issuant there from a double cross Argent. The three peaks represent the three mountain ranges, Tatra, Matra and Fatra. They first appeared on the seal of King Ladislaus (1301-1305). The National Coat of Arms of Croatia is blazoned: Chequy of twenty five gules and argent. The checkerboard (sahovnica) was first attested as a symbol for the Kingdom of Croatia in 1495 on a tower in Innsbruck depicting the emblem of Emperor Maximilian I. The Flag and coat of arms of Transylvania were granted in 1765, by Emperess Maria Thereza, blazoned as: Per fess Azure and Or, a fess Gules between in chief an eagle Sabled flanked by a sun Or and an increscent moon Argent, and in base seven towers Gules. According to it's name, Silvania (Forest Land), the Transylvanian nobles used as military insignia symbols related with the forest, wild nature and hunting: green fields, stag, boar, wolf, bear, fox, wild sheep, chamois, buffalo, horse, eagle or aquila, falcon, swan, goose, mountain rooster, pheasant, dove. Commonly such symbols were displayed on their hunting castles and hunting residences. Famous families in Transylvania, bearers of insignia were: Arpad, Csacky, Balassa, Ratot, Corvinus, Szilagy, Borsa, Pancratius, Kendeffy, Bathory, Bethlen, Apor, Banffy, Teleky, Bornemissa, Josika, Wesseleny. Another traditional symbol was the tower, standing for a castrum, or a stronghold. The Southern part of Transylvania, enhabited by Saxons, was curently named in the Middle Ages as Septem Castrensis (Seven Cities). The main symbol for military families was a rider with a sword, or the

right hand with a sword.



The Middle Age heraldy of Italy may be divided in three parts, under distinct political influences: the Lombard Kingdom in the North under the influence of the Holy Roman Empire, the Centre Italy with the Stated of the Church, and the Southern Italy, under Byzantine, Normand and Spanish influences. Most of the nobles formed an exclusively military cast, but in Venice and Genoa nobles were also merchants and sailors. The evidence of surviving seals show clearly that the practice of commerce was no bar to bearing arms. A banner pertaining to the Papal State dates from 1059, when Pope Nicholas II created William of Montreuil the "armed advocate or standard bearer of the Roman See". Also in the 11th century, Archbishop Heribert invented the "carroccio", a large four wheeled wagon bearing the city signs. A bas-relief carved in 1171, on the Porta Romano of Milan, depicts such a carroccio bearing a staff tipped by a cross with a gonfanon charged with a Latin cross. The colors are described in an illuminated manuscript as pale argent and gules. During the 13th century, in Florence, the Guelfs and the Ghibelline clans were the most representative people for Italian nobility, each with a distinctive flag. Their banners were blazoned: Gules, a fleur de lis Argent for the Ghibellines, and a vermilion eagle above a green serpent for the Guelf. In 1266, the major mercantile guilds were assigned arms, followed by the minor guilds in 1282. For example, the Vatican Archives include for the year 1290 the family of Stefano Colona, with a triunghiular red shield bearing a column argent and or. The first Pope for whom there is contemporary evidence for his arms was Pope Clement IV, in 1296, with a seal bearing a Rose between three roundels, recorded on the foundation of an oratory, by Tommaso Andrei Bishop of Pistoia. Coronets, originally depicted as simple circlet of gold, appeared towards the end of the 15th century, used by sovereign princes. Supporters are present from the 13th century, with no particular limitations, often used by merchants. The crossed keys and a tiara were used by the Popes, the Red hat by the Cardinals, while the Archbishops used the double cross. Other Italian representative emblems were displayed on the coat of arms of Napoleonic Italy (1805-1815): papal ombrellino with the keys of Saint Peter (Duchy of Parma), white eagle (House of Este, Duchy of Modena), blue Milanese serpent (House of Visconti, Duchy of Milan), the lion of Saint Mark with a red cap on his head (Venetia), an iron crown with six points (Lombardy). Prior to the abolition of nobility, in 1947, the adviser to the government on heraldic matters was in the registry called Consulta Araldica, created in 1860. The National Coat of Arms for the Kingdom of Italy was that of the Royal Dinasty of Savoy, blazoned: Gules a cross Argent. Present emblem of the Italian Republic is blazoned: upon a cogwheel proper, the Star of Italy, and a red ribbon with the inscription "Repubblica Italiana". Duchal coats of arms of historical importance were those of: Mantua, Mirandola, Ferrara, Modena, Parma, Spoleto. Present regional coats of arms are issued for: Abruzzo, Aosta Valley, Apulia, Basilicata, Calabria, Campania, Emilia-Romagna, Friuli Venezia, Lazio, Liguria, Lombardy, Marche, Molise, Piedmont, Sardinia, Sicily, Tuscany, Trentino Alto, Umbria, Veneto.

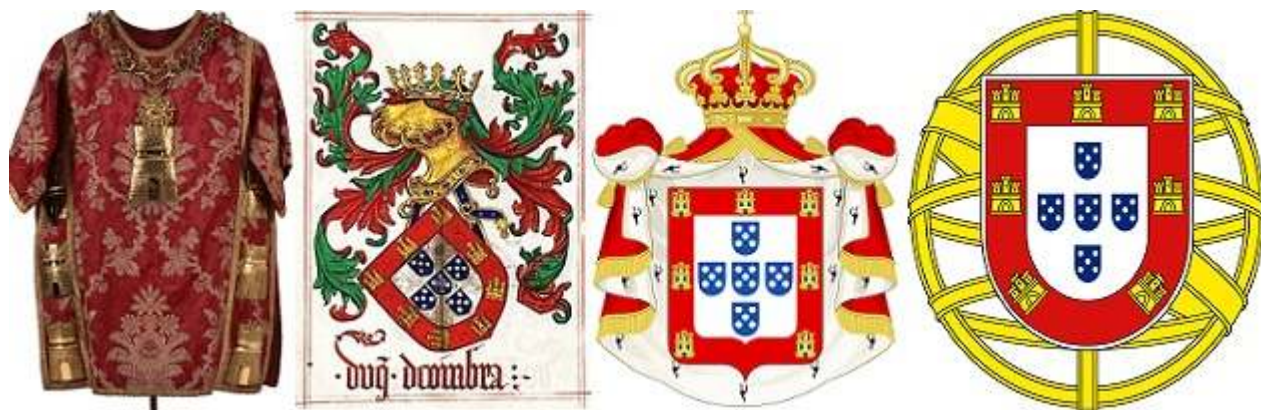


In Spain, the tradition and art of heraldry first appeared in the 11th century as the need for knights and nobles to distinguish themselves on the battlefield or tournaments. Knights wore armor from head to toe and the design of their arms, excepting for the rules of heraldy, were up to the owner. Originally anyone could display arms, but later it became a practice for the nobility. Both paternal and maternal arms were displayed. During the 18th and 19th centuries, the use of four quarterings came into use, with the order of display: 1. Paternal grandfather 2. Maternal grandfather 3. Paternal grandmother 4. Maternal grandmother. Such, the shield was half paternal and half maternal. The Spanish nobility was almost entirely a military cast, with few exception from law, commerce or the church. The families fought their way to their rank, which allowed commoners to join ranks through successful military service. Spanish arms were inheritable, like any other form of property, and they were also inherited through females. The most common shape for the shield was the Iberian style, square on top and round at bottom. The King of Arms was a civil servant who had the authority to grant armorial bearings. The Spanish heraldic office, called Cronista de Armas, dates back to the 16th century, while heralds were named after the provinces of Spain: Castile, Leon, Seville, Cordoba, Murcia, Granada, Catalonia, Aragon, Sicily, Naples, Toledo, Valencia. Their appointment was not hereditary, more than 15 families produced more than one herald. The Spanish Coat of Arms of the King of Spain marshal the arms of former monarchs of Castile (castle), Leon (lion), Aragon (red and gold pallets) and Navarre (cross, saltire and orle of chains). After 1492 the coat of arms of the House of Trastamara was in use, resulted from the marshal of arms of Isabella of Castile and Ferdinand of Aragon. It was followed in 1504 by the House of Habsburg, with the Order of the Golden Fleece round the main shield. In 1700 the black eagle was replaced by the coat of arms for the House of Bourbon. More blasons were issued for the Grandees of Spain, the Houses of: Osorio, Lara, Vega, Pezuela, Viver, Hoyos, Nunez, Rocamura, Montijo, Carvajal, Aranda, Ciudad Real, Talavera, Aguilar-Priego, Estella, Cadiz. Examples of notable families bearing a coat of arms were: Alborada, Alcalá, Aragon, Amalfi, Banderas, Benavente, Davila, Fuerte, Hajar, Llosa, Lopez, Marquez, Miranda, Mola, Montoro, Navarro, Prado, Salinas, Solferino, Suarez, Valhermozo, Zapatero, Zaragoza. Common features charged on the eschuteron were: crown, coronet, cross, green tree, castle, tower, eagle, falcon, griffon, chequy, fleur de lys, pomegranate, crescent, wolf, boar, bull, bear, star, sword, ship, pillars of Hercules. In modern times, many cities have civic coats of arms, some of them date back to the medieval period. An elaborate example is Toledo, using the double headed eagle of the Holy Roman Empire as supporter for the Royal Coat of Armes. The symbol for the city of Madrid is a bear taking fruit from a tree.



Part of the Iberian tradition, heraldry has been practiced in Portugal since the 11th century, but it only became standardized in the 16th century, during the reign of King Manuel I Aviz (1495-1521) who created the royal flag depicting an armillary sphere. The use of quartering and augmentations of honor is highly representative of Portuguese heraldry. In 1521, an ordinance of King Manuel I defined strict heraldic rules and the statute for the officer of arms. Frequent use of bordures, mottos inside the shield and the use of cauldron to represent power of a nobleman to feed a military contingent were part of the Iberian tradition. Beginning with the 15th century, many coat of arms included features related with overseas exploration: padroes (pillars), ships, flags, weapons, slave heads, exotic animals. Since very early, the round bottom Iberic shield was preferred, but other formats were present, especially in the 19th century: oval, horse head shaped, heater, almond shape. Women's coat of arms were always represented in a lozenge, with the exception of queens represented in a shield. The system of cadency for the royal family was similar to other European countries, while the non-royal lineages identified from which grandparent the coat of arms was inherited. The most common augmentations of honor were the arms of Portugal: Azure charged with five plates Argent. Another name for the arms of Portugal was "quina", from quincunx (the 5 face of a gaming die), in use from the 14th century. Other particular Portuguese charges were: cruz de Cristo (Order of the Christ), cruz de Avis (Order of Avis), cruz de Santiago (Order of Saint James). Specific to Portuguese heraldry is that woman was able to hold titles and transmit them to heirs, while surnames given to a person was optionally taken either from the father or from the mother, including names only used by their ancestors. Numerous coats of arms included quarters with arms from both paternal and maternal ancestors. In late 16th century, the system of coronets was similar to those used in other countries. The first National Coat of Arms of Portugal was a cross azure on a field argent, displayed in the 12th century on the shield of Henrique of Burgundy (1096-1112) Count of Portugal. This symbol evolved to five escuturons azure forming a cross azure on a field argent during the reign of King Sancho I of Burgundy (1185-1211). The escuturons are said to represent the Five Holy Wounds of Christ on the Cross, while the plates are supposed to represent the right of Portuguese kings to issue their own coins. A crown over the shield appeared in the 14th century and the crest of the shape of a dragon appeared since the reign of King John I of Castile (1379-1390), associated to the adoption of Saint George as the patron saint of Portugal. Since the 14th century, Portuguese Monarchs had officers of arms at their service. Since 1521 the corporation of the officers of arms included three kings of arms, three heralds and three pursuivants, named for the Kingdom of Portugal, the Kingdom of Algarve and the State of India. The heralds were named after the notable town in each kingdom: Lisbon, Silves and Goa. The heraldic authority also included an Escrivao da Nobreza (Scrivener of the Nobility) and an Armeiro-mor (High Armorer), responsible for keeping the registres. Collections of coats of arms usually took the form of illuminated manuscripts, of which few have survived: Livro do Armeiro-Mor - 1509 (Book of the King of Arms), Livro da Nobreza e Perfeicam das Armas 1521-1541 (Book of the Nobility and Perfection of the Arms), Thesouro de Nobreza 1675 (Treasure of the Nobility). Since 1910 the body of officers of arms and the Nobility Register were disbanded, but in 1930 the Heraldic Section of the Association of Portuguese Archeologists was appointed. Some of the families bearer of a coat of arms were: Abreu, Aguiar, Almadras, Almeida, Avelar, Azambuja, Baião, Borgia, Brito, Cabral, Carvalho, Castro, Corte-Real, Costa, Coutino, Esmeraldo, Gama, Lima, Maia, Melo, Mendonca, Menezes, Moniz, Monteiro, Moraes, Moura, Ornelas,

Pereira, Pinto, Silva, Sousa, Spinola, Teixeira, Vasconcelor, Velho, Vilalobos.



Feudal Japan had a complex system of heraldy, just like medieval Europe did, with family crests, called "mon" and a variety of flags to distinguish lords, clans or individual warriors on the battlefield. A "horo" was a type of cloak worn by a samurai on battlefields with the family mon marked on it. Kamon and "mondokoro" were other words used to refer to emblems that identified a family. There are 241 categories of mon, with 5116 distinct individual mons, based on structural resemblance, where a single mon may belong to multiple categories. Mon are essentially monochrome and may be drawn in any color. Mon have originate as fabric patterns to be used on clothes of a specific clan or organization. By the 12th century they had been implemented as a distinguishing feature for the use of battle. It was seen on flags, tents and equipment. Initially held only by noble families, on the battlefields mon served as army standards, called "sashimono", attached to the backs of the chest armor by special fittings. Such sashimono were worn both by common soldiers, called "ashigaru" as well as the elite "samurai", members of the "shogunate", or by cavalry soldiers. The flags bearing clan symbols were most prominent during the Sengoku period, from middle 15th to early 17th century. In absence of a clan mon, the designs on the flags were usually very simple geometric shapes, sometimes accompanied by Japanese characters providing the name of the leader or a slogan. Mons were also adopted by various civil organizations, such as merchant and artisan guilds, temples and shrines, theater troupes or criminal gangs. It was not uncommon for shops, and therefore shop-owners to develop a mon to identify themselves, passing it on their descendants. Rules regulating the choice and use of a mon were limited, though the selection of the mon was generally determined by the social customs. It was considered offensive to use a mon known to be held by someone of a high rank. The mon held by the ruling clans of Japan, such as the hollyhock mon or the Imperial chrysanthemum mon were legally protected from unauthorized usage. Most mon consist of a rondel encircling a figure of plant, animal, man made, natural or celestial objects, all abstracted to various degrees. The pictorial depiction of the mon was not formalized, and there was a great degree of toleration in between variants of a mon. For example, the paulownia crest with 5-7-5 leaves was reserved for the prime minister, whereas paulownia with fewer leaves could be used by anyone. The imperial chrysanthemum with 16 petals is reserved for the Imperial Family, whereas chrysanthemum with fewer petals may be used by other lesser members of the Imperial Family. Japanese heraldy does not have a cadency or a quartering system, but it is common for cadet branches of a family to choose a slightly different mon from the senior branch. For example, each princely family uses a modified chrysanthemum crest as their mon. The National Flag of Japan, called Nisshoki (flag of the sun), or Hinomaru (circle of the sun) is a rectangular white banner bearing a red circle in its center. The rising sun had become symbolic in the year 607 AD, when the "Emperor of the rising sun" sent a letter to Chinese Emperor Yang of Sui. Other national symbols for Japan are: cherry blossom, green pheasant, Koi fish, jade, Mount Fuji, sumo, sushi, sake.

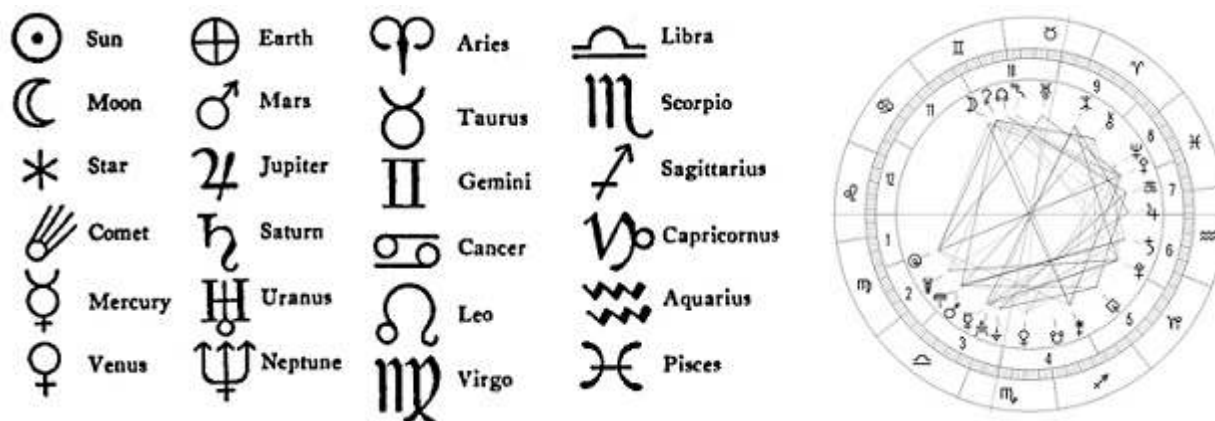


Astrological/astronomical symbols and emblems

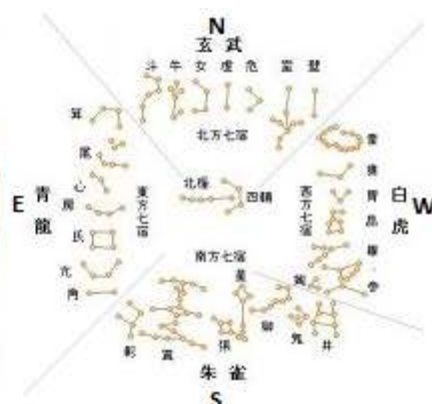
During history, astrology shared the use of symbols and techniques with astronomy, but instead of searching for a natural explanation the astrologists were only seeking for the supra-natural. During centuries, astrology was restricted for the use of kings, while common people were not permitted to doubt or read the will of gods. Various ceremonial, religious and divinatory practices were used, claiming to discern information about human affairs in connection to the relative position of celestial objects. Some visionary astrologists also claimed to be able to travel in time, to get connected with astrologers from different eras, just by observing a repeated celestial pattern or a major event such as a Sun eclipse. In common use were the horoscopes, also called natal charts, consisting of maps with the positions of the Sun, Moon and planets at the time of someone's birth. Since a horoscope is practically a map of Heavens, with a predictable configuration, astrologers have speculated to be able to read the will of heavens, the predestination in someone's fate. Reserved for royal and academic circles, astrology was regarded in the past with fear and deep respect, mentioned in literary works of: Dante Alighieri, Geoffrey Chaucer, William Shakespeare, Lope de Vega, Calderon de la Barca. Only from the end of the 19th century, natural sciences managed to challenge the predictive capability of astrology. Degraded to a humiliating statute of pseudoscience, astrology lost the interest of upper classes, but instead gained the interest of the lower classes. Millions of believers can now find their daily fate in news papers or Tv-commercials. Astrology was also reknown for its outrageous mistakes. An ancient Chinese legend states that Emperor Qin Shi Huang (259-210 BC), founder of the Qin Dynasty and the first to unify China states, died after ingestion of some alchemical elixire made from a pulverized meteorite. Instead of divine powers, he received an intoxication with mercury, nickel and other metals. Traditional astrology in China came to flourish during the Han Dynasty (2nd century BC) with the concept of five elements (wood, fire, earth, metal, water), ten Heavenly Stems (sacrifice days) and twelve Earthly Branches (cardinal directions). Another cradle for ancient astrology was in India, where the Vedas mention the concept of "bandhu" (ties) that connects the outer and the inner worlds. For example, Vedic texts mentions the 360 bones of the fetus that fuse into adult bones after 360 days. In modern days, Vedic astrology is still a discipline in Indian Universities, etiqueted as classical knowledge. In Babylon, astrologers were feared for reading the intentions of god in inspecting the liver of sacrificial animals. Such objects or natural phenomena in relation with the will of gods, called "omen" were extremely common. For example, the ancient Romans used to read the outcome of a battle (auguri) in the number of eagles rotating over the battle field. A special person trained to practice the inspection of the liver from sacrificed sheep and poultry was called a "haruspex". For example, on the bronze model of sheep liver found at Piacenza the names of gods are etched into the corresponding surface where their will was exposed. Smooth, shiny and full surface was a good omen.



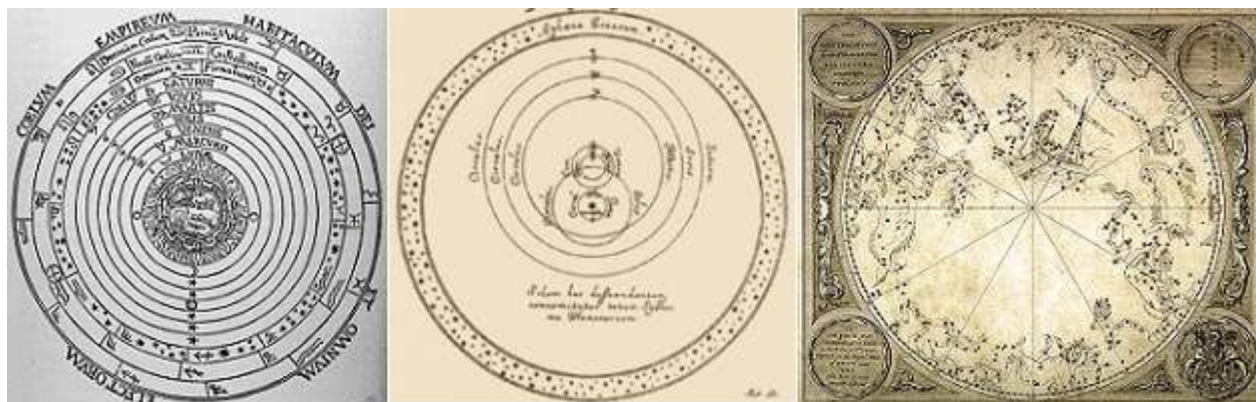
Astrological symbols overlap with those used in astronomy, including signs of the zodiac and for the classical planets. They first appeared in the medieval Byzantine codices, used for ancient horoscopes. For example, in the original papyri, the glyph for the Sun was a circle with a shine and for the Moon was a crescent. Identified with ancient gods, the symbols of the main planets were: Mercury - caduceus (staff entwined by two serpents), Venus - double necklace, Mars - spear, Jupiter - staff, Saturn - scythe, Sun - diadem with rays, Moon - headdress with a crescent. In modern era, new symbols were added: Uranus - circle with an arrow (iron and gold), Neptune - trident, Pluto - monogram PL. The zodiacal signs are: Aries - ram, Taurus - bull, Gemini - twinned, Cancer - crab, Leo - lion, Virgo - maiden, Libra - scales, Scorpio - scorpion, Sagittarius - archer, Capricorn - goathorned, Aquarius - water, Pisces - fishes. Most of the symbols in astrology are used to produce a horoscope, also called an astrological chart or a natal chart, a diagram representing the positions of the Sun, Moon, planets together with their angles at the time of an event. Angular relationships between the planets and other points are called aspects and offer a geocentric perspective of a stylized map of the Heavens. The term horoscope is derived from Latin, meaning "hour observer" in relation to the movement of the stars, hour by hour. The following symbols are used to define astrological aspects: Conjunction (a circle with a line, 0 degrees), Vigintile (V, 18 degrees), Semisextile (V underlined, 30 degrees), Undecile (U, 32.73 degrees), Decile (D, 36 degrees), Novile (N, 40 degrees), Semi-square (angle, 45 degrees), Septile (S, 51.43 degrees), Sextile (6 angles, 60 degrees), Quintile (Q, 72 degrees), Binovile (N2, 80 degrees), Square (square, 90 degrees), Biseptile (S2, 102.86 degrees), Tredecile (D3, 108 degrees), Trine (triangle, 120 degrees), Sesquiquadrate (angle under a square, 135 degrees), Biquintile (Q2, 144 degrees), Quincunx (angle pointing under a line, 150 degrees), Triseptile (S3, 154.29 degrees), Quadranovile (N4, 160 degrees), Opposition (two conjunctions opposed, 180 degrees). The basic concepts in Western astrology are: 1. The native is considered to be in the center of the event being charted (birth, marriage, death) 2. The planets and constellations are projected onto an imaginary sphere called the celestial sphere 3. The equator plane of the celestial sphere is the Earth's equator projected into space 4. The plane of the ecliptic is defined by the orbits of the Earth and the Sun 5. The plane of the horizon is centered on the native and is tangential to Earth at that point. The "houses" are twelve divisions of the plane of the ecliptic, 30 degrees each. The first house begins at the ascendant and the others are numbered counterclockwise from that point. The first six houses are below the horizon, the other six are above. The signs and planets, all move through the twelve houses during the course of a day. Midheaven is the highest point in a celestial object's apparent position, midway between the ascending and the descending position. Imum Coeli is exactly opposite to Midheaven. To construct a horoscope, an astrologer must determine the exact time and place of the subject, in order to calculate the ascendant and midheaven. Next he would use a set of tables, called ephemeris, which lists the location of the Sun, Moon and planets at each sidereal time, with respect to the fixed stars. Having placed the celestial objects, the astrologer will analyze each house and each aspect, together with a complex geometrical figure that resulted from drawing lines to interconnect each significant point.



The earliest interest for astrology was documented in Ancient Egypt, starting with the 3rd millennium BC. All the Egyptian pyramids were carefully aligned toward the pole star, which at that time, because of the precession of the equinoxes, was a faint star named Thuban (large snake), now called Alpha Draconis, near the Ursa Minor. The Egyptians were also able to connect the rising of the star Sirius, the brightest star in the constellation Canis Major, with the flooding of the Nile. The heliacal star rising for Sirius occurs in Cairo on 19 July, just before the summer annual flooding. In consequence, the star was worshipped as goddess Sopdet, guarantor of the fertility of land. The first astrological instruments were a weighted line (pendulum) and a sighting instrument (horologium, solar clock) consisting of a palm branch with a sight-slit in the broader end. With such instruments, ancient Egyptians were able to produce tables of the fixed stars, found on the ceiling tombs of Pharaoh Ramses VI (12th century BC) and Pharaoh Ramses IX (1129-1111 BC). To determine the local meridian, an observer seated on the ground during night time facing the Astrologer in such a position that the line of the polar star passed over the middle of his head. On different days of the year, each hour was marked by the position of a fixed star culminating (transiting the local meridian). In the tables, the position of stars is given as: in the centre, on the left eye, on the right shoulder ... etc. In founding or rebuilding the temples, the North axis was determined by the same apparatus, with a degree of accuracy of one degree. Similar astrological tables were found in Mesopotamia, known as Enuma Anu Enlil. On 68-70 tablets there are 6500 to 7000 observations of the first appearance of the moon on various days of the month, in relation to planets and stars. One of the tablets lists the first and the last rising of the planet Venus over a period of 21 years. The quality and frequency of Babylonian observations increased during the reign of King Nabu-našir (Nabonassar 747-733 BC), including the discovery of a 18-year cycle of lunar eclipses. The Greek astronomer Ptolemy later used this observation to fix the beginning of an era in astronomy, since they were the earliest usable observations at his time. In India, an astronomical text dated around 1350 BC, called Vedanga Jyotisha, describes the rules for tracking the motions of the Sun and the Moon for the purposes of ritual. In their observations, in an "era" (yuga) there were: 5 solar years, 67 lunar sidereal cycles, 18360 days, 1835 sidereal days and 62 synodic months. In China, the first agricultural calendar was developed around 700 BC, during the Zhou dynasty, setting the beginning of a year as the day of the new moon before the winter solstice. The solar year, as the time between two winter solstices, was divided into 24 solar terms, spaced 15 degrees along the ecliptic. Each solar term was divided in three pentads, consisting of five days, so there were 72 pentads. Ancient Chinese astronomers divided the sky ecliptic into four regions, each assigned a mysterious animal: Azure Dragon, Black Tortoise, White Tiger and Vermilion Bird. Each region contained seven mansions, for a total of 28 mansions, each corresponding to one day of the Moon's movement onto the sky. The 28 houses were: 1 Horn (Vir), 2 Neck (Vir), 3 Root (Lib), 4 Room (Sco), 5 Heart (Sco), 6 Tail (Sco), 7 Basket (Sgr), 8 Dipper (Sgr), 9 Ox (Cap), 10 Girl (Aqr), 11 Emptiness (Aqr), 12 Rooftop (Aqr), 13 Encampment (Peg), 14 Wall (Peg), 15 Legs (And), 16 Bond (Ari), 17 Stomach (Ari), 18 Hairy Head (Tau), 19 Net (Tau), 20 Turtle Beak (Ori), 21 Three Stars (Ori), 22 Well (Gem), 23 Ghost (Cnc), 24 Willow (Hya), 25 Star (Hya), 26 Extended Net (Hya), 27 Wings (Crt), 28 Chariot (Crv).



The Ancient Greeks were the first to seek a geometrical model for celestial phenomena, mostly based on concentric spheres. Most of the names for planets, stars and constellation of the Northern hemisphere were inherited in our culture from the Greek astrology. The term "planetes", meaning wanderer, is also Greek in origin, as they had observed that certain stars moved across the sky in relation to all the other stars. The most influential work was produced by Claudius Ptolemy (100-170 AD), a late descendant of Pharaoh Ptolemy Sote (367-282 BC), living in Alexandria and working in the famous library. His book, called "Almagest" (He Megale Syntaxis) described the apparent motions of the stars, offering a geocentric model for the Universe, accepted for more than 1200 years. Consisting in thirteen sections, his cosmogonic theory postulated: 1 Earth is a sphere 2 Earth is at the center of the Cosmos 3 The celestial realm is also spherical 4 The Earth does not move 5 The stars are at a great distance, reducing the Earth to a single point. In order to explain and predict the behaviour of planets Mercury and Venus, of which Heraclides already suggested to revolve around the Sun, Ptolemy used a mathematical tool called the "equant". His mathematical model described the circular motion of a point around another point also in a circular movement. Slaves bearing torches were used to observe such movements, at a small scale. An early star catalog had been produced by Hipparchus of Nicaea (190-120 BC) but his work is known today only from descriptions made by his disciples. The 48 constellations observed by the Greeks are known from Ptolemy's book: Andromeda, Aquarius, Aquila, Ara, Argo Navis, Aries, Auriga, Bootes, Cancer, Canis Major, Canis Minor, Capricornus, Cassiopeia, Centaurus, Cepheus, Cetus, Corona Australis, Corona Borealis, Corvus, Crater, Cygnus, Delphinus, Draco, Equuleus, Eridanus, Gemini, Hercules, Hydra, Leo, Lepus, Libra, Lupus, Lyra, Ophiuchus, Orion, Pegasus, Perseus, Pisces, Piscis Austrinus, Sagitta, Sagittarius, Scorpius, Serpens, Taurus, Triangulum, Ursa Major, Ursa Minor, Virgo. It is also known that Ptolemy had produced a series of astronomical tablets, but none of the surviving manuscripts mention his name, or the name of his follower, Theon of Alexandria (335-405 AD), known to produce a book on Ptolemy's work. The tables contained all the data needed to calculate the positions of the Sun, Moon, planets and stars. There were also some calculations regarding eclipses, not quite accurate due to the lack of essential knowledge. Other famous Greek astronomers of the antiquity were: Aglaonice, Anaxagoras, Anaximander, Apollonius, Archimedes, Archytas, Aristeus, Aristarchus, Aristotle, Aristyllus, Autolycus, Callipus, Cleomedes, Cleostratus, Conon of Samos, Democritus, Empedocles, Euclid, Geminus, Hephaestio, Heraclides Ponticus, Hicetas, Hipparchus, Hippocrates of Chios, Menelaus of Alexandria, Meton of Athens, Parmenides, Philolaus, Plato, Posidonius, Proclus of Athens, Pythagoras, Thales of Miletus, Theon of Smyrna, Seleucus of Seleucia, Theodosius of Bithynia.



The next step forward was made in the Islamic world, during the 9th to 13th centuries. A large corpus of literature, numbering 10 000 manuscripts reflects the interest of emirs and caliphs in the field of astronomy. A significant progress was due to the religious obligation to determine the "qibla" (direction to Mecca) from any position in the world. The easiest method was to observe the shadow of a vertical rod when the Sun culminates at the zenith of the Kaaba in Mecca. Such position occurred twice a year, at 12:18 (local time) on 27 or 28 of May, and at 12:27 on 15 or 16 of July. At that moment, any shadow cast by vertical objects on earth will point directly away from Kaaba. Most mosques contain a niche that indicates the direction of qibla. The first major work was "Zij al-Sindhind" produced by Persian mathematician Muhammad al-Khwarizmi (780-850). The work consisted of 37 chapters on calendrical, astronomical and astrological data regarding the celestial movements and a table of Sine values. Many Muslim astronomers worked heavily to expose problems present in Ptolemy's work, resulting in small but continuous progress of knowledge. A manual for astrologers that used flowers and horoscopes was produced in Baghdad, by scholar Abu Mashar (787-886 AD). Mathematician Muhammad al-Fazari (8th century) is credited to have built the first astrolabe in the Islamic world, an instrument that included an inclinometer and an analogue calculation device, capable of solving several problems in astronomy. Astrolabe proved to be of great use in navigation, to get the accurate reading of latitude while out to sea. In its simplest form, an astrolabe is a metal disc with a pattern of wires, cutouts and perforations that allows a user to calculate astronomical positions precisely, day or night. In the 13th century Persian mathematician Nasir al-Din al-Tusi had described a mathematical device for two coupled circular movements known today as Tusi couple, generating planes known as hypocycloides and hypotrochoides. Nasir al-Din al-Tusi worked at the Maragheh observatory (in Azerbaijan) with an angle instrument mounted on a wall (mural quadrant). It is said that there was also a library with 400 000 volumes. Another famous observatory was the Samarkand Observatory (in Uzbekistan) built by Sultan Ulugh Beg, a grandson of Sultan Teymur. Built on a hill 21 meters above the ground, the Samarkand observatory has a cylindrical shaped building with a diameter of 46 meters and a height of 33 meters, with a sextant in the middle of this cylinder. Using this device, in 1437 Ulugh Beg had published a star catalogue for around 1000 stars, called Zij-i Sultani, the first one different from that of Ptolemy. Three hundred years later, King Jai Singh II noticed that the Zij catalogue values did not match the positions calculated. He ordered five new observatories to be built in five different cities, in order to create more accurate books. At least 23 astronomers were employed in Jaipur to produce nineteen instruments for measuring time, predicting eclipses, tracking location of major stars and planets. The largest observatory of the Muslim world was founded in 1577 at Constantinople, by Taqi ad-Din Muhammad, for Sultan Murad III. Unfortunately, three years later, the astrologer made a wrong prediction regarding a comet with an enormous tail, and the observatory was destroyed (since a plague devastated the empire). A short list of notable astronomers in the Islamic world includes: Khalid ibn Yazid, Mashallah ibn Athari, Muhammad Musa Al-Khwarizmi, Muhammad al-Fazari, Abu Mashar, Banu Musa brothers, Muhammad Al-Battani, Ahmad Al-Marwazi, Abu Sahl al-Quhi, Abu Nasr Mansur, Hasan Ibn Haytham, Abu Ishaq Al-Zarqali, Mansur Al-Khazini, Sharaf Al-Din al-Tusi, Nasir al-Din Al-Tusi, Ibrahim Ibn Al-Shatir, Ulugh Beg, Ali Qushji, Taqi al-Din Ibn Maruf.



An early astrologer in the Latin world was Gaius Plinius Secundus (Pliny the Elder 23-79 AD) in his *Natural History*. Out of the 37 books included, the second one was dedicated to astronomy and meteorology. His first topic was that known Universe included countless other worlds than the Earth, consisting of four elements: fire, earth, air and water. Magistrate Martianus Capella (410-420 AD) included in his book "*De nuptiis Philologiae et Mercurii*" a geocentric model for the Universe, with the Earth circled by the planets and the stars. In the 6th century, Dionysius Exiguus (470-544), born in Tomis (Romania), was the first to calculate and introduce "Anno Domini", the year of the conception of Jesus, as basis to count years in the Christian calendars. In 525 he prepared a table of 95 future dates of Easter and a set of rules explaining their calculation. In the 8th century, Saint Bedae, a Benedictine monk at the monastery of St. Peter in Northumbria (England) wrote a book called "*De temporum ratione*" including a medieval view of the cosmos, the effect of the Moon on tides, and instructions for computing the date of Easter covering the time interval AD 532-1063. Benedictine monk Hermann of Reichenau (1013-1054) from the monastery on the island in Lake Constance, was the first Latin to describe the construction and use of an astrolabe. By the 12th century, the first universities were founded in Europe and scholars translated into Latin all knowledge from Greek and Arabic sources, including astrological texts. Monk Johanes de Sacro Bosco (1195-1256), a teacher in mathematics at the University in Paris, wrote in 1230 a book called "*Tractatus de Sphaera / De Sphaera Mundi*" including his time knowlegde in astronomy, including a translation of Ptolemy's *Almagest*. In the 14th century, Bishop Nicole Oresme of Lisieux wrote "*Livre du ciel et du monde*" (Book of the sky and the world), claiming against any movement of the Earth on its axis, because "the air would be left behind, causing a great wind from East to Weast". Astronomer Johannes Muller, better known as Regiomontanus, built an astronomical observatory in Buda, for King Matthias Corvinus, where he developed his "*Tabulae directionum profectionumque*", including trigonometric tables and their use in astrology. A new model for the Universe was proposed by a Catholic canon, Nicolaus Copernicus (1473-1543), in his book "*De revolutionibus orbium coelestium*", published in 1543. His model stated that: 1 There is no one center for all the celestial objects 2 The center of the Earth is not the center of Universe 3 All planets surround the Sun 4 The Earth revolves the Sun like any other planet 5 The apparent retrograde motion of the planets arises from the motion of the Earth. Numerous astronomers embraced his model: Georg Rheticus, Erasmus Reinhold, Tycho Brahe, Johanes Kepler, Thomas Digges, Thomas Harriot, Giordano Bruno, Galilo Galilei, Diego Zuniga, Simon Stevin, Michael Maestlin, Christoph Rothmann, William Gilbert, Achilles Gasser, Valentin Otto, Tiedemann Giese. The first telescope was produced by mathematician Galileo Galilei (1564-1642), in 1611, and presented at the Accademia dei Lincei in Rome. Four satelites of Jupiter (Io, Europa, Ganymede, Callisto) and the rings of Saturn were the first contributions owned to this optical instrument. Another mathematician, Johannes Kepler (1571-1630) produced the first laws of planetary motion, published in three books: "*Astronomia nova*", "*Harmonice Mundi*" and "*Epitome Astronomia Copernicanae*". He stated that: 1 The orbit of a planet is an ellipse with the Sun in one of the two foci 2 A planet sweeps out equal areas during equal intervals of time 3 The square of the orbital period is proportional to the cube of the semi-major axis. Fifty years later, Sir Isaac Newton (1642-1726) formulated the laws of motion and universal gravitation: 1 A body remains at rest or in motion at a constant speed, unless acted upon by a force 2. When acted upon the change of its momentum equals the force 3. If two bodies exert forces on each other, the forces have the same magnitude

but opposite directions 4. Every particle attracts every other particle in Universe, with a force proportional to the product of their masses and inversely proportional to the square distance between their centres. Christoph Schissler (1531-1608) was a German builder of scientific instruments, such as: astrolabes, quadrants, sundials and armillary spheres.



The first large scale pre-telescopic observatories were built in: China (Gaocheng 1276, Beijing 1442), Sweden (Stjenborn 1585, Uraniborg 1597), Netherlands (Leiden 1633), India (Jaipur 1727, New Delhi 1724), Indonesia (Mohr 1765). Modern astronomical observations began with the construction of scientific observatories runned by men of science. The earliest was the Paris Observatory built in 1670 under the authority of King Louis XIV, directed by Cesar Francois Cassini (1714-1784). It was followed in 1675 by the Royal Observatory Greenwich, commissioned by King Charles II to be built by Sir Christopher Wren (1632-1723). In Germany, Prince-elector Frederick III granted the plans of Gottfried Leibniz (1646-1716) for the construction of the Berlin Observatory, directed by Gottfried Kirch (1639-1710). Other early observatories were: Uppsalla (1741), Lund (1749), Vienna (1753), Vilnius (1753), Turin (1759), Brera (1764), Radcliffe (1772), Armagh (1790), Palermo (1790), Cadiz (1793), Bogota (1803), Capodimonte (1812), Cape Town (1820), Rio de Janeiro (1827), Cambridge (1830), Moscow (1831), Helsinki (1834), Markree (1837), Pulkovo Saint Petersburg (1839), Athens (1842), Cincinnati (1843), Georgetown Washington (1844), New Brunswick (1853), Utrecht (1853), Detroit (1854), Sydney (1858), Copenhagen (1861), Melbourne (1862), Budapest (1871), Shanghai (1872), Lyon (1878), La Plata (1883), Perth (1896), Edinburgh (1896), Bucharest (1910), Moscow Planetarium (1929). There are more than 3600 modern observatories identified by a numeric code, published by the Minor Planet Center. Precise measurements have resulted in a large amount of data and numerous new terms were needed to organize the information. Some astronomical observational parameters are: apogee or aphelion (the farthest point of orbit), perigee or perihelion (the nearest point of an orbit), apsis or apside (the extreme points of an orbit), semi-major axis (the longest semi-diameter), excentricity (deviation from the perfect circle shape), orbital period (time for a complete orbit around an object), sidereal period (full orbit around its star), synodic period (apparent same position relative to stars), draconitic period (two passages through ascending node), anomalistic period (two passages through perihelion), tropical period (two alignments of its rotational axis with its star), right ascension (angular distance from the March equinox), orbital speed (speed around the barycenter or center of mass), orbital inclination (tilt around its star), longitude of the ascending node (angle of the ascending node from the prime meridian), ascending node (where an orbit intersects the reference plane, ascending), argument of perigee (angle from from ascending node to perigee), moment of inertia factor (radial distribution of mass), escape velocity (speed needed to escape from gravitational influence), axial tilt (obliquity), declination (angle from the celestial equator), Albedo (diffuse reflexion), apparent magnitude (brightness), angular diameter (angular distance), parallax (difference in apparent position), blueshift (decrease in wavelength), redshift (increase in wavelength). Observational astronomy may also explore the entire electromagnetic spectrum of radiations resulting in several subdivisions: radio astronomy (millimetre to decametre wavelength), infrared astronomy (longer than 1 micrometer wavelength), optical astronomy (400-700 nanometer wavelength), high energy astronomy (shoarter than 400 nanometer wavelength).



Radio astronomy was born in 1933, when radio engineer Karl Jansky with the Bell Telephone Laboratories published an article entitled "Electrical disturbances apparently of extraterrestrial origin". The hunt for extraterrestrial life and communication had begun. The source identified by Karl Jansky was in the densest part of the Milky Way, in the constellation Sagittarius. In 1942 the first radiowaves from the Sun were recorded by a British researcher, James Stanley Hey. Observations from Earth are limited to the wavelength that can pass through the atmosphere. Radiowaves are generated by charged particles undergoing acceleration and traveling in vacuum at the speed of light. At 300 GHz the wavelength of a radiowave is 1 mm, while at 30 Hz the wavelength is 10 000 Km. A radio wave is polarized when it has an electric field that oscillates in a plane along the direction of motion. Polarization may be horizontal, vertical, circular, at right hand or at left hand, or in an equal mixture of all kinds (unpolarized). An antenna receiving radio waves must have the same polarization as the transmitting one, or it will suffer a severe loss of reception. Since radio sources such as planets, stars, nebulas and galaxies are very far away, their signal is extremely weak, so radio telescopes require very large antennas to collect enough radio energy to study them. Most of the cosmic radio waves are not polarized (in equal mixture), suspected to be interference fringes of larger waves. Also, since all the cosmic radio sources are moving, the radio waves suffer a Doppler shift, that is a change in frequency. The cosmic microwave background is composed mostly of radiowaves of 2-20 cm in wavelength, and 200 - 400 MJy/sr in intensity, with a total energy density of around 0.260 eV/cm³ (about 411 photons/cm³). Due to their extremely low energy, cosmic waves are easy to discriminate from the terrestrial ones with the same wavelength (thousands of times higher in flux density). In radio astronomy, the flux density (spectral irradiance) is measured in units called Jansky (Jy), an equivalent for 1/(10 E+26) watts per square meter/herz. For example, 1 solar flux unit is 10 000 Jy and the Milky Way signal at 10 GHz is 2 000 Jy. The device for measuring the radian flux of a radio wave is called radiometer, or microwave radiometer in the case of millimetre to centimetre wavelengths. The most common form of radiometer was introduced in 1946 at the Massachusetts Institute of Technology, later to be used by American space probes Mariner to scan the planet Venus. The principle of operation in a radiometer is related to the difference in absorption shown by different gases. In order for a radiometer to work, the initial weak signal needs to be amplified by around 80 dB, by heterodyne techniques (by mixing with a stronger signal). One of the most developments in observation consisted in combining the signals from multiple radio telescopes to simulate a larger one (astronomical interferometry). In present days, the increasing use of radio frequencies for communication makes astronomical observations more and more difficult, even in the most remote areas. The largest radio telescope built is the Five hundred meter Aperture Spherical Telescope, completed at Guizhou in China, in 2016. Some other large radio telescopes were developed at: Zelenchukskaya (Russia 600 m), Arecibo (Puerto Rico 305 m), Kaleden (Canada 100x20 m), Kharkiv (Ukraine T shaped), Bologna (Italy interferometer), Bad Munstereifel (Germany 100 m), Green Bank (United States 100 m), Cheshire (England 76 m), Galenki (Russia 70 m), Yevpartoria (Russia 70 m), Tidbinbilla (Australia 70 m), Yerevan (Armenia 54 m), Narrabri (Australia 6x22 m), Palo Alto (United States 45 m), Neuquen (Argentina 35 m). Since 1965, three space radio telescopes were in action: KRT-10 (Salyut 6 Russia 1979), HALCA (Japan 1997), Spektr-R (Russia 2011). Since planets are objects electrically charged and in permanent movement, they also describe strong

electromagnetic waves, with a wavelength of millions of kilometers, but their pattern is accessible to us only as theoretical models.



Oriental symbols and emblems

Crescent is a symbol used to represent the lunar phase in the first quarter, or by extension to represent the Moon itself. As early as 2300 BC, the crescent shape was present on Akkadian cylinder seals to represent the Moon and the Aramaic deity Sin, a god in Ancient Sumer, Asiria, and Babilonia. In Ancient China, the Moon (yue) was the symbol of heaven, depicted as a blue or a green disc of jade, one of the Twelve Symbols of Sovereignty present on the five clawed dragon robe of emperors, ever since the Zhou Dynasty (1050-771 BC). In Hinduism, Lord Shiva is often shown wearing a crescent moon on his head, symbolising that the lord is the master of time and is himself timeless. In the Kingdom of Pontus, a star and crescent was the emblem of the Mithridates Dynasty and later the emblem of Byzantium. In Sassanid Persia, the crescent was a Zoroastrian regal symbol and during the time of Crusades it came to be associated with Orient in general, present on seals and coins. It was also used as a heraldic charge on the field of an escutcheon. The official adoption of star and crescent as the Ottoman state symbol started during the reign of Sultan Mustafa III (1757-1774). After 1793 every ship in the Ottoman navy showed the crescent flag. Since 1805, the national flag of Egypt is red, with three white crescents, each accompanied by a white star. The 1844 Ottoman flag, with a white crescent star (ay-yildiz) on a red background continues to be in use as flag of the Republic of Turkey. Other countries also use this symbol as a national insignia: Algeria (1958), Azerbaijan (1918), Comoros (2001), Libya (1951), Malaysia (1948), Mauritania (1959), Pakistan (1947), Singapore (1959), Tunisia (1831), Turkmenistan (1991), Uzbekistan (1991). In the late 20th century, the star and crescent have acquired a popular interpretation as a symbol of Islam. Crescent without star is present on other contemporary flags, such as: All India Muslim League (1906) and the Organisation of Islamic Cooperation (1981). The term Fertile Crescent is used in modern times to depict a crescent shaped region in the Middle East including Iraq, Syria, Lebanon, Palestine, Israel, Jordan and Egypt, together with the Southeastern region of Turkey and the Western part of Iran. This region is most famous for its archeological sites, related to the origins of agriculture. In China, The Crescent Moon Society was a literary society founded in 1923 by poet Xu Zhimo, named after a poem by Rabindranath Tagore. Another unique scenic spot is the Crescent Moon Spring, in the Gobi Desert, located in an aeolian sand environment, causing great concern to many scholars. Isotopic studies of the water indicate that the spring is a window into the groundwater table, cut out of low-lying terrain in

sand dunes.



In the Ottoman Empire, the equivalent for the European feud was called "timar" and consisted of land granted by the sultans, with an annual tax revenue of less than 20 000 akces. Larger properties with revenues from 20 000 to 100 000 akces were called "zeamet", while properties with revenues greater than 100 000 thousand were called "hass". A timar holder was called a Timariot, and timars were distributed among the cavalymen, called "Sipahis", or to other members of the military class, including the "Janissaries". Such properties were given as compensation for military services. In rare circumstances women could become timar holders, only for members of the imperial family or high-ranking elite. The Timariots employed agents called "kethuda", "vekil" or "voyvoda" to collect revenues and exercise the delegate powers. A Timar holder did not own the land, the ownership was held by the Ottoman state. Timars could not be inherited, but sons were usually reassigned on the land of their father. If a Timariot failed to engage in military service for seven years, he lost his duty and land. A new form of farm taxing was introduced in 1695 under the name of "malikane", where contracts were for life time. A malikane farm, typically for a village or district would be auctioned to the highest bidder, in return for collecting all state taxes. The winner of an auction was given a document called "berrat". Traditional Ottoman houses were two stories high, with the first floor built in stone and the second store built in timber. Characteristics for such houses were: rectangular shape, ample windows, lightness, transparency, a free plan. Many of the turkish words used for furniture, such as sofa, hayat (small table), cardak, divanhane, minisofa, had entered the international vocabulary. At the other end of the "silk road", the feudal system in China was known as "fengjian", consisting of king, nobles and four lower classes: scholar officials, peasants, laborers and merchants. The feudal lord called "zhuhou" payed homage to the king, but they eventually grew rebellious to develop their own kingdoms. Most land was owned by the government and distributed in the equal field system to individual families, depending on their ability to supply labor (around one hectare/able man). The historical type of residence commonly found in China was called "siheywan", also used for temples, palaces and monasteries. Siheyuan refers to a courtyard surrounded by buildings on all four sides, hosting multiple families. The entrance gate was usually painted in red with a pair of stone lions placed outside the gate. According to the amount of sunlight, different buildings served as living room, bed room or reception room and servant dwellings. All houses were built in accordance with Chinese morality, Confician ethics and traditional concepts such as the five elements (water, wood, fire, earth, metal) and the eight diagrams of divination (heaven, lake, fire, thunder, wind, water, mountain, ground). In the regions where dust storms are very strong the courtyard walls were higher and stronger. In Japan, a feudal property was called "shoen" while the nameholder was called "shogun". The land policy was similar to the Chinese equal field system. The domestic houses, called "shinden zukuri" was a blending of house and garden. Popular features included: rice-paper walls, sliding doors, foldable screens, tatami mats and futon beds. The audience room in a samurai home was called "zashiki" while the wooden floor was covered with rectangular tatami mats made of straw.



In India numerous terms were in use for the local feudal land lords: "sardar", "mankari", "chaudhary", "taludqdar", "zamindar", "jagirdar", "ghatwals", "mulrayats", "deshmuk", "samanta". The essential characteristic was the decentralization of power, with a lack of economic contact between king, vassals and serfs. The vassals were only required to pay a small fraction of their revenue and to provide troops for the overlord. The population in India was ordered in castes, rigid social groups characterized by hereditary transmission of life style, occupation and social status. The four classes were: "Brahmins" (priestly people), "Kshatriyas" (rulers and warriors), "Vaishyas" (artisans, merchants, farmers), "Shudras" (laborers). Indian traditional architecture used natural materials such as: mud, plaster, bamboo, straw, wood, clay tiles, stone bricks and sometimes mortar. Rural traditional houses were called "kachcha" or "pucca". The traditional townhouse or palace was called "haveli", built around a courtyard, with a fountain in the center of the courtyard, identified mostly with the merchant class. The feudal system of social hierarchy in Thailand was called "sakdina", meaning field prestige. This system assigned a numerical rank to each person, represented by the number of "rai" (1600 square meters) of land a person was entitled to own. The numerical rank served to determine their precedence in society, especially among the nobility. For example, the "Three Seals Law" specified a sakdina of 100 000 rai for the emperor, 10 000 for the kings, 600 for learned Buddhist monks, 20 for commoners and 5 for slaves. The traditional house in Thailand, called "ruean thai" was made of timber and bamboo, with no nails. Instead, pre-cut holes and grooves were used to fit the timber elements. Superstition played a large part in Thai tradition. A special ritual had to be performed by a person of acknowledged spiritual power to bless the first column of a house, as the first line of defense against ghosts and evil spirits. One universal aspect of Thai houses is the elevation on stilts, due to frequent floodings. Another common feature is the great number of windows and doors. In Indonesia the word "mandala" was in use for the feudal power of the ancient kingdoms, while the regular tribute was called "bunga mas" (flowers of gold), consisting in miniature trees made in gold and silver. The Medang Empire was divided, based on religion, in between two kingdoms and dynasties: the Shivaist dynasty in Java and the Buddhist dynasty in Sumatra. Islamic culture and symbols penetrated the Indonesian islands beginning with the 16th century, resulting in the Sultanate of Mataram. Beginning with 1800, the Dutch Cultivation System was introduced, called locally "tanam paksa" (enforced planting), where 20 % of the land was devoted for export products, such as tobacco and rubber. Traditional houses in Indonesia are called "rumah adat", built in timber, with elaborate roof structures and either wooden or bamboo walls. Most rumah adat are built on stilts, sometimes on rivers and wetlands.



A "caliphate" was the public office for governing an Arab territory under Islamic rule. Considered to be a successor to the Islamic prophet Muhammad, the caliph is a leader of the entire Muslim world. Three major caliphates succeeded each other: the Rashidun Caliphate (632-661 AD), the Umayyad Caliphate (661-750 AD), and the Abbasid Caliphate (750-1517 AD), to be followed by the Ottoman Caliphate (1517-1924). The empire was divided into several provinces, each with a governor appointed by the caliph. At its greatest extent, the Umayyad and the Abbasid Caliphates covered 11 to 13 million square kilometers, including Egypt and North Africa. During the Muslim Agricultural Revolution (8th to 13th century), a change in land ownership took place, giving individuals of any gender, ethnic or religious background the right to buy, sell, mortgage and inherit land for farming. Their ancient law said that all Muslims are partners in three: water, pastures and fire. Early Islamic law also included a collection of "zakat" (charity), gathered in the treasury, by the government, and used to provide income for the needy, including poor, elderly, orphans, widows and disabled. All traditional Arabic houses share some common architectural elements, due to the arid regional climate, in order to provide a cozy atmosphere. Arab houses are mostly closed to the sun by the use of "mashrabiyyah" (wooden lattice bay window). A shadowed courtyard is also a common element in the design, needed to enhance the airflow and the thermal comfort inside the house. A circular well, or a fountain, is usually present in the center of the courtyard. Wind towers, called "barajils" are also used to regulate a downfall flow of air. Sometimes water is sprinkled at the bottom of the tower to cool the ambient temperature within the house. The "majlis" (nice meals) are the meeting rooms where male guests are entertained, while women enjoy separate private spaces. Egypt is one of the largest countries in the Arab world, a country that prospered for centuries under the Muslim rulers. During the Mamluk Sultanate (1250-1517), the sultan delegated power to provincial governors called "nuwwab as-saltana". The market was supervised under the rule of a general inspector called "muhtasib", controlling weights, measures and the quality of goods. The right to collect revenue from a fixed territory was called "iqta", and was accorded to an officer (emir) as a financial source to provision his soldiers. Agriculture was the primary source of revenue, every commodity was taxed by the state. Most traditional houses in Egypt were made from mud bricks, with one brick thick walls for the poor and double brick thick for the rich. Most houses had a roofed central room, a kitchen nearby, and smaller rooms attached. Homes of the rich contained at least 10 rooms, while the walls were painted with lime, usually in blue and yellow colors.



A dear symbol to the Ottoman Turks was in their garden, created to satisfy both pleasure and need. For example, at the Artuquid Sarayi in Diyarbakir, built in the 13th century, the garden was designed around a mosaic decorated pool and a water chanel. Magnificent polychrome ceramic tiles were excavated at the Kubadabad Sarayi, near Lake Beysehir, in the gardens built for Sultan Kayqubad I (1220-1237). In Istanbul, gardens, yards and orchards, occupied an important place since the Roman and Byzantine era, to be continued and developed by the Turks, and such spaces were not limited to the sultans private gardens (hasbahces). Muhibbi Divani is the main work reflecting horticulture and the love for flowers, in the 16th century. Every house had a garden with lines of cypress, oak, linden, chesnut, myrtle, broom and vines. Evliya Celebi reported in 1458 a number of 20 000 cypresses, sycamores and various trees in the imperial gardens. According to registers, there were 1650 "bostancis" (gardeners) in 1576, 2396 in 1632, 3707 in 1641 and 3323 in 1746. A "bostancibashi" (head gardener) supervised the imperial gardens, while a "bostaniyan-i hassa" (clerk) kept the products record book, with sales and profit. For example, in 1813, the net profit was 1 168 870 akce. Notable gardens in Istanbul were near the imperial buildings: Suleymaniye Mosque, Topkapi Palace, Dolmabahce Palace, Besiktas Palace, Ciragan Palace, Yildiz Palace, Uskudar Palace, Kavak Palace, Beylerbey Palace. One main element in an Ottoman garden was the garden pavilion, built in an enormous amount of diversity, from modest bowers to luxurious pavilions. In China vast gardens were built for the pleasure of emperors, while scholars, poets, government officials, merchants and soldiers were building more intimate gardens, enclosed by walls, with one or more ponds, rock works, halls or pavilions. Many gardens in China have an island, or a group of islands, representing the legendary island of the Eight Immortals, where was no pain and no winter, where the palaces were in gold and silver, with jewels on the trees. In medieval times, Emperor Huizong (1082-1135) had constructed an artificial mountain one hundred meters high, caled the Mountain of Stability. Around a squared artificial lake, there were also numerous terraces and pavilions for writing poetry, with exotic plants brought from around China. Another famous garden was the summer palace of Kublai Khans, described in 1275 by Marco Polo as inclosing a compass of 16 miles, with fountains, rivers, brooks and all kinds of wild animals. Some gardens from the Ming Dynasty (1368-1644) are still in existance today, including: Jichang Garden in Wuxi, Lingering Garden in Suzhou and Yuyuan Garden in Shanghai. But the most famous gardens in China are the Old Summer Palace and the Summer Palace gardens in Beijing (560 hectares), built during the Quing Dynasty (1644-1912), including the Marble Boat pavlion, built in 1755, and the Long Coridor 728 meters long, built in 1750. Classical gardens in China usually include: a ceremony hall, the principal pavilion for the Festival of Lanterns, a pavilion of flowers, a pavilion facing all four directions, a lotus pavilion next to a pond, a pavilion of mandarin ducks, a stone pavilion, bridges, two story towers. In Japan, ideas, techniques and styles for gardens were brought from China, during the Asuka period (538-710 AD), but they also originated in the national religion, Shinto, with its story for the creation of perfect islands of gods. The first chronicle of Japan, Nihon Shoki, published in 720 AD, mentions the Emperors and nobles pleasure gardens. A surviving example of a Paradise Garden is at the Byodo-in Temple, near Kyoto, built by Fujiwara Michinaga (966-1028 AD). Another example is the Joruri-ji Temple Garden, completed in 1047 AD, by the priest Gimyo Shonin. Japanese zen gardens were invented during the Kamakura and Muromachi periods (1185-1573), with famous examples in: Rokuon-ji Golden Pavilion, Jisho-ji Silver Pavilion and Saiho-ji Moss Garden. A new kind of architecture appeared in the Edo period

(1615-1867), called "Sukiya-zukuri" (refined taste) associated with "ikebana" and characterised by the use of natural materials, especially wood. Notable examples are: Shisen-do Buddhist Temple (1641), Koraku-en Okayama, Ninna-ji Temple Kyoto, Sanzen-in Temple Kyoto. A remarkable example of a private garden, from the Meiji period (1868-1912), is the Kenroku-en Garden, in Kanazawa, extended on 12 hectares, with 8750 trees and 183 species of plants, the oldest teahouse and the oldest fountain in Japan. In general, traditional Japanese gardens can be categorized in three types: "tsukiyama" (hill gardens), "karesansui" (dry gardens) and "chaniwa" (tea gardens). Typical garden elements are: water, rock and sand, garden bridges, stone lanterns, water basins, garden fences, Torii gates, trees and flowers, Koi fish.



The most identifiable architectural design in an Islamic garden is the "charbagh", a quadrilateral layout divided by walkways or flowing water into four sectors, resembling the four gardens of Paradise mentioned in the Quran. Unlike European gardens, designed for walking, Islamic gardens are intended for rest, reflection and contemplation, enhanced by the use of aromatic plants. Persian gardens were traditionally enclosed by walls, with pools built either in the courtyard or surrounding the courtyard. In the battle against time, the enclosed garden forms a space where time does not decay the elements within the walls, such representing an unworldly domain. At the center of a cycle of time is a human being, who, after being released, eventually reaches eternity. For example, the Great Mosque of Cordoba (Spain) contains a continuously planted garden in which rows of fruit trees are planted in the courtyard. Another type of Islamic garden design includes stepped terraces, in which water flows through a central axis, with a notable example in the Bagh-i Babur park in Kabul, Afghanistan. Elements present in an Islamic garden are: pavilions and walls, sunlight, water, ponds, canals, reflecting pools, fountains ("salsabil") and aromatic plants (cherries, peaches, apples, almonds, jasmine, roses, narcissi, violets, lilies, lotus). In India, the charbagh type of Islamic garden was loved and developed during the Mughal empire, starting with the gardens in Lahore and Dholpur, built by Emperor Barbur. Famous imperial gardens followed in Delhi (Mughal Garden, Sunder, Char Bagh, Roshanara), Agra (Taj Mahal), Srinagar (Nishat Bagh), Allahabad (Khusro Bagh), Haryana (Pinjore). Notable examples of Islamic gardens in Pakistan are: Lahore (Gol Bagh, Hazuri Bagh, Shahdara Bagh, Shalimar), Sheikhpura (Hiran Minar), Wah (Mughal Garden). Another distinct type of oriental garden is in the tropical garden, an exceptionally fertile landscape. For example, in Thailand, there are three distinctive types of tropical gardens, destined for: royal palaces, temples, normal people. Public spaces are in 18 botanical gardens and 53 arboreta gardens, among which: Nong Nooch Tropical Garden Sattahip, Queen Sirikit Botanical Garden Mae Rim, Queen Sirikit Park Bangkok. In Indonesia, a private type of tropical garden developed to yield food is called "pekarangan". Such gardens are also in use for social interactions, cultural ceremonies and religious practices. Around 100 000 square kilometers of land are used in gardens of this sort. Perennial plants cultivated include: melinjo (Gnetum gnemon), coconut, jackfruit, banana, oranges, mangoes and salak. Collections consisting in the entirely native and endemic species can be found in 45 Botanical Gardens, with notable examples at: Bogor Botanical Gardens, Cibodas Botanical Gardens, Purwodadi Botanic Garden and Bali Botanic Garden. Bali Botanic Garden is the largest, with an area of 157 hectares and 21 000 specimens belonging to 2400 species of plants, plus an additional herbarium with 10 000 preserved plant specimens, ranging from algae to orchids, ferns, cacti and carnivorous plants. But, in essence, most of the tropical region is a large tropical

garden.



In the oriental world, associations of laborers were just as common as in Europe. In the Ottoman Empire, corporations and guilds were known as "esnaf", "akhism", "zanaatca" or "lonca", where groups of laborers worked together and sometimes shared tools. Every guild had a "nizam", a guild agreement or a set of rules, and a "gedik", an exclusive licence for monopoly. Not all the workers were equal among guilds, with hierarchies which varied among different regions. For example, there might be four or five different types of shoemakers in the same guild. Being a part of a guild became a major part of one's identity. Every member was monitored very closely. There were influential members, but no one controlled completely the productivity of other fellow members. A compound product, such as silk, would go through many different hands prior to reaching the consumer. The prosperity and commercial success of merchants were both a cause and a consequence of their domination in urban politics. In the Ottoman world, muslim traders dominated exchanges and all the international routes. On these routes, towns were developed around a post-station called caravanserai. For example, the Guild Town of Mudurnu on the Silk Road in Anatolia, where Evelyiya Celebi registered: 3000 houses, Yldirim Mosque, 13 schools, 3 khans and hammams, 1100 needle workshops. There were links between cities and countryside, although direct exchanges were rather the exception than the rule. Civilians were limited to buying only from the source they had been assigned to. The most crowded guilds in Istanbul were the bakers and the butchers, providing the society with food. In medieval China, local business were mentioned as "gongsuo", "hang" and "tuan", while the places for meetings were the temples, such as the "silk-loom god temple" established in 1078 in Suzhou. The "Short Table of the Chinese Craft and Commercial Guilds 1655-1911" contains a list of 600 dated and 130 undated guild houses and associations. According to the list, guild concentration was greater in the large cities: Suzhou, Shanghai, Peking, Changsha, Hankou and Chonqing, and along the coast. Chinese guilds combined the economic with social and religious functions, as they regulated wages, prices, raw materials and the training of the labour force. A three years apprenticeship was the most often rule and there were entrance fees to be payed. Social functions included communal cemeteries, elementary schools, relief of poverty, firefighting, road maintaining and entertainment in the form of theatrical productions and processions. Virtually every guild was a religious fraternity too and religious service was practiced in common. Local administrators used to refuse permission to register to journeymen guilds, or to unskilled labourers. In the 19th century, Chinese guilds were required to collect a transit tariff called "lijin" and to perform municipal work. The most representative guildhouse in China is Huguang Guild Hall, established in 1759 during the reign of Quianlong Emperor, to become the most renowned Beijing Opera, where on 25 August 1912 the Chinese Nationalist Party was founded. In Japan, the primary types of guilds were called "za" (seat, pitch) and consisted in protective cooperation between merchants and temples. Temples would offer protection against bandits, while merchants would sell their goods on a pitch or platform in the temple's grounds. The earliest za came into being in the 11th century, including guilds of performers and entertainers. A woodcutter's guild is mentioned in registers in 1092, in Yase near Kyoto. The za trade guilds appeared as a major force in the 14th century and lasted through the 16th century. In late medieval times, the monopoly in working precious metals (gold, silver, copper) was

regulated by a specific za under protection from the shogun. In the Sengoku and Edo periods new types of organisations for merchants, called "nakama" or "kabunakama" were authorized by the shogun. During the Tokugawa period, in 1720, the za system brought 90 % of the nations's silk processing to Kyoto. Over the course of the 18th and 19th centuries, guilds evolved to modern forms called "zaibatsu" and "keiretsu". The meeting places for za members were used to stage both "kabuki" and "bunraku" theatrical performances, known in modern times as Kabuki-za Theatre.



Oriental emperors, sultans, emirs, kings and wealthy merchants used seals to mark all official documents and their correspondence. In the case of Ottoman sultans, the calligraphic monogram was called "tughra" and was written on the documents by a calligrapher called "nishanci" (sealer). A tughra had a characteristic form with three elements, each with a specific meaning: two loops on the left side (beyze - the two seas), three vertical lines in the middle (tug - winds of independence) and two extensions to the right (hancer - sword). Notable examples are the tughras of: Orhan I (1326), Suleyman the Magnificent (1520), Selim III (1789), Mahmud II (1808). Similar tughras were used in other states, such as: the Safavid Empire of Persia, the Mughal Empire, the Khanate of Kazan, the Khanate of Tartars in Imperial Russia. The Mughal tughra was circular in shape, with three points at its tip, beside the calligraphic signature of the emperor. Tughras were also present on the reverse of numerous coins. Ottoman seals in use by merchants were engraved with flowers and herbs, names, titles, verses of Quran. Engraving was considered a prestigious profession, and some sultans, like Mahmud II, engraved seals themselves. Most sultans had four seals, one in emerald and the others in gold, with different shapes: round, oval, square or octagonal. Other materials used in the Islamic world to carve seals were: carnelian, onyx, turquoise, rock crystal, brass and silver. The word for seal in the Arabic world is "khatm", consisting of three letters: kha, ta and mim. In Ancient Egypt, scarab amulets were also used as impression seals, often engraved with the names of pharaohs and other royal persons, names, titles and officials. Probably they were in use by officers of intendance, to mark the products destined to the pharaoh. More than 200 examples have survived, found in locations in support of diplomatic activities. In the Indus Valley, more than 2000 ancient seals were discovered, made of clay, soapstone, terracotta and copper. Some were carved with human, animal figures, mythical animals, others have an inscription in a sort of pictorial writing. Love, power, legends and sovereignty can all be traced by the use of Indian signet rings. Seals of the Sultans of Delhi are rare, still all the grants of land were sealed with the royal tughra, by an important functionary called "muhradr" (keeper of seals). Mughal seals include imperial, ecclesiastical, judicial and private seals. Most imperial seals are lineal or dynastic in character, from Emperor Babur to Bahadur Shah II. The round seal of Emperor Babur consists of two circles, of which the inner contains the name of the emperor, and the outer the name of his ancestors back to Timur. In case of each of his successors there is an increase by one in the number of outer rings, to include one more ancestor. Of the seals of Mughal queens, those of Hamida and Banu Begam have been preserved. The Mughal princes also had their own seals, with their names and titles.



The Arabic alphabet was derived from the Aramaic alphabet, which in turn descended from the Phoenician alphabet. The first recorded text in the Arabic alphabet was written in 512 AD, as a trilingual dedication in Greek, Syriac and Arabic. There are 21 letters, of which only 15 are different, being used to note 28 phonemes (units of sound). The oldest papyrus using a bilingual Arabic-Greek text (PERF 558), dating from 643 AD, was found in Egypt, at Heracleopolis. It was a receipt that Son of Jabir and his companions had received from Theodorakis, captain of a Greek ship, for the slaughter of fifty sheep. The oldest calligraphic form of Arabic script was the Kufic script, developed in the city of Kufa (Iraq), the preferred script used for Quran transcription and architectural decoration. One impressive example of an early manuscript, is the Blue Quran, produced in the 9th century, with gold letters on blue parchment, now preserved at the Metropolitan Museum of Art in New York. The Kufic script was also inscribed on textiles, coins, lusterware, buildings and monuments. In the 12th century, an ornamental variant of the script was developed, called Square Kufic, originally created in architecture with bricks and tiles. It is used in modern times for decorated clocks, frames, stickers and logos. Another style of writing was the Hijazi script, developed in the Arabian Peninsula, around the cities of Mecca and Medina. The Hijazi script is notably angular, does not contain any dots or diacritical marks to indicate vowel sounds, but does differentiate consonants by the use of dashes above the graphic letter forms. Also derived from the Kufic script was the Maghrebi script, developed in North Africa, beginning with the 7th century, as demonstrated by coins minted under governor Musa ibn Nusayr (640-716). Maghrebi script is characterized by rounded letter forms, extended horizontal features, and final open curves below the baseline. For centuries, Maghrebi script was used to write and record Andalusian and Moroccan literature, with two variants: Andalusian script and African script. The second major calligraphic style, beside Kufic, was the Naskh script, smaller and round, used for everyday scribal use. In the Naskh script characters lack "hooks" on the end of ascending and descending strokes and differentiates various sounds by the use of diacritical points, in the form of 1-3 dots above or below the letter, which makes the script more easily legible. The Naskh script is used in modern days as an electronically default typeface for Arabic fonts (Arial, Simplified Arabic, Courier New, Damascus, Noto Naskh Arabic, SF Arabic). Diwani script is a style of Arabic calligraphy developed in the 16th and 17th centuries in the Ottoman Empire. Invented by Housam Roumi, it reached its height under Sultan Suleyman the Magnificent (1520-1566). Spaces between letters are narrow and lines ascend upwards from right to left. Larger variations called "djali" are filled with dense decorations of dots and diacritical marks in the space between. Diwani was in use for court documents as it prevented forgery. Manuscripts surviving from the Ottoman Empire take the form of books, such as mushafs (codex), divans (poetry) or murakkaas (collections). Examples of famous Ottoman calligraphers are: Sheikh Hamdullah (1436-1520), Cafer Celebi (1452-1515), Mustafa Eyyubi (1619-1686), Mahmud Celaledin (1750-1829), Hafiz Osman (1642-1698), Mehmed Sevki (1829-1887), Mehmed Sami (1838-1912).



Chinese characters, also called hanzi (han characters) are logograms (words), or morphemes associated with an entire syllable. Most modern Chinese words are compounds, written with two or more characters, to represent a concept or an idea. Modern Chinese has many homophones, thus the same spoken syllable may be represented by many different characters, depending on meaning. Also, a particular character may have a range of meanings, sometimes quite distinct, with different pronunciations, depending on the context of the sentence. At origin, Chinese words were monosyllabic and each character denoted a single word. In time, two thirds of the 3000 common words of modern Chinese were formed as disyllables. The most common process has been to form compounds of existing words, by adding affixes, by reduplication, or by borrowing from other languages. In borrowing, an existing character is used to represent an unrelated word with similar or identical pronunciation. Sometimes, the old meaning was completely lost, due to infrequent use. In ancient times, characters were used purely for their sound values, but they evolved to be used in a rebus like fashion. Middle Chinese is a historical variety of Chinese language, as it was recorded in the year 601 AD, in a rime dictionary, called Qieyun. A copy produced for Emperor Huizong (1100-1126) remained in the Imperial Palace Library until 1926. Qieyun dictionary contains 12 158 character entries, divided into five volumes and 193 final rhyme groups, with each group subdivided into homophone groups. In the 12th century, another rime table, called Yunjing, used 43 tables to organize the rhymes according to four tones (level, rising, departing, entering), in six columns representing place of articulation: lips, tongue, molar, tooth, throat, tongue-tooth. In the earliest Chinese dictionaries, characters were grouped together in semantic categories. Shared graphic elements, such as a dot or horizontal stroke, were selected to form semantic indicators called "radicals". The early 540 radicals were reduced in the Middle Age to 214, with characters arranged in increasing order in the number of additional strokes. The 1615 Zihui Dictionary, edited by scholar Mei Yingzuo, included 33 179 head character entries. Kangxi Dictionary, published in 1716, was the most authoritative resource, containing 47 035 characters, plus 1995 graphic variants. Walter Henry Medhurst, an English missionary, used Kangxi Dictionary to compile a Chinese to English Dictionary, containing all the words according to radicals, used by researchers to produce the modern Unicode standard. In 1950 a set of simplified Chinese characters was introduced to encourage literacy and for the use in printing. The modern Table of General Standard Chinese Characters consists now of 8105 characters. Chinese characters are in modern use in many different languages, in countries such: China, Japan, North and South Korea, Malaysia, Singapore, Taiwan, Hong Kong, Macau, Vietnam. The word "kanji" is used in Japan for the Chinese script. Such characters were first identified on official seals, swords, coins and mirrors in the first century AD. Japanese children learn in elementary school 1026 kanji characters, and 1110 additional characters are learned in junior and high school to produce the 2136 characters of the modern writing.



In India, at the origin of modern writing was the Brahmi script, an alphasyllabary with units based on a consonant letter with associated vowel and diacritical marks. Over the course of a millenium, the Brahmi script developed in numerous regional scripts, with two main branches Northern Brahmi and Southern Brahmi. The Northern Brahmi gave rise to Gupta script 5th century, evolving to Siddham script (6th century), Sarada script (9th century) and Bengali script (modern). Southern Brahmi gave rise to the Grantha alphabet (6th century), evolving to Vatteluttu alphabet (8th century), Baybayin script (16th century) and Javanese script (15th century), Tamil script (modern). All Indic scripts run from left to right. Indic languages are syllabic in nature, and unless otherwise indicated each consonant is typically followed by the inherent vowel. Most Indic scripts also include a basic set of additional letters, used to represent sounds from foreign languages, such as Sanskrit or English. Such additional letteres are formed by adding a diacritic to an existing letter. When a consonant is followed by a vowel other than the inherent one, that specific vowel shall be added. A consonant can only support one vowel, while a vowel sign may appear to the left, to the right, above or below the base consonant, and sometimes surrounds the base consonant on more than one side. Up to four consonants can be combined in ligatures adding special marks. All Indic scripts have different characters for the numbers. Only 0 (zero) is identical in all the scripts, but the numbers are not based on the decimal system so larger numbers are not formed using the zero shape. Tens, hundreds and thousands are represented using distinct characters. Words are separated with spaces. The Siddham script, meaning the perfected script, is particularly important since many Buddhist texts, sutras and mantras, taken to China along the Silk Road, were written in Siddham. The art of Siddham calligraphy survives today in Japan in the esoteric schools of Shingon Buddhism. There are tens of regional variants of the basic scripts. The main variants evolved from Northern Brahmic are: Sharada, Landa, Takri, Nagari, Kamarupi, Gaudi, Nepalese, Tibetan, Kalinga, Bhaiksuki. The main variants evolved from the Southern Brahmic are: Tamil, Pallava, Grantha, Khmer, Sukhotai, Cham, Kawi, Sinhala, Kadamba, Pyu, Mon, Thai. Of modern importance is the Tamil script, still used in modern India, Sri Lanka, Malaysia, Singapore, Indonesia by some one hundred million native speakers. The script consists of 31 letters: 12 vowels, 18 consonants and one special character (akku). About 100 000 ancient inscriptions found in India are in Tamil language. Another script of importance is the Bengali-Assamese script, using the Bengali alphabet, with more than 265 million users in modern times. The Bengali alphabet uses 9 vowels and 36 consonants, plus 12 diacritics and other symbols. The most important modern Indian script is Devanagari, also known as Nagari, used with Hindi and another 120 languages of the Indian subcontinent, by more than 600 million people. The Devanagari script is composed of 14 vowels and 33 consonants. In regular use by the 7th century, it was fully developed about the end of the first millenium. It was used traditionally by religiously educated people, but also for administration, commerce and daily uses.



A central position in the Muslim world is occupied by the mosques, also called "masjid", huge buildings commonly serving as locations for prayer, revelation, funeral services, marriage and business agreements, alm collection and distribution. Historically, mosques have also served as community centers, courts of law and religious schools. Islam was established in Arabia in the 7th century, during the lifetime of Prophet Muhammad ibn Abdullah (570-632 AD), the Messenger of God. Some of the oldest mosques in the world are mentioned in the Quran: Al-Haram Mosque in Mecca (the direction of prayers and the site of Pilgrimage), Quba Mosque in Medina (the first mosque built by Muhammad in 622 AD), Al-Aqsa Mosque in Jerusalem (the third holiest site in Islam). Other early mosques are located in: Massawa (Eritrea, 613 AD), Negash (Ethiopia, 614 AD), Zeila (Somaliland, 615 AD), Ghogha Gujarat (India, 623 AD), Guangzhou (China, 627 AD), Al-Kilabiyah (Saudi Arabia, 629 AD), Zabid (Yemen, 629 AD), Kodungallur (India, 629 AD), Tadjoura (Djibouti, 630 AD), Kilakarai (India, 630 AD), Aleppo (Syria, 637 AD), Hebron (Palestine, 637 AD), Bilbeis (Egypt, 639 AD), Cairo (Egypt, 641 AD), Kufa (Iraq, 639 AD), Damietta (Egypt, 642 AD), Kairouan (Tunisia, 670 AD), Mila (Algeria, 678 AD), Samail (Oman 7th century), Fahraj (Iran, 7th century), Bukhara (Uzbekistan, 713 AD), Shamakhi (Azerbaijan, 743 AD), Cordoba (Spain, 785 AD). The frequency by which Muslim attend mosque services is the highest in Africa, where in 15 countries more than 80 % of the believers attend mosque at least once a week: Ghana (99 %), Liberia (94 %), Ethiopia (93 %), Uganda (93 %), Guinea-Bissau (92 %), Mozambique (92 %), Kenya (91 %), Niger (88 %), Nigeria (87 %), Congo (85 %), Cameroon (84 %), Djibouti (84 %), Tanzania (82 %), Chad (81 %), Mali (79 %). The earliest type of mosques used a hypostyle hall with a square plan, to accomodate large numbers of worshippers during Friday prayers. Most hypostyle mosques also have outer arcades (riwaq) so that visitors can enjoy the shade. In the 15th century, the Ottomans introduced the central dome type of mosques, heavily influenced by Byzantine architecture. Islam forbids figurative art, therefore mosques are decorated only with abstract patterns and beautiful inscriptions. Coloured tiles are widely used in mosques, usually in watery colours, used to create a cool atmosphere. In the prayer hall, usually opposite the entrance, is the "mirhab", a niche or a depression indicating the direction of Mecca. To the right side of the mirhab is a pulpit, from where the imam leads the five daily prayers. Women who pray in mosques are separated from men, in a balcony called "makhphil", with a wall perforated through which imam can be partially seen. As ritual purification precedes all prayers, mosques often have ablution fountains or other facilities. A tall, slender tower, called a "minaret" is usually situated at one corner of the structure, or in all four corners. The tallest minarets in the world are located at: Algiers (Algeria, 265 m), Casablanca (Marocco, 210 m), Indramayu (Indonesia, 201 m), Selangor (Malaysia, 142 m), Putrajaya (Malaysia, 116 m), Medina (Saudi Arabia, 105 m). Numerous mosques have other additional facilities, such as schools, health clinics, gymnasiums, libraries and refectories. Islam requires that its adherents wear clothes that portray modesty and remain respectful to those in prayer. The largest mosques in the world, according with their total area are located at: Mashhad (Iran, 598 675 m2), Muscat (Oman, 416 000 m2), Medina (Saudi Arabia, 384 000 m2), Mecca (Saudi Arabia, 356 000 m2), Karachi (Pakistan, 200 000 m2), Algiers (Algeria, 200 000 m2), Semarang (Indonezia, 100 000 m2). The Islam Ummah (community) numbers in present times around two billion members.



With 1,2 billion adherents, Hinduism is the second greatest oriental religion in the world, with symbolic houses called "mandir" as the seat and body of divinity. Mandir are structures designed to bring human beings and gods together, using symbolism to express the ideas and beliefs. In Vedic tradition, circles and squares, together with astronomical numbers are used for the representation of macrocosmos and microcosmos. In Hindu sense, cyclic time (samskara, asrama) is the essence of life, with five proper goals: dharma (duty), kama (desire), artha (goal), moksha (enlightenment) and karma (deeds). This five spiritual principles are represented symbolically in all Hindu Temples, as given in the ancient Sanskrit texts, the Vedas and Upanishads. Hindu temples come in many styles, with different construction methods, adapted to different deities or regional beliefs. Hindu temples are particularly found in: India, Nepal, Bangladesh, Pakistan, Sri Lanka, Cambodia, Vietnam, Malaysia and Indonesia. Such a temple aims to be a symbolic reconstruction of the universe, with all the universal principles that enable everything in it to function. The central core in a Hindu temple is marked by a spire (vimana), while the temple space is laid in a series of courts (mandapas). The craftsmen and builders of temples, called "Silpin" were highly educated, with more than 20 years of training starting from the age of 5 to 12. One single temple would maintain up to 600 employees. In social life, Hindu temples served as nuclei for social, economic and artistic developments such as: irrigation projects, land reclamation, post disaster relief and recovery, libraries of manuscripts, schools, hospitals, monasteries. Some of the largest Hindu temples in the world, according to their total area are located at: Angkor (Cambodia, 1 626 000 m²), Tiruchirapalli (India, 631 000 m²), New Delhi (India, 280 000 m²), Delhi (India, 240 000 m²), Bali (Indonesia, 200 000 m²), Howrah (India, 160 000 m²), Chidambaram (India, 160 000 m²), Yogyakarta (Indonesia, 152 000 m²), Kolkata (India, 101 000 m²). Most Hindu temples include large temple tanks of water, wells or reservoirs, said to cure various diseases and maladies when bathed in. The tanks are used for ritual cleansing and during rites of consecration. Some of the largest temple tanks are located at: Mannargudi (India, 93 000 m²), Madurai (India, 66 000 m²), Tiruvarur (India, 65 000 m²), Chennai (India, 27 000 m²). Another important component is a monumental tower, highly ornated, called "gopuram", usually at the entrance of the temple. Some very tall gopurams are located at the Hindu Temples in: Srirangam (India, 80 m), Murdeshwar (India, 79 m), Thiruvannamalai (India, 72 m), Virudhunagar (India, 64 m), Kanchipuram (India, 63 m), Tenkasi (India, 60 m), Kumbakonam (India, 57 m), Arunachala (India, 57 m). Other tall towers, called "vimanas", housing the main deities are the tallest part in the entire temple. Usually shaped as a pyramid, a vimana consists of several stories called "tala", always made of shining material, or covered in gold. Impressive vimanas are to be found at: Orchha (India, 115 m), Banaras Hindu University (India, 83 m), Thanjavur (India, 72 m), Puri (India, 72 m), Bhubaneshwar (India, 62 m), Gangaikonda (India, 60 m). The supreme Hindu deities are: Brahma, Vishnu, Shiva, Devi, Shakti, with hundreds of alternative names and avatars. The Hindu spiritual hermitages and monasteries are called "ashram", traditionally located far from human habitation in forests or mountainous regions. Some of the largest Hindu ashrams, according to their total area are located in: Bangalore (India, 1 011 714 m²), Velliangiri Mountains (India, 607 020 m²), Kollam (India, 404 686 m²), Pune (India, 161 874 m²).



The third greatest oriental religion is Buddhism, with more than 520 million adherents in: China (244 million), India, Nepal, Bhutan, Myannar, Cambodia, Japan, Tibet, Laos, Mongolia, Sri Lanka, Thailand, Vietnam, Indonesia, North Korea, South Korea. Buddhist temples and monasteries include structures called in different languages and regions: "vihara", "chaita", "stupa", "wat" or "pagoda". Such temples represent the "pure land" or the pure environment of Buddha, the awakened one, the one who have attained nirvana. The original teachings are attributed to Gautama Buddha, an ascetic and spiritual teacher who lived some five centuries BCE. The goal of Buddhism is to overcome suffering caused by desire and ignorance and to attain the state of nirvana, ending the cycle of death and rebirth. The basic practices in the Buddhist way of liberation includes: meditation, devotion, ethics and wisdom. The five precepts used in the basic training of Buddhist require to abstain from: killing, stealing, sense-pleasures, lying and intoxication with alcohol or drugs. Monastic communities cut their social ties to family and community and live as "islands unto themselves". The Buddhist textual history is vast. More than 40 000 manuscripts were discovered in a single cave, at Dunhuan Chinese. The Chinese canon includes 2184 texts in 55 volumes, while the Tibetan canon comprises 1108 texts spoken by Buddha and 3461 texts composed by Indian scholars. The Tripitaka Koreana is a South Korea collection of 81 258 wooden printing blocks from the 13th century, the oldest version of Buddhist canon in Korean writing. Buddhist monastics originally followed a life of wandering, or lived in the woods in groves and wooden structures. Monasteries slowly evolved from rustic dwellings to permanent structures. Viharas are Indian monasteries with a central hall and quarters for monks with small cells connected to it, sometimes with beds carved from stone. Typical viharas are carved in caves, such as: Alanta, Aurangabad, Karli and Kanheri Caves (India). Stupas are mound-like or hemispherical structures containing relics, used as a place of meditation while walking around them. The best known stupas are: India (Sanchi, Sarnath, Amaravati, Bharhut, Mathura), Sri Lanka (Jetavanaramaya), Nepal (Boudhanath, Kathmandu, Yetkha), Tibet (Lhasa), China (Miaoying), Indonesia (Borobudur), Pakistan (Barikot), Myanmar (Shwedagon), Cambodia (Kantha Bopha, Oudong). The wat temples are housing a large image of Buddha and a facility for lessons. Well known examples of wats include: Cambodia (Angkor, Preah Keo, Botum, Moha Montrey, Ounalom, Phnom, Bakan), Laos (Pha That Luang, Xieng Thong), Malaysia (Buppharam, Chayamangkalaram, Chetawan, Phothivihan), Singapore (Ananda, Palelai), Thailand (Suthat, Benchamobophit, Ratchanatdaram, Phra Kaew, Arun, Pho, Phra That Doi Suthep, Phra That Lampang, Phumin, Phra Pathommachedi). Pagodas are tiered towers with multiple eaves located in Buddhist viharas (monasteries). The oldest pagodas were built of wood, but most that survived were built of brick or stone. Some of them are solid, with no interior, others contains an altar or a smaller pagoda, as well as staircases to witness the view from an opening on each side. Some notable pagodas are: China (Songyue, Xumi, Daquin, Xi'an, Suzhou, Zhending, Dingzhou, Lingyan), Japan (Horyu-ji, Ichijo-ji, To-ji), Korea (Mireuksa, Bunhwangsa, Hwangnyongsa, Seokgatap, Palsangjeon), Nepal (Changu Narayan, Kathmandu), Vietnam (Dau, Tran Quoc), Hong Kong (Tsui Sing Lau).



With more than 300 million adherents, Confucianism, also known as "Ruism", is a humanistic religion developed in Ancient China from the teachings of philosopher Confucius (551-479 BCE). Rather than an other world source of spiritual values, Confucianism focuses on family and social harmony, on the practical order that is given by this world awareness of the Heaven (Tian). Every man's Heaven is at his home, with a roof over his head. The Confucian priests are leading the liturgy, called "ru", in order to worship their master in public, or in ancestral temples. The main Confucian belief is that human beings are fundamentally good, teachable, improvable, perfectible through personal self cultivation and self creation. Virtue is cultivated in a morally organised world, with benevolence and humaneness. Other Confucian values to be worshiped are: righteousness (Yi), beauty and reason (Li), wisdom (Zhi), sincerity (Xin), loyalty (Zhong), piety (Xiao). In Ancient China, the temples of Confucius often housing schools and administration, were the sites for imperial examination (keju), selecting candidates for state bureaucracy. The largest temple of Confucius, in Qufu (Shandong China), hosts a 72 meter tall statue of Confucius, made of brass, his tomb, and a cemetery for the Kong Family, the main line of his descendants. The temple complex covers 16 000 square meters and has a total of 460 rooms, nine courtyards, five gates, two halls and two pavilions. Sacrifices to the spirit of Confucius started in Qufu in 195 BC, with Han Gao Zu, the first Emperor of the Han Dynasty. Beginning with the 7th century, during the Tang Dynasty, Confucian temples were built in county schools throughout the empire, either to the front or on one side of the school. Inside a temple there are usually three courtyards, containing steles commemorating visits by an emperor or an descendant of Confucius. The main building is housing the Spirit Tablets, ritual objects inscribed with the teachings of Confucius, where incense sticks are to be burned and fruit or items are to be offered to please his spirit. Normally, Confucian temples do not have images, paintings or sculptures, due to the fact that the imperial temples were built in honour of his teachings, not to the man himself. His worship was not supposed to overshadow the Chinese cult for their great Emperors. Since 1477, Confucius posthumously received from Emperor Chenghua and his consort Wan the title of king, together with the imperial honor of a eight row dance (eight columns of eight dancers each). Other 162 disciples of Confucius are also honoured in his temples, such as: the "Four Correlates" (philosophers Yan Hui, Zeng Shen, Kong Ji, Mencius) and the "Twelve Philosophers" (Min Sun, Ran Geng, Ran Yong, Zai Yu, Zi-gong, Ran You, Zi-Lu, Zi-Xia, Zi-Zhang, You Ruo, Zhu Xi, authors of Spirit Tables). The best known temples of Confucius are located in: China (Qufu, Beijing, Nanjing, Shanghai, Suzhou, Yunnan, Shanxi), Taiwan (Taipei, Kaohsiung, Tainan, Changhua), Japan (Tokyo, Nagasaki, Naha, Taku), Vietnam (Hanoi, Hung Yen, Hai Duong, Bac Ninh, Nghe An, Khanh Hoa, Dong Nai, Vinh Long), South Korea (Munmyo), Indonesia (Surabaya). The first Confucian temple in Vietnam was established in 1070, during the Ly Dynasty, while the first temple in Taiwan was constructed in 1665, during the Tungning Kingdom. There are 232 active temples in Korea with the first one built during the Goryeo period (918-1292 AD). Confucian temples were also widely built in Japan, with the most famous, Yushima Seido, built in 1630, during the Edo period.



Modern symbols and emblems

Trademark is a type of intellectual property consisting of a recognizable sign, a design, or an expression which identifies products or services of a particular source from those of others. The trademark owner can be any legal entity, business organization or individual. Usually, a trademark is located on the product itself, but it may also be located on a package, label or voucher. The first legislative act concerning trademarks was issued in 1266, by King Henry III Plantagenet (1216-1272), requiring all bakers to use a distinctive mark for the bread they sold. The first comprehensive trademark system in the world was passed into law in 1857. The symbols TM (trade mark) and R in a circle (registered trademark) can be used to indicate whether the owner has been registered. In most cases, a trademark identifies a "brand", that is a mark or a label used to identify goods and services. The word brand derives from firebrand, the old word used when torches were used to permanently burn identifying marks on furniture and pottery or into the skin of livestock and slaves. Later, firebrands were replaced with branding irons. In ancient Rome, brands and inscriptions applied to objects were known as "titulus pictus", while the ceramic objects produced were known as "terra sigilata". In the Middle Ages merchant guilds promoted the use of trading marks to protect their interest. Silver seals and marks became widely used in Europe at that time. Hallmarks for silver itself and gold were introduced around the year 1300. The British Bass Brewery, founded in the year 1777, became a pioneer in international brand marketing with a red triangle applied to its barrels. In 1876, the red triangle brand became the first registered trademark issued by the British government. In Germany, in 1875, the Krupp Steel Company registered as its label as three train wheels put on top of each other. Industrial Revolution introduced mass-produced goods and mass-marketing, resulting in the widespread use of branding and trademarks. In modern times, slogans, mascots and jingles appeared on radio and television broadcasting various brands. In even more modern times, electronic chips were inserted into the products, to trace the distribution and use of products via satellite, or to read instructions by the use of a smartphone. At the core of every brand there is a brand mark or a logo. The International Organization for Standardization issued two branding standards: ISO 10668/2010 and ISO 20671/2019. A brand name is not to be confused with a trademark, which refers to the brand name or part of a brand that is legally protected. Trademarks can be used by others under licensing agreements. The unauthorized usage of trademarks by producing and trading counterfeit consumer goods is known as brand piracy. Most countries require formal registration of a trademark before pursuing legal action against trademark infringement. Some laws consider a trademark to be a form of property and most

laws confers exclusive rights upon the registered owner. Trademarks rights must be maintained. Rights will cease if a mark is not actively used, normally after five years, in most jurisdictions.



The financial market is one of the primary concerns of modern man. Stock market indexes are variables used by investors to compare current stock price levels with past prices, in order to evaluate market performance. Such indexes may have global coverage, regional coverage, country coverage, sector based coverage or exchange coverage. For "ethical investing" (socially responsible investing) several indices include only companies that meet the ecological and social criteria. The principal types of weighting methods for stock market indexes are: market capitalization, price weighting, equal weighting, factor weighting, price volatility weighting, minimum variance weighting. Examples of global stock market indexes are: MSCI World (Morgan Stanley Capital International - 1546 companies), GDOW (Global Dow - 150 corporations), FTSE All World (Financial Times Stock Exchange - 3 100 companies in 47 countries). Regional indices in Europe are: EURO STOXX 50, FTSEurofirst 300, CECEEUR (Central European Clearinghouses and Exchanges). Examples of national indices are: United States (Amex, CBOE, Dow Jones, Nasdaq, Russell, Standard and Poor, Value Line Composite, Wilshire Associates), Austria (ATX), Belgium (BEL20), Bulgaria (SOFIX), Croatia (CROBEX), Czechia (PX), Denmark (OMX) Finland (OMX), France (CAC, SBF), Germany (DAX, MDAX, SDAX, TecDAX), Greece (Athex), Hungary (BUX, BUMIX), Italy (FTSE, MIBTel), Netherlands (AEX, AMX, AScX), Poland (WIG), Portugal (PSI), Romania (BET), Russia (MICEX, RTS), Serbia (BELEX), Spain (IBEX), Sweden (OMX), Switzerland (SMI), Ukraine (PFTS), United Kingdom (FT, FTSE). Some examples of industry indices are: Amex Oil, PHLX Semiconductor, TecDax Price, CBV Real Estate. The mean variance analysis of such indexes, also called portfolio, is a mathematical framework used to calculate the expected return of some investment, maximized for a given level of risk. The general idea is that of diversification in investing, stating that owning different kinds of financial assets is less risky than owning only one type. With this respect, the two primary criteria of a stock index are: investable and transparent. The larger extent of an index, the lower is the risk. The higher the transparency, the lower is the risk. Investors can invest in a stock market index by buying an index fund that may be a mutual fund or an exchange traded fund. A mutual fund pools money from many investors, while an exchange traded fund pools stock exchanges in bonds, currencies, futures contracts, commodities, gold bars. The active risk of an investment, also called "tracking error" is the risk due to active management decisions made by the portfolio manager, measured as standard deviation between his portfolio and the index returns. It is assumed that most investors are risk averse and will prefer indexes with minimal variation. An investor who wants higher expected returns must accept more risk and eventual more losses. The risk free asset is the hypothetical asset that pays a risk free rate. In practice, short term government securities, such as treasury bills are used as risk free assets, because they pay a fixed rate of interest.

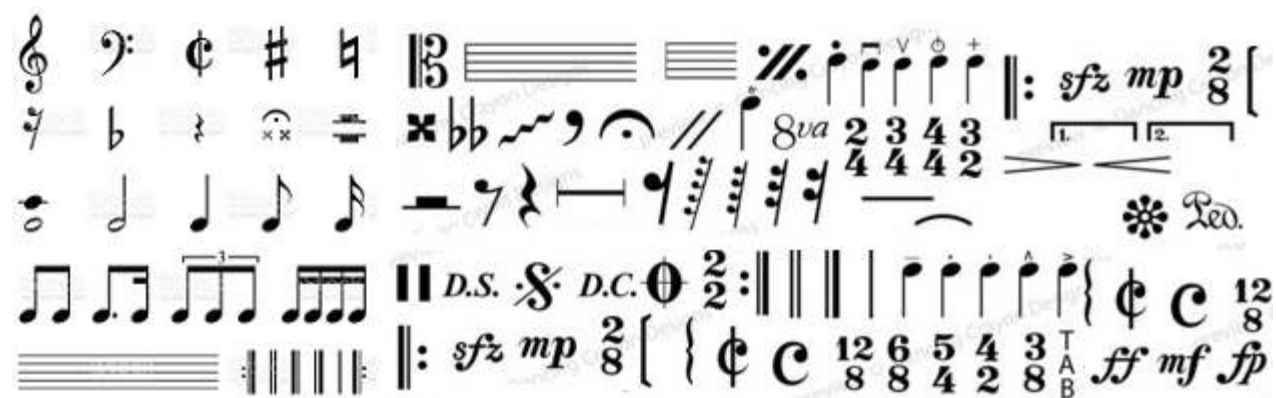


For centuries, wooden or stone milestones were used to indicate distances in both directions from one point. With the introduction of autovehicles the volumes of traffic increased and many other pictorial signs were adopted to inform the traveler regardless of language barriers and to enhance traffic safety. Such signs use symbols in place of words, usually based on international protocols. The first traffic signs were invented in Europe in the 1930s. For the European Union the current convention was adopted in 1968 at the Vienna Convention on Road Signs and Signals, with re-implementations in 1978, and on 30 June 2004, for the 52 signatory countries. The European convention defines eight categories of signs: A. Danger warning signs (equilateral triangle shape with a red or black border, or diamond shaped with a white or yellow background)

B. Priority signs (traffic signs - triangle with a red border, stop signs - eight sided with lettering, priority roads - white and yellow diamond shaped) C. Prohibitory or restrictive signs (circular in shape, with a white, yellow or blue background) D. Mandatory signs (circular in shape with blue or white background and a red border for the white ones) E. Special regulation signs (rectangular shape with a blue or light background color and varying text colors) F. Information, facilities or service signs (blue or green with no specified border color) G. Direction, position or indication signs (rectangular in shape in vary color of text) H. Additional panels (variable in color and shape). In the United States traffic signs and pavement markings are legally defined by the Federal Highway Administration. USA, Canada, Ireland, Australia and New Zealand share the following categories of signs: 1. Regulatory signs (white circle with red border, blue circle or rectangle with a white border, red rectangle with a white border, red octagon with a white border) 2. Warning signs (equilateral triangle with a red border, diamond shape, or various other) 3. Guide signs (street name, route marker, expressway, freeway, welcome signs, informational signs) 4. Emergency management signs (identification, ranking, responding to risks, tolerating, treating, transferring, terminating, reaction planning, reporting risk performance, risk management) 5. Temporary traffic control signs (work zone) 6. School signs 7. Railroad and light rail signs 8. Bicycle signs. New generations of traffic signs are based on electronic display that can change their text or symbols to provide intelligent control linked to automated traffic sensors. In present times modern cars are beginning to feature cameras with automatic sign recognition and automatic response. In the future it is expected that automatic machines will rule the traffic, with most of the traffic signs invisible or incomprehensible for human eye.

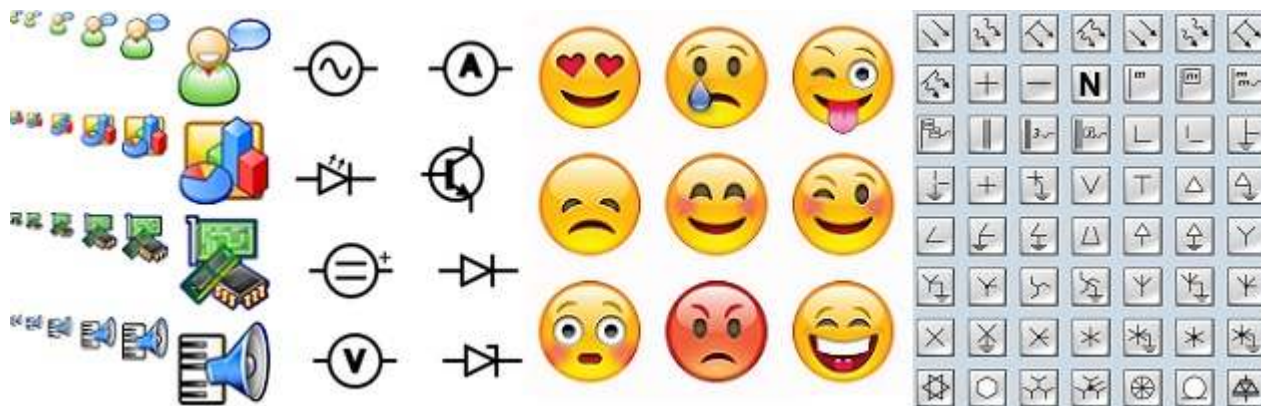


Musical symbols are marks and signs in musical notation that indicate various aspects of how a piece of music is to be performed. Musical symbols contain information about musical elements such as: pitch, duration, dynamics, articulation of musical notes, tempo, metre, rhythm, melody, harmony, repetition, variation, musical form (sectional, strophic, potpourri, binary, ternary, rondo, variational, sonata, cyclical), section names (introduction, verse, refrain, pre-chorus, chorus, post-chorus, bridge, solo, collision). The musical symbols may be: 1. Lines (five line staff, ledger, bar line, double bar line, bold double bar line, dotted, bracket, brace) 2. Clefs (G clef - treble, C clef - alto, F clef - bass, Octave clef, Neutral clef) 3. Rhythmic note values (Large - octuple whole note, Long - quadruple whole note, Breve - double whole note, Semibreve - whole note, Minim - half note, Crotchet - quarter note, Quaver - eighth note, Semiquaver - sixteenth note, Demisemiquaver - thirty-second note, 1/64, 1/128, 1/256, Beamed notes, Dotted note, Ghost note, Multi-measure rest), 4. Breaks (Breath mark, Caesura) 5. Accidentals (Flat, Sharp, Natural, Double flat, Double sharp, Key signatures, Demifalt, Flat and a half, Demisharp, Sharp and a half, Harmonic flat) 6. Time signatures (simple, compound, common time, alla breve, metronome mark) 7. Note relationships (Tie, Slur, Glissando, Tuplet, Chord, Arpeggiated chord) 8. Dynamics (Pianississimo, Pianissimo, Piano, Mezzo Piano, Mezzo forte, Forte, Fortissimo, Fortississimo, Sforzando, Fortepiano, Crescendo, Diminuendo, Niente) 9. Articulation marks (Staccato, Staccatissimo, Tenuto, Fermata, Accent, Marcato) 10. Ornaments (Trill, Upper mordent, Lower mordent, Gruppetto, Appoggiatura, Acciaccatura) 11. Octave signs (Ottava, Quindicesima) 12. Repetition and Codas (Tremolo, Repeat, Simile, Volta brackets, Da capo, Dal segno, Segno, Coda) 13. Instrument specific notation A. Bowed string instruments (Left hand pizzicato, Snap pizzicato, Natural harmonic, Up bow, Down bow) B. Guitar fingerpicking (thumb, index, middle, ring, little) C. Piano marks (Engage pedal, Release pedal, Variable pedal, Una corda, Tre corda) D. Harp (Far left mallet, Middle left mallet, Inner left mallet, Inner right mallet, Middle right mallet, Far right mallet). Musical symbols can also be written on an electronic device using a Unicode block, ranging from U+1D100 to U+1D1FF. Fonts that support the Unicode block for musical notation are: Bravura, Euterpe, FreeSerif, Musica and Symbola. There is also a shorthand form of musical notation for computers, called the "ABC notation", that uses the letter notation with A-G for notes and Z for rests. The best known format using this notation is MIDI, but there are many other software packages with the ability to read the ABC notation. The most recent standard for ABC was released on 21 December 2011.



The most abundant symbols used in modern life are related to computer and smart phone screens, where some pictograms called "icons" are used to simplify navigation from one application to another. Icons must be quickly comprehensible, like a traffic sign, granting access to a software tool, a mathematical function or a data file. Icons can serve as an electronic hyperlink (reference) or a file shortcut (handle) used to access a program or a data. The user can activate an icon using a mouse, pointer, finger or a voice command. Their placement on the screen, in relation to other icons, may provide further information about their usage or hierarchy. In most cases, in a computer system icons are part of the graphical user interface, in conjunction with a pointing device (mouse or finger) to grant access to windows and menus. The design of all computer icons is constricted by limitations produced by the display device. They are limited in size, with the standard

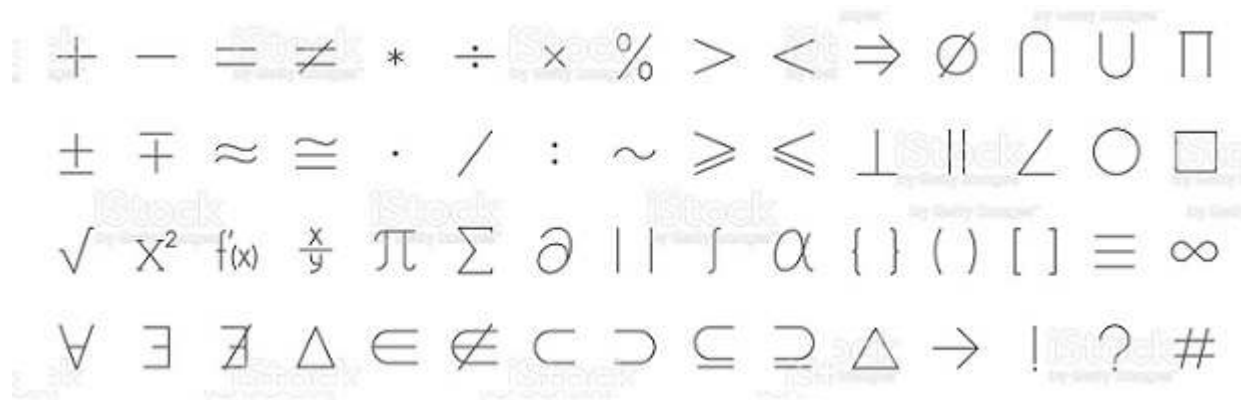
size about a thumbnail. The colors used for both image and background should stand out against the background of different software systems, and among each other. The detailing needs to be simple, recognizable in varying graphical resolutions and screen sizes. Computer icons must be language independent, not relying on letters or words to convey their meaning. The standardization of electronic symbols is an important safety feature on all types of electronics. Common examples are the power symbol and the USB icon, found on a wide variety of electronic devices. Hardware icons identify a functionality or a specific button, while system warning icons are used very much like traffic signs, to regulate navigation. For example, the Microsoft MSDN is the standard icon in use of error, warning, information or question mark. Different organizations are actively involved in standardizing these icons, as well as providing guidelines for the creation and use of the new ones. For example, the International Electrotechnical Commission (IEC) has defined "Graphical symbols for the use on equipment" published as IEC 417, a document which displays IEC standardized icons. Beside the computer icons designed for the general use, there are subgroups of icons designed for a specific use. For example, the Desktop icons designed for the office space in a desktop environment includes sets of icons used for organizing files, folders, recycle bins, inbox and correspondence. Another subgroup includes computer icons related to the brand identity of software programs, using the same logos to represent the company and the product itself. To regulate the use of this type of icons, they are trademark registered and are considered part of the company intellectual property. On some computer systems, such as Windows, on an icon which represents an object (e.g. a file) a smaller secondary icon may be added to indicate the current status of the object (e.g. read only), usually positioned in one of its corners. Another subgroup of icons, called "emoticons" use a simplified pictogram of a human face to symbolize the emotional context of some message. In adding an emotional overlay to the text, emoticons have enabled electronic messages to substitute the voice-to-voice messaging in human interaction. Numerous creation tools for icons are to be found on the Internet, ranging from professional tools to stand alone freeware. Some examples are: Axialis IconWorkshop, IcoFX, IconBuilder, Microangelo Toolset, Greenfish icon editor, ImageMagick, IrfanView, ResEdit.



Mathematical notation is a writing system used for recording concepts in mathematics. A mathematical expression is a sequence of symbols that can be evaluated. A mathematical symbol is a figure, or a combination of figures used to represent a mathematical object, an action on such an object, relation between mathematical objects, or for structuring the other symbols that may occur in a mathematical formula. The most basic symbols are the decimal digits and the letters of the Latin alphabet, used for representing numbers. Historically, upper case letters were used for representing points in geometry, while lower-case letters were used for variables and constants. In modern mathematics, letters are used for a large variety of mathematical objects and letters from the Greek and Hebrew alphabets are also in use. Since the letters alone are not sufficient for the extensive need of mathematicians, many other symbols are in use, including punctuation marks, diacritics and deformed letter forms. There is no natural order of symbols. Many symbols are used in different parts of mathematics with different meanings, completely unrelated. Still, some symbols are encountered in most mathematical texts and are supposed to be known even by beginners. In most of the printed papers, mathematical symbols are displayed in one of the two common formats: Unicode or LaTeX.

With the Unicode version the use of search engines and copy-pasting are easier, while LaTeX renders a more aesthetic aspect in formulas. In order to be more comprehensible, mathematical symbols may be organized in subgroups, according with their use in different fields of mathematics. Such an arbitrary grouping may include:

1. Arithmetic operators (addition, subtraction, multiplication, division, square root, exponentiation)
2. Equality, equivalence and similarity operators (equality, inequality, equivalence, identity, isomorphism, congruence, proportionality)
3. Comparison operators (less than, greater than, less than or equal to, greater than or equal to, much less than, much greater than)
4. Set operators (empty, pound sign, set membership, not in set, set inclusion, subset, union of sets, intersection of sets, difference of sets, symmetric difference, set complement, cartesian product of two sets)
5. Logic operators (false, true, negation, logical or, logical and, exclusive or, given any, there exists, uniqueness, material conditional, equivalence)
6. Symbols for number systems (natural, integers, rational, prime numbers, real, complex)
7. Calculus operators (derivative, second derivative, antiderivative, complex conjugate, logical implication, vector, vector differential, vector gradient, integral, surface integral)
8. Symbols for linear and multilinear algebra (sum, infinite product, internal direct sum, tensor product, transpose, orthogonal complement)
9. Group theory symbols (direct product, semidirect product, wreath product)
10. Infinite numbers symbols (infinity, cardinality, ordinal, cardinal of the continuum, limit ordinal)
11. Brackets (parentheses, square brackets, braces)
12. Miscellaneous (QED, therefore, because, such that, proportional to, factorial, divisibility, non-divisibility, parallelism, product of power series).



Similar to mathematics, the computer science makes extensive use of symbols to produce symbolic languages, in order to represent concepts, entities or data. An early example is the Lisp programming language, originally specified in 1958 as a high-level programming language that pioneered many ideas in computer science, such as: tree data structures, automatic storage, dynamic typing, conditionals, high-order functions, recursion, self-hosting compiler, read-evaluate-print loop. The name Lisp is derived from List Processor, since both its source code and the data structures are organised as linked lists, a major step forward in the programming science. All the source code is written as symbolic expressions, ordered in pairs, to form a binary tree structure. With circular references, expressions may also be ordered to form cyclic graphs. With further development of new programming languages, standard documents were needed for every language specification. ALGOL 68 was the first major language for which a full formal definition was made before it was implemented. A language specification must include an explicit definition of the syntax and semantics of the language. For the earliest computer languages their semantics was described in natural language, in the form of a reference manual, including an explanation for every symbol in use. Some manuals runned to hundreds of pages (e.g. The Java Language Specification). In order to reduce ambiguous interpretations, modern languages use formal languages when presenting the standard implementation, and automatic tool support for each expression in the source code. Thousands of different programming languages have been created, and more are created every year, but only a few meet a world-wide acception. Computer programs range from tiny scripts written by individuals to huge systems written by hundred of professional programmers. There is no need for someone to know or understand all the symbols used in computer programming, but it is important to understand the importance of standardization in using them. In learning

programming languages it is important to follow the historical development of concepts and languages, with newer developments added to a former basic training. There is no guide-line in learning programming, but learning the sequence of the following languages surely may help: FORTRAN (1954), LISP (1958), COBOL (1959), CPL (1963), BASIC (1964), PASCAL (1970), C (1972), SQL (1978), dBase (1979), C++ (1980), FoxPro (1984), PERL (1987), Visual Basic (1991), Java (1995), Delphi (1995), C# (2001). A short version of programming languages consist of scripting languages, represented by short fragments of code that automates the execution of tasks otherwise performed by a human operator. A short list of scripting languages may include: Bash, PowerShell, REXX, Perl, Python, Tcl, Java Script, Kotlin, Visual Basic. Machine readable visual codes can also be represented not in words and numbers but in a visual, graphical form. One or two dimensional barcodes are now in common use for commercial operators to automatically read and write product information, in a form incomprehensible to the human eye. With high resolution optical readers, a word can be encoded by the use of 8-16 pixels (or 3-4 coloured pixels), while a whole dictionary may be encoded in a screen sized picture. For the computer generated symbolic languages, only "the sky is the limit". In a similar fashion to mathematics, there are sets of specific symbols in any scientific field: physics, chemistry, biology, medicine ... etc.

```

2 let meetups = [
3   {name:'JavaScript', isActive:true, members:700},
4   {name:'Angular', isActive:true, members:900},
5   {name:'Node', isActive:false, members:600},
6   {name:'React', isActive:true, members:500}
7 ];
8 let sumFPChain = meetups.filter((m)=>{
9   return m.isActive;
10  })
11 .map((m)=>{
12   return m.members- (0.1*m.members);

```



The national flag is a flag that represents and symbolizes a given nation. It is flown by the government, but usually can be flown by its citizens on special occasions. Typically, there are special meanings for its colours and symbols. The art and practice of designing flags is known as vexillography, while the study of the history, symbolism and usage of flags is known as vexillology. Historically, flags originated as military standards, used in battle to show the difference between friend and foe, combatant or civilian. The practice of indicating a country of origin became common with the maritime flag. For example, the national flag of Denmark is based on a flag in continuous use since the 14th century. During the age of sail, the Union Flag of Great Britain found its origin on 1606, when King James VI of Scotland inherited both the English and Irish thrones. The United States flag was adopted as a naval ensign in 1777, and began to be displayed as a national symbol after the American Revolution, in the 1790s. Most countries of Europe standardised and codified the designs of their maritime flags as national flags in the course of the 19th century. For example, the Ottoman flag was adopted in 1844, while the flag of Switzerland was introduced in 1889, based on a medieval flag. The French flag, and the flags of some other countries, selected three colours to express their revolutionary principles: liberty, equality, fraternity. Currently there are 193 national flags in the world, flown by sovereign states, members of the United Nations. The national flag is usually mentioned in the country's constitution or in a monarchic decree. There are three distinct types of national flags, for the use on land, and three types for the use at sea (civil flag, state flag and war flag), but in practice, many countries have identical flags for these three purposes. Frequently, swallow-tailed flags are used as war flags. There is a protocol involved in the proper display of a national flag: it should be flown in a position of honour, not inferior to any other flag, at the same size with other national flags, at the top of a separate flagpole. When a national flag is flown upside down it indicates distress. Most national flags are rectangular, or have a rectangular common variant (with the exception of Nepal). All national flags consist of at least two colours, presented in either horizontal or vertical

bands. Most flags also feature emblems, such as coat of arms, with various designs. The most popular colours are: red (155), white (144), blue (112), yellow (102), green (97) and black (69). Although the national flag is meant to be a unique symbol for a country, many pairs of countries have very similar flags, only differing in the tint of one colour: Monaco and Indonesia, Netherlands and Luxembourg, Romania and Chad, Ireland and Ivory Coast, Mali and Guinea. Some of the similarities are rooted in shared histories. Examples: Colombia with Ecuador and Venezuela, Romania with Moldavia, Kuwait with Jordan, or Iceland with Denmark, Norway, Sweden and Finland. The International Federation of Vexillological Associations is a federation of 51 regional, national and multinational associations and institutions across the globe that study vexillology. The flag terminology used to describe the parts, patterns and attributes includes a glossary with tens of specialized terms.



Dictionary

acheiropoieta - also called icons made without hands, are Christian icons said to have come into existence miraculously. The most notable example is the Mandylion of Edessa, with the face of Jesus.

acrophony - is the naming of letters in an alphabetic writing system, so that a letter's name begins with the letter itself. For example, in the phoenician alphabet: alpha - from alp = ox and beta form bet = house.

albedo - is the measure of the diffuse reflexion of solar radiation, out of the total solar radiation. It is measured on a scale from 0 (black body) to 1 (perfect mirror)

altar - a sacred table on which the sacrifice of the Mass is offered to God, the table from which the faithful receive the Blessed Sacrament

amvon - the pulpit from which the readings are proclaimed

Amun-Ra - the Sun God, the creator of life, the primordial deity of Egypt, identified with Zeus

angular diameter - or angular size, is an angular distance describing how large a sphere or a circle appears from a given point of view. In astronomy it is measured in arcseconds. One arcsecond results from: 1 cm circle at 2.6 km, a 725.27 Km circle at 1 astronomical unit (distance from Earth to Sun) or a circle of 45 866 916 km at 1 light-year

anomalistic period - is the time that elapses between two passages of an object at its periapsis (perihelion), the point of its closest approach to the attracting body

antae - is an architectural term describing the posts or pillars on either side of a doorway

aphelion or apogee - it the farthest point of a body's orbit around the Sun

apostle - in its most literal sense is an emissary. The term derives from the New Testament and was used for Jesus's original Twelve Apstles.

apparent magnitude - is a measure of the brightness of a star or astronomical object observed from Earth. It depends on its intrinsic luminosity, distance from Earth and extinction of its light. The scale is reverse logarithmic, from 10 to -1. the brighter the object is the lower its magnitude number

apside - is one of the extreme points in the orbit of a planetary body, or the distance in between the extreme points of an orbit

archetype - is a pattern of behavior or a collectively inherited unconscious idea, that is universally present, or is a motif in literature, painting or mythology

argument of perigee - symbolized as " ω ", it is one of the orbital elements of an orbiting body, it is the angle from the ascending node to the perigee (perihelion).

armillary sphere - is a model of objects in the sky consisting of spherical framework of rings, centered on Earth or Sun

ascending node - the point where an orbit intersects a plane of reference to which it is inclined, ascending

aspergillum - a liturgical implement used to sprinkle holy water

aspersorium - a silver bucket used to carry holy water for sprinkling

astrolabe - is an ancient astronomical instrument that was a handheld model of the Universe, including an inclinometer and an analogue calculation device

augmentation of honor - an addition to a coat of arms, typically given by a monarch as a favor, a reward, or a recognition for some meritorious act (an extra-symbol added)

axial tilt - or obliquity, is the angle between an object's rotational axis and its orbital axis

bandhu (Bandhana) - the Sanskrit word for friend or connections, that according to Vedic texts links the outer and the inner worlds

barycenter - is the center of mass of two or more bodies that orbit one another, the point about which the bodies orbit

berat - a document issued to a tax farmer in the Ottoman Empire called a malikaneci

blueshift - or negative redshift, is a decrease in the wavelength of electromagnetic radiation, corresponding to an increase in frequency and photon energy

boustrophedon - is a style of writing in which alternate lines of writing are reversed, with reversed letters (bous = ox, strophe = turn, don=manner). It was a common way of writing in stone in Ancient Greece

brand - is a name, term, design, symbol or any other feature that identifies goods or services

cabochon - is a gemstone that has been shaped and polished as opposed to faceted resulting in a rounded obverse and a flat reverse

cadency marks - in heraldry is a systematic way to distinguish arms displayed by descendants of the holder of a coat of arms

canting arms - are heraldic bearings that represent the bearer's name in a visual pun or rebus. Example: a bow quartered with a lion, for the name Bowes-Lyon

carroccio - a large four wheeled wagon bearing the city signs, around which the militia of the medieval communes gathered and fought

charbagh - is a Persian or Indo-Persian quadrilateral garden layout based on the four gardens of Paradise mentioned in the Quran, divided by walkways or flowing water into four smaller parts.

chasuble - is the outermost liturgical vestment worn by clergy for the celebration of the Eucharist

ciborium - a golden vessel with a lid used for distribution of Hosts

cornucopia - or the horn of plenty, was a symbol of abundance and nourishment, commonly a large horn-shaped container overflowing with produce, flowers or nuts

culmination - in observational astronomy is the transit of a celestial object across the local meridian, also known as meridian transit

cuneiform script - writing system using wedge shaped lines

declination - is the angle of a point measured North or South of the celestial equator along the hour circle (meridian)

diacritic - is a glyph added to a letter or to a basic glyph to result in a special value

diwan - is a collection of poems by one author, frequently sung or set to music

draconitic period - is the time that elapses between two passages of the object through its ascending node, that is the point on its orbit where it crosses the ecliptic from the Southern to the Northern hemisphere

ecliptic - is the plane of Earth's orbit around the Sun. Because the Earth's axis is inclined by 23.4 degrees the ecliptic crosses the Earth's equator plane only in two points, known as equinoxes.

emblem - is an abstract or representational pictorial image that represents a concept (a moral truth, an allegory) or a special person (a king, a saint), a family, a county or a country. An emblem is often a pattern used to represent an idea, a relationship amongst people, a specific characteristic of someone or something.

Epitaphios - a large embroidered cloth bearing an image of the dead body of Christ, often accompanied by his mother and other figures

escape velocity - is the minimum speed needed for a free, non-propelled object, to escape from the gravitational influence of a planet or celestial body (ignoring atmospheric friction)

Eucharist - is a Christian rite, considered a sacrament, instituted by Jesus Christ, of giving bread and wine

excentricity - is a dimensionless parameter, with values between 0 and 1, that determines the amount by which the orbit of an astronomical object deviates from a perfect circle

fresco - is a technique of mural painting executed upon a freshly laid lime plaster into which the pigments sink.

galero - is a red broad brimmed hat with tasselled strings, restricted to use by individual Cardinals

geocentric model - in astronomy is a description of the Universe with Earth at the center

geomancy - is the method of divination that interprets marking on the ground or the patterns formed by tossed handfuls of soil, rocks or sand.

gheisha - is a Japanese performing artist trained in traditional Japanese art styles, such as dance, music and singing, as well as being proficient in conversation

gonfalon (confalone) - is a type of heraldic flag, or banner, often pointed, swallow tailed or with several streamers, suspended from a crossbar in an identical manner to ancient Roman vexillum

haruspex - a person trained to inspect the entrails of sacrificed animals, especially the liver, for the reading of omens (in Ancient Rome)

hass - was an imperial desmene in the Ottoman administrative classification of land, with an annual revenue greater than 100 000 akces

heliacal rising - of a star occurs annually when it first becomes visible above the eastern horizon at dawn, just before sunrise, thus becoming the morning star.

herald - an official employed to oversee state ceremonial, precedence and use of armorial bearings, to make proclamations, carry official messages and oversee tournaments

hyperlink - or simply link, is a reference (pointer) to data that the user can follow by clicking or tapping

hypocycloid - is a special plane curve generated by the trace of a fixed point on a small circle that rolls within a large circle

hypostyle hall - is an opened hall with a roof supported by numerous columns, one of the two main types in mosque construction

hypotrochoid - is a curve traced by a point attached in exterior to an axis of a circle that rolls inside a larger circle

horoscope - or natal chart is an astrological diagram, representing the positions of the Sun, Moon and planets, together with their angles, at the time of an event

iconoclasm - is a period in the history of the Byzantine Empire of the 8th century, when the use of religious images was opposed by religious and imperial authorities

icon - is a religious work, most commonly a painting, sacred images used in religious devotion. The most common subjects include Christ, Mary, saints and angels.

iconography - is a branch of art history concerning the identification, description and interpretation of the content of images

iconology - is a method of interpretation that uncovers the cultural, social and historical themes present in visual arts

iconostasis - a wall of icons separating the nave of a church from the sanctuary

ikebana - is the Japanese art of flower arrangement, also interpreted as the language of flowers, wherein plants are given specific code meanings, based on colours, thorns and other factors

inherent vowel - is part of an alphasyllabary script as the vowel sound which is used with each unmarked or basic consonant symbol

jansky - is a non-SI unit of spectral flux density, or spectra irradiance, used in radio astronomy

keys of Saint Peter - keys of Heavens

khorugv - is a religious banner used liturgically in the Eastern Orthodox Church

koi - is a variety of colored Amur carp (*Cyprinus rubrofasciatus*) kept for decorative purposes in outdoor ponds or water gardens. In Japan, koi is a symbol of luck, prosperity and good fortune, closely associated with national identity.

lambrequin - is a drapery tied to the helmet above the shield, sometimes used to complement the coat of arms

Latin Cross - or crux immissa is a type of cross in which the vertical beam sticks above the crossbeam, with the three upper arms equally long

libation - a ritual of pouring a liquid, or grains, on a deity altar, in memory of the dead

Linear A and Linear B - ancient writing systems using lines to form phonetic signs and ideograms

logo - is a graphic mark, emblem or symbol used to aid and promote public identification and recognition of a trademark or brand

logogram - the graphic symbol is used to represent a word

logography - the use of logograms for writing

logographic system - is a writing system based on pictographs (logographs) used to represent every word in the language. Chinese hanzi, Japanese kanji, Korean Hanja and Vietnamese hantu are modern examples.

longitude of the ascending node - it is the angle from the prime meridian to the direction of the ascending node as measured in a specified reference plane

lozenge - in heraldry is a diamond-shaped charge. A lozenge shaped escutcheon is used to depict a female, especially an unmarried woman, but also for mural monuments which commemorate females

mantra - is a sacred utterance, a numinous sound, a syllable, word or phoneme believed by practitioners to have religious, magical or spiritual powers

martlet - in English heraldry it is a mythical bird, without feet, which never roosts from the moment of its drop-birth until its death fall, a symbol for continuous effort

moment of inertia factor - in planetary sciences it is a dimensionless quantity that characterizes the radial distribution of mass inside a planet or satellite

monogram - is a motif made by overlapping or combining two or more letters or other graphemes to form one symbol

mushaf - is the Arabic word for codex, used for collections of sheets or a copy of Quran

nadir - is the point on the celestial sphere directly below an observer, and in direct opposition to zenith

nave - the main body of the church where the congregation gather

nirvana - is a concept in Buddhism, Jainism and Sikhism that represents the ultimate state of final salvation, the liberation from pain and unhappiness

omen - is a phenomenon or an object believed to foretell the future or to carry a message from the gods

oracle bone script - ancestor of Chinese characters engraved on animal bones, used for pyromantic divination

orbital inclination - is the tilt of an object's orbit from the equatorial plane, or the angle between its orbital plane and a reference plane

orbital period - is the time a given astronomical object takes to complete one orbit around another object

orbital speed - is the speed at which an object orbits around the barycenter or the center of mass

ostensorium - or monstrance, is a vessel used in Roman Catholic churches for the more convenient exhibition of some objects of piety, such as the Eucharistic host. It is also used as reliquary for the display of relics of some saints.

padrao - is a stone pillar, surmounted by a cross and the royal coat of arms, left by Portuguese maritime explorers to record significant landfalls, often placed on promontories and capes or at the mouths of major rivers.

parallax - is the difference in the apparent position of an object viewed along two different lines of sight, expressed as the angle or the semi-angle of inclination between those two lines. Nearby objects show a larger parallax than farther objects.

pekarangan - is a type of tropical home garden developed in Indonesia, containing plants and animals to yield food for subsistence

perihelion or perigee - is the nearest point to the Sun on the orbit of a planet or comet

peristerium - also known as Eucharistic dove, is a metallic vessel in the shape of a dove, used to keep consecrated hosts for Eucharist

phoneme - a unit of sound than can distinguish one word from another in a particular language

pyromancy - is the art of divination by means of fire.

pyx - a small, closing golden vessel used to bring the Blessed Sacrament to those who cannot come to the church

quibla - is the direction towards Kaaba, the Sacred Mosque in Mecca, used by muslims when they pray to enter the communion with the whole Islam world

redshift - is an increase in the wavelength corresponding to a decrease in frequency and photon energy of electromagnetic radiation (such as light)

rhyton - a conical container from which fluids are to be drunk at table, or poured in some ceremony, such as libation

right ascension - is the angular distance of a particular point measured Eastward along the celestial equator from the Sun at the March equinox to the point in question above the Earth. It is the celestial equivalent of terrestrial longitude for a point on the celestial equator as seen from the terrestrial equator.

saltire - an X shaped cross also known as the cros of Saint Andrew

sacristy - the room where the sacred vestments, vessels and other items used in the celebration of liturgy are stored and prepared

sanctuary - the elevated portion of the church where the clergy and other ministers perform proper functions in the worship of God, the symbol of heaven

secco - is a wall painting techniques where pigments are mixed with an organic binder (egg, glue, oil) and lime, than applied onto a dry plaster.

semi-major axis - is the longest semi-diameter or one half of the major axis of an ellipse

sepulchre - is a tomb, a repository for the remains of the dead, a burial chamber.

sextant - is an instrument that measures the angular distance between two visible objects, such as the angle between an astronomical object and the horizon, for the purpose of celestial navigation

shortcut - in computing, a file shortcut is a handle (abstract reference) in a user interface that allows the user to find a file or a resource located in a different directory or folder.

sideral period - is the amount of time that takes an object to make a full orbit around it's star

sinopia - is a dark reddish brown natural earth pigment resulted from hematite, an iron oxide. It was named after the Turkish city of Sinope.

sutra - is an Indian aphorism or a collection of aphorisms in the form of a manual or a condensed text

sycee - is a type of gold and silver ingot used in Imperial China, starting with the 3rd century AD

symbol - a mark, a sign or a word, that indicates, signifies, or is understand as representing an idea, an object or a relationship. Symbols may take form of words, sounds, gestures, ideas, or visual images, and are used to describe something.

synodic period - is the amount of time that it takes for an object to reappear at the same point in relation to two or more other objects

szlachta - were the noble estate of the realm in the Kingdom pf Poland and Grand Duchy of Lithuania

tabard - a surcoat weared by a herald, decorated with the coat of arms of his master

tabernacle - or sacrament house, is a fixed, locked box in which the Eucharist is stored

tamga - an abstract seal or stamp used by Turko-Mongolian leaders, an emblem of a particular tribe, clan or family.

tartan - is a patterned cloth consisting of criss-crossed, horizontal and vertical bands in multiple colours, in woven wool, particularly associated with Scotland, as Scottish kilts (man shirt).

Tau cross - is a T shaped cross, representing an execution cross

thurible - an object used in nthe church for carrying and burning incense

timar - was land granted by the ottoman sultans with an annual tax revenue less than 20 000 akces

topiary - the art or practice of clipping shrubs or trees into ornamental shapes, also shrubs or trees clipped into ornamental shapes

torii - is a traditional Japanese gate, commonly found at the entrance of a Shinto shrine, symbolically marking the transition from the mundane space to the sacred

trademark - a type of intellectual property consisting of a sign, design or expression which identifies products or services

tropical period - is the interval between two alignments of its rotational axis with the Sun, also viewed as two passages of the object at a right ascension of 0 hours

tughra - is a calligraphic monogram, seal or signature of a sultan that was affixed to all official documents and correspondence

Uraeus - is a stylized, upright rearing cobra, a symbol of sovereignty, royalty, deity and divine authority. It is also the symbol of the serpent goddess, the patroness of the Nile Delta and Lower Egypt. The pharaohs wore the uraeus as a head ornament to reinforce his claim over the land. It also the simplest hieroglyph (a snake).

zeamet - was land granted by the Ottoman Sultans with an annual revenue between 20 000 and 100 000 akces, offered as compensation for military services

zenith - the point of the celestial sphere that is vertically above the observer, and directly opposite to nadir

Selective bibliography:

- | | |
|---------------------------|--|
| Adrian Frutiger | Signs and Symbols Their design and Meaning |
| Emma Baysal | Personal Ornaments in Prehistory |
| James Devitt | Neolithic Jewelry Splits Farmers from Hunters |
| Roberto Micheli | Raw Materials, Personal Ornaments and Neolithic Groups |
| Nomination Document | Gobekli Tepe Nomination for Inclusion on the World Heritage List |
| V.Ozkaya, A. Coskun | Kortik Tepe a new Pre-Pottery Neolithic Site |
| Rundle Clark | Myth and Symbol in Ancient Egypt |
| Daphna Ben-Tor | The Immortals of Ancient Egypt |
| Damien Finch et al. | Ages for Australia's oldest rock paintings |
| Kevin Gibbs | Late Neolithic Pottery and Ambiguous Symbols in Southern Levant |
| Irina Zhushchikhovskaya | Spiral patterns on the Neolithic pottery of East Asia and Far East |
| Marija Gimbutas | The civilization of the Goddess: the world of Old Europe |
| Hammer Joseph | Ancient Alphabets and Hieroglyphic Characters Explained |
| Allen James | An Introduction to the Language and Culture of Hieroglyphs |
| Mark Collier, Bill Manley | How to Read Egyptian Hieroglyphs: a step-by-step guide |
| Melchert H. Craig | Anatolian Hieroglyphs |
| A. Karnava | The Cretan hieroglyphic script of the second millennium BC |
| Diego de Landa | Yucatan Before and After the Conquest |
| Knozorov Yuri | Ancient Writing of Central America |
| Knozorov Yuri | Machine decipherment of Maya script |
| Brian Stross | Maya Hieroglyphic Writing and Mixe-Zoquean |
| Dieter Arnold | The encyclopaedia of ancient Egyptian architecture |
| Everson Tim | Arms and Armour from the Heroes of Homer |
| Heckel Waldemar | Macedonian Warrior: Alexander's Elite Infantryman |
| Spiedel Michael | Ancient Germanic warriors: warrior styles from Trajan's column |

Treister, Michail Yu	The Role of Metals in Ancient Greek History
Packard David	Minoan Linear A
Chadwick John	The Deciphrement of Linear B
Robinson Andrew	The Story of Writing
John Younger	A Companion to Linear B: Mycenaean Greek Texts and Their World
Walker C.B.F.	Reading The Past Cuneiform
Fischer Steven Roger	A history of writing
Veldhuis, Radner, Robson	The Oxford Handbook of Cuneiform Culture
Jean Jaques Barthelemy	Reflexions sur quelques monuments pheniciens
Shaked Saul	Aramaic
Rajesh P.N. Rao	The Indus Script and Economics.
Iravatham Mahadevan	Indus Script: Concordance and Tables
Keightley David	The Oracle-Bone Incriptions in Bronze Age China
Qui Xigui	Chinese Writing
Xu Yahui	Oracle Bone Inscriptions from the Ruins of Yin
Joanna Then-Obluska	Royal ornaments of late antique African Kingdom, Nubia
Fred W. Burgess	Antique Jewellery and Trinkets
J.J. Lally	Silver and Gold in Ancient China
T. G.H. James	Gold Technology in Ancient Egypt
Sanchari Pal	Maharajas, Myths and Mysteries
Eran Almagor	The Horse and the Lion in Achaemenid Persia
B. F. Cook	Greek inscriptions
Leslie Theatte	The Grammar of Attic inscriptions
Harald Haarmann	Geschichte der Schrift
M. Cebeillac Gervasoni	Epigraphie latine
B. H. Roberts	History of the Church
F. Lanzi, G. Lanzi	Saints and their Symbols. Recognizing Saints in Art and Popular Images
Whittermore Carol	Symbols of the Church
Post W. Ellwood	Saints, Signs and Symbols
Henry Jenner	Christian Symbolism
Gertrud Schiller	Iconography of Christian Art
Gregory Dippio	Icons and Liturgical Objects from the Byzantine and Christian Museum
Ann Buckley, Lisa Colton	Music and Liturgy in Medieval Britain and Ireland
Archbishop Eyre D.D.	The Episcopal Seald of the Anciend Diocese of Glasgow
C. H. Hunter Blair	Medieval Seals of the Bishops of Durham
Fox Davies, Brooke Little	A complete Guide to Heraldry
Martin Jaques	Heraldry in the Vatican
Sandeep Balakrishna	The Fascinating History of Flags in Ancient India
Banister Fletcher	A History of Architecture on the Comparative Method
Assmann Jan	The Search for God in Ancient Egypt
Rao Gopinatha	Elements of Hindu iconography
Ian Barnes	The Historical Atlas of Knights and Castles
Francois Velde	Napoleonic Heraldry
Pere Anselme, D'Hozier's	Armorial de la Generalite de Paris
Arthur Charles Fox-Davies	The Art of Heraldry
Wagner A.	Historic Heraldry of Britain
Burnett, Charles,J, Mark D	Scotland's Heraldic Heritage
Bruce A. McAndrew	Scotland's Historic Heraldry
Neubecker Ottfried	A Guide to Heraldry
Sven Tito Achen	The Modern Civic Heraldry of Finland

Parish of Kizhi	Russian heraldy as it is
Petrauskas Rimvydas	Vytis, the Sign of the Dynasty
Dan Cernovodeanu	Știința și arta heraldică în România
Ioan Puscariu	Familiile Nobile Române
Betsy Dru Tecco	How to draw Hungary's Sights and Symbols
Tamaska de Baranch Endre	The Evolution of the Hungarian Coat of Arms
John Goodall	Heraldry in Italy during the Middle Ages and Renaissance
Slater Stephen	The Complete Book of Heraldry
Al Sosa	Spanish Heraldry
Bruno Heim	Heraldry in the Catholic Church
Nakano Mas	Family Crests-Mon
Thomas Noble	The Foundations of Western Civilization
Marc Bloch	Feudalism
Oliver Creighton	Castles and Landscapes
Cathcart King	The Castle in England and Wales
Gebelin Francois	The chateaux of France
Monreal y Tejada Luis	Medieval Castles in Spain
Selcuk Aksin Somel	The A to Z of the Ottoman Empire
Sedad Hakki Eldem	The Ottoman-Turkish House
Crisp Frank	Medieval Gardens
Arthur Hill	The History and Functions of Botanic Gardens
Nurhan Atasoy	Historical and Historiographical Survey of Ottoman Gardens
Nurhan Atasoy	The Gardens of Istanbul
Che Bing Chiu	Jardins de Chine, ou la quete du paradis
Feng Chaoxiong	The Classical Gardens of Suzhou
Gunter Nitschke	Le Jardin japonais - Angle droit et forme naturelle
Murase Miyeko	L'Art du Japon
Ruggles Fairchild	Islamic Gardens and Landscape
Dar Saifur Rahman	Historical Gardens of Lahore
Robin Winks	World civilization: a brief history
J. Burbank, F. Cooper	Empires in World History
Ogilvie Sheilagh	Institutions and European Trade: Merchant Guilds 1000-1800
Suraiya Faroqhi	Guildsmen and Handicraft Producers
Mehmet Altintas	The World of Ottoman Guilds: The Issue of Monopoly
Christine Moll-Murata	Chinese Guilds from the Seventeenth to the Twentieth Centuries
Cherry, Berenbeim, Beer	Seals and Status: power of objects
Sinasi Acar	Turk Hat Sanati / Turkish calligraphy
Josef Wegner	The Evolution of Ancient Egyptian seals and Sealing Systems
K.D. Bhargava	Indian seals
David Huntley	Old Church Slavonic
C. Waldman, C. Mason	Encyclopedia of European Peoples
Cercignani Fausto	The Elaboration of the Gothic Alphabet and Orthography
F. Fiedl, N. Ott, B. Stein	Typography: An Encyclopedic Survey Through History
Dennis Moter	Fraktur Writings and Folk Art Drawings
E.L. Skip Knox	Carolingian Handwriting
Edward Maunde Thompson	Handbook of Greek and Latin Paleography
J Clark, C Yallop	An Introduction to Phonetics and Phonology
George Alain	The Rise of Islamic Calligraphy
Baxter William	A Handbook of Old Chinese Phonology
Qiu Xigui	Chinese writing

Subhash Kak	The evolution of early writing in India
Iravatham Mahadevan	Early Tamil Epigraphy
Aisin-Gioro Puyi	From Emperor to citizen: the autobiography of Asin-Gioro Pu Yi
Irina Andreevna Bogatskaja	The Kremlin
Ahmet Ertug	Topkapi: The Palace of Felicity
R. Allison, S. Riddel	The Royal Encyclopedia
Nash Roy	Buckingham Palace: The Place and the People
Pierre Velert	Le chateau de Versailles
James Evans	The History and Practice of Ancient Astronomy
Antoine Gautier	L'age d'or de l'astronomie ottomane
Anton Pannekoek	A History of Astronomy
Eric Chaisson, Steve McMillan	Astronomy Today
James Condon	Essential Radio Astronomy
Wolfram Eberhard	A Dictionary of Chinese Symbols
Nicholas Campion	Astrology and Cosmology in the World's Religions
James Herschel Holden	A History of Horoscopic Astrology
Dan Caplinger	What is a Stock Market Index ?
Tom Gerou, Linda Lusk	Essential Dictionary of Music Notation
Anthony Donato	Preparing Music Manuscript
John Chambers	History of ABC music notation
Abdullah, Ryan, Hueber, Roger	Pictograms, Icons and Signs: A Guide to Information Graphics
Florian Cajori	A History of Mathematical Notations
Georges Ifrah	The Universal History of Numbers
Ellis Horowitz	Fundamentals of Programming Languages
Carl A. Gunter	Semantics of Programming Languages
Richard Wexelblat	History of Programming Languages
James Minahan	The Complete Guide to National Symbols and Emblems