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POST SCRIPTUM

Povijest i značenje umijeća pisanja

History and Meaning of the Art of Writing

Zagreb, 2016.

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Introduction

Igor Uranić

Pismo je u civilizacijskome smislu najznačajniji izum čovječanstva, pa je i razumljivo da na temelju njegove pojave dijelimo prapovijest od povijesti. Opće je poznato da je nastanak pisma izravno povezan s nastankom prvih civilizacija i početcima života u naseljima poput gradova Mezopotamije i Egipta, dakle na mjestima na kojima je pojava pismenosti u evoluciji čovječanstva upravo i započela. Znak, pojam i riječ, međutim, bez ikakve sumnje bili su asocijativni već i za ljude kamenoga doba. Značenje pojedinoga simbola već je tada bilo primitivni oblik komunikacije, i to ne bitno različit od onoga kakav poznajemo danas. Crteži spiljskih ljudi i jednostavni znakovi koji se javljaju na njihovim alatkama ne ostavljaju mjesta sumnji da se već tada nešto bilježilo i zapisivalo, ma koliko ti postupci još uvijek bili primitivni i jednostavni. Je li čovjek prvo bilježio svoje misli u na kamenu

Script, in civilisation terms, is the most important invention of mankind. Therefore, it is understandable that the appearance of writing systems creates a divide between prehistory and history. It is also well known that the birth of script is directly linked to the birth of the first civilisations and the beginnings of life in settlements such as the towns of Mesopotamia and Egypt, i.e. in those places where this phenomenon in the evolution of mankind started. Signs, ideas and words, however, were undoubtedly associative even for the Stone Age people. The meaning of a certain symbol was a primitive way of communication even then and not essentially different from the way of communication we know today. The cave paintings and simple marks that appeared on their tools do not leave a shadow of a doubt that something was noted and written, no matter how primitive and simple their procedures still were. Whether the man was recording his thoughts on stone or on

Idol iz Samatovaca, 5000 pr. Kr., AMZ / Idol from Samatovci, 5000 BC, AMZ

ili na kostima, ne znamo točno. Jedan od zabavnih odgovora na to dao je poznati član skupine Monty Pyton, povjesničar Terry Jones, u svojem sjajnom dokumentarcu *The Story of Number One*, ustvrdivši da su bez sumnje ljudi u pretpovijesti pokušali bilježiti neke količine poput plijena, ulovljenih životinja, nadvladanih neprijatelja i slično, crtama na predmetima, te je tako, kaže Jones, neminovno nastao broj jedan koji predstavlja svaka crta urezana na kost, drvo ili kamen. Je li broj jedan uistinu bio prvi znak ili su to bili simboli koji su na idolima kamenog doba označavali pojmove ili imena ranih božanstava vjerojatno nikad nećemo saznati. No pouzdano znamo da je razvoj inteligencije već tada vodio prema pojavi koju nazivamo pisanjem, a čitav proces do onoga što danas jesmo.

Pisanje je stalno mijenjalo svoje medije i tehnike, bilo usavršavano, a pismenost se širila. U posljednjih stotinjak godina (a to je kap u moru vremena uzmemo li u obzir razvoj čovjeka) pismenost je od elitnoga umijeća prešla u masovnu obaveznu sposobnost svih ljudi civiliziranoga svijeta i bez nje više nije moguće djelovati u suvremenom društvu. Konačno, pojavom računala dogodio se skok u pisanju iz pisanja po papiru prema pisanju na računalima, telefonima i pametnim telefonima. U tim je uvjetima u godini 2011. napisano više teksta nego u sveukupnoj povijesti čovječanstva. No, vjerojatno je da svaka nova godina nadilazi spomenutu godinu, a prodaja raznih digitalnih naprava koje, uz ostalo, služe za pisanje postala je jednim od najunosnijih poslova u posljednjih stotinu godina.

Pisanje i čitanje posredstvom papira nije još postalo povijest, ali pisanje rukom postalo je manje praktično i takoreći „neslužbenom metodom", a nove generacije posvećuju mu sve manje pažnje. Time i pojam rukopisa, jedan od glavnih pojmova pisanja, mijenja svoje značenje. Stoga, tekst napisan na računalu postaje „rukopis", u smislu izvornog teksta. U našem dobu pojava pismenosti promijenjena je na takav način da možemo govoriti o njezinoj potpuno novoj dimenziji. Štoviše, promjena je tako duboka da se slobodno može usporediti s prelaskom s piktograma na sustav fonograma, koji su označivali glasove, odnosno s prijelazom od niza asocijativnih slika na jezik sa svim njegovim zakonitostima.

bones, we do not know precisely. One of the entertaining answers to that question was given by a member of the Monty Python group, Terry Jones, a historian himself, in his brilliant documentary *The Story of Number One*. He said that the prehistoric people were undoubtedly trying to record certain quantities of e.g. prey, the number of animals they had caught, the enemies they had overpowered etc. with lines scratched on bones, wood or stone, and hence number one was created. Whether number one was indeed the first symbol or the first symbols were carved on the Stone Age idols representing notions or names of the early gods, we shall probably never know. But we are confident that the development of intelligence was, even then, leading towards to what we today call writing, and the whole process made us who we are today.

Writing has continuously changed its media and techniques, it has been perfected and thus literacy spread. Over the past hundred years or so (which is a drop in the ocean if we think in terms of human evolution) writing transformed from an elite art to the skill compulsory to all people of the civilised world without which it is no longer possible to function in a modern society. Finally, the development of personal computers lead to the leap from writing on paper to writing on a computer, phones and smart phones. In these circumstances more texts were written in 2011 than in the whole of history together. However, it is possible that each following year will surpass the mentioned 2011, and the sales of various digital gadgets which, apart from other purposes, are also used for writing, have become one of the most lucrative businesses in the past one hundred years.

Paper-based reading and writing has not yet become history, but handwriting has become less practical and almost an "informal method", so the new generations pay less and less attention to it. Hence the notion of handwriting, as one of the main ways of writing, has changed its meaning. Therefore, the text written on a computer becomes a "manuscript" in the sense of an original document. In our era the phenomenon of literacy has been changed in such a way that we can speak about its completely new dimension. Moreover, the change is so profound that it can be compared to the shift from the pictographic to phonographic system, where phonemes represent sounds, or the shift from a series of associative images to the language with all its principles.

Drastične promjene događaju se u posljednjih dvadesetak godina. Čini se da neuro-kulturološki sklop ljudskoga uma evoluira u teško zamislivim smjerovima.

Cilj ove izložbe Arheološkoga Muzeja u Zagrebu, koji u svojim zbirkama čuva mnoštvo povijesnih zapisa od starog do srednjeg vijeka, jest povezati razvoj ljudske svijesti kroz spektar razvoja umijeća pisanja na raznim stranama svijeta, te tehnike i metode pisanja. Ona je kratak pogled na nepreglednu tematiku starih pisama i onih koja su još uvijek u uporabi, od egipatskih hijeroglifa, klinastih pisama do pisama Bliskog i Dalekoga istoka i onih čije značenje nismo uspjeli odgonetnuti, pa sve do suvremenog doba i strojnog pisanja. Svako od njih ima svoju priču o nastanku, svoje metode pisanja i svoju estetiku. I svako od njih svjedoči o iznimnim ljudima koji su svoje znanje, ideje, maštu, stihove i povijesna svjedočanstva prenosili drugima, katkad prostorno i vremenski vrlo udaljenim čitateljima. Znamo da današnje poruke s naših uređaja putuju u sekundama internetom u udaljene zakutke planeta Zemlje, no prisjetimo se i onih ljudi koji nam svoje riječi šalju iz faraonskog Egipta, stare Grčke ili drevne Kine i Indije i koje razumijevamo zahvaljujući još uvijek najmoćnijem aparatu kojim ljudi raspolažu – ljudskome umu.

Drastic changes have occurred over the past twenty years. It seems that a non-cultural aspect of a human mind evolves in difficult to imagine directions.

The aim of this exhibition of the Archaeological Museum in Zagreb, which keeps a multitude of historical records from Antiquity to the Middle Ages in its collections, is to associate the development of human consciousness through the spectrum of the development of writing skills in various parts of the world to the techniques and methods of writing. This exhibition is a brief overview of the vast amount of topics written in ancient writing systems and the scripts which are still used, from hieroglyphs, cuneiform to the scripts of the Near East and the Far East, the scripts which have still not been deciphered to modern day writing systems and typing. Each and every one of them has a different story of its origin, its own methods of writing and aesthetics. They all give evidence of the extraordinary people who conveyed their ideas, imagination, verses and historic documentation to others, sometimes to distant readers both in terms of space and time. We know that our messages today travel from our gadgets via the Internet to the remote corners of the planet Earth in seconds. But let us remember the people who sent their words to us from the days of the Pharaohs in Egypt, ancient Greece, China or India and which we can understand owing to the still most powerful apparatus the mankind has – the human mind.

Uspon uma i pismo

Tijekom svoje evolucije čovjek je snagom uma nadilazio svoja fizička i perceptivna ograničenja. Ta sposobnost dovela ga je u položaj najvišeg ostvarenja razgranata drveta života, ako ne i njegova barem privremena vladara. Percepcijom smo smješteni u srednjem svijetu – dakle ne percipiramo bakterije i viruse, niti možemo uočiti razliku u veličini Marsa i Jupitera, jer našoj evoluciji to nije bio prioritet. Međutim, znamo da netko na primjer ima bakterije u tijelu i možemo ih suzbiti antibiotikom, jer raspolažemo mikroskopom i poznavanjem biologije i kemije. Isto tako, astronomija i tehnologija za istraživanje svemira omogućuju nam konkretna saznanja o planetima Sunčeva sustava do te mjere da vrlo jasno razlikujemo pojedine susjedne planete – raspolažemo mnogim podatcima o njihovoj strukturi, gustoći, masi, veličini i pojavama na njihovim površinama. Znatan broj znanstvenih spoznaja nadilazi perceptivnu moć kojom smo obdareni i izgrađen je isključivo na sposobnostima uma. To znači da se čovjek u nekom trenutku svoje evolucije uzdigao iznad opažajnog doživljaja stvarnosti i time postao bitno drugačije biće od svih ostalih na Ze-

Crteži bizona iz Alatamire (18000.-13000. pr. Kr.)
Bison drawings from Altamira (18000 -13000 BC)

The Ascent of the Mind and Writing

Throughout evolution man has surpassed his physical and perceptive limitations. That ability placed him into the position of the highest achievement in the rich and varied tree of life, if not its temporary ruler. Perception places us into the *medial world* - e. i. we can neither perceive bacteria and viruses nor can we tell the difference in size between Mars and Jupiter, because it was not a priority in our evolution. However, we do know that if someone has bacteria in their body we can suppress it with antibiotics as we have the microscope and the knowledge in biology and chemistry. Similarly, astronomy and space technology enable us to acquire factual knowledge about planets of the Solar system to such an extent that we can clearly tell neighbouring planets one from another - we have the abundance of data about their structure, density, mass, size and phenomena on their surfaces. A considerable number of scientific concepts simply exceed the perceptive experience we are endowed with and they are exclusively built on the ability of the mind. It means that man simply rose above the perception of reality at a certain point of his evolution, and thus became an essentially different being from all others on the Earth. It is more than obvious that this step in the evolution is linked to the invention of script not only in time but also causatively.

From approximately one million years of the development of *Homo erectus,* only the last 5 millennia, owing to the advent of script, can be called history, while the time before it seems an extremely long journey of survival and struggle with nature through the long phases we call the Stone Age.

According to the archaeological evidence from various parts of the world, the people lived the same unchanged way of life for hundreds of thousands of years The progress was slow and related to the usage of stone or wooden tools and their shaping, the discovery of fire, the construction of simple houses and the beginnings of making pottery. As it is usually said in documentaries: only the last minute of the whole cosmic day is the minute of our evolution. If we imagine the whole evolution as one day, then the

mlji. Više je nego očito da je taj korak u evoluciji povezan, ne samo vremenski nego i uzročno, s razdobljem javljanja pisma.

Od otprilike milijun godina razvoja *homo erectusa*, tek posljednjih pet milenija, zahvaljujući pojavi pisma, možemo nazvati poviješću, dok vrijeme prije toga čini naizgled beskrajno dug put preživljavanja i borbe s prirodom kroz dugotrajne faze koje nazivamo kamenim dobom.

Prema arheološkoj evidenciji s raznih strana svijeta, stotinama tisuća godina ljudi su živjeli nepromijenjenim načinom života. Napredak je bio spor, a sastojao se u upotrebi kamenih i drvenih oruđa, njihovu oblikovanju, otkriću uporabe vatre, gradnji jednostavnih nastambi, odnosno počecima izrade keramičkog posuđa. Kako se u dokumentarnim filmovima ima običaj reći: tek je posljednja minuta od čitava kozmičkog dana minuta naše evolucije. A ako ljudsku evoluciju zamislimo kao dan, tada je tek posljednja minuta toga dana povijest ljudske civilizacije. Trenutak prevrata iz duge i spore promjene u brzu i naglu. čije ubrzavanje na temelju arheološke evidencije percipiramo kao sve intenzivnije, obilježen je i uzročno povezan s pojavom pisma. Prve tragove ideje pisanja ili bilježenja neke vrste nalazimo u neolitskim kulturama. Crteži u spiljama od Altamire do Gornjeg Egipta, ali i drugih europskih kultura. pojavljuju se kao crteži ljudi i životinja koji pokazuju razvoj imaginacije i sposobnost da se ideje i misli prenesu na neki medij. Kako se motivi transformiraju u simbole, prepoznajemo začetke ideje pisma, odnosno prenošenja ideja pomoću znakova. U tim ranim pojavama možemo govoriti o proto-pismima, sve dok simboli i znakovi ne postanu standardizirani piktogrami.

Egipatski hijeroglifi i sumersko klinasto pismo najstarija su potpuno razvijena pisma prvih civilizacija staroga vijeka. Pretpovijesne kulture Egipta i Mezopotamije jednako sporo su se razvijale desetcima tisuća godina u nomadskom i sjedilačkom načinu života. Naseljavanje je povezano s uzgojem biljaka (osobito žitarica) kojim se moglo računati na relativno siguran izvor hrane, što je uz stalan pristup vodi bio preduvjet nastanjivanja nekog mjesta, u ovom slučaju obala velikih rijeka Nila te Eufrata i Tigrisa. Ti koraci i promjene doveli su do na-

Adorant (Vučedolska kultura 3000. pr. Kr.), AMZ
The worshipper (Vučedol Culture 3000 BC), AMZ

last minute of that day is the history of civilisation. The turning point from the slow to fast and sudden change whose acceleration, according to the archaeological documentation, perceived as more and more intense, is marked by and causatively related to the advent of script. The first traces of the idea of writing, or recording of some kind, can be found in Neolithic cultures. The cave paintings from those in Altamira to those in Upper Egypt and some European cultures, started depicting humans and animals, thus showing the development of imagination and the ability to express ideas and thoughts in other media. As the paintings transformed into symbols we can recognize the beginnings of the idea of writing, or in other words expressing ideas through symbols. We can talk about proto-scripts in those early manifestations until the symbols and signs became standardized pictographs (pictograms).

Egyptian hieroglyphs and Sumerian cuneiform are the oldest completely developed scripts of the first ancient civilisations. Prehistoric cultures of Egypt and Mesopotamia were developing equally slowly for tens of thousands of years in both nomadic and sedentary ways of life. The development of permanent settlements is closely related to growing crops (especially cereals/grains) which provided a relatively reliable source of food, which together with the access to water was a precondition for building permanent settlements, in this case along big rivers such as the Nile, Euphrates and Tigris. These steps and changes prompted the rise of cultures (in the

stanka kultura (u arheološkom smislu te riječi) no ne i do stupnja koji nazivamo civilizacijom. Kako naselja rastu, tako raste i proizvodnja žita i drugih poljodjelskih kultura, te broja životinja koje kontroliraju ljudi. Vjerojatno je da dolazi i do specijalizacije stanovništva prema djelatnostima poput ratničke, poljodjelske, stočarske, lončarske i slično. I upravo to stanje diferencijacije povoljno je za pokušaj korištenja znakova, simbola i brojeva čije bi značenje za sve žitelje nekog mjesta bilo razumljivo. Stoga je za vjerovati da su s rastom naselja, urbanizacijom, stečeni uvjeti za nastanak pisma.

Arheološka evidencija iz spomeničke građe Egipta prilično je jasna u tom smislu. Predinastijske palete prikazuju simbole (pretežito životinje) ranih moćnika (ljudi s raznim palicama, krunama i drugim ukrasima na glavi, koji sjede na tronu), gradova (osobito utvrđenih koji su prikazani kao područja opasana zidom) te scene zvijeri ili ljudi koji ubijaju druge ljude ili životinje. Te se slike polako transformiraju u piktograme i na kraju hijeroglife koji postaju standardizirani znakovi već prije nego što će biti uključeni u sustav pisma. Ti se znakovi urezuju na kamene oblutke, drvo i slonovaču. Istovremeno u Mezopotamiji klinovi utiskivani u cigle od blata zamjenjuju mitske slike i razvija se pismo. No vrlo zanimljive tragove pretpovijesnih pisama možemo naći i nama u susjednim zemljama. Posebno je interesantna takozvana Vinčanska kultura (ili kultura iz Vinče) rasprostranjena u Srbiji, Makedoniji, BiH, Grčkoj, Bugarskoj i Rumunjskoj (5300.–4400. pr. Kr.) na idolima i posudama prikazivala je znakove koji su očito bili rani oblik neke vrste pisma. Piktograme ili ukrase koji bi se mogli tako protumačiti također nalazimo na materijalu iz Vučedolske kulture (eneolitske kulture iz 3. tisućljeća pr. Kr. rasprostranjene u više zemalja – Hrvatskoj, BiH, Srbiji, Mađarskoj, pa sve do Češke). Jedan od najpoznatijih primjera je bikonusna zdjela s okruglim i križnim znakovima za koje se smatra da imaju astrološko-mitsku simboliku. Inače, u pretpovijesti prije pojave urezanih ili oslikanih simbola bilježimo i sporazumijevanje pomoću predmeta. Tako u slavenskih naroda, kako navodi Kulundžić (*Knjiga o knjizi*), poslati nekome jabuku znači prosidbu, a limun poziv u goste.

archaeological sense of the word) but not up to the point that it can be considered civilisation. The early settlements, the production of crops and other agricultural products and the number of domesticated animals grew at the same pace. It is probable that it led to specialisation based on activities - a warrior, a farmer, a cattle breeder, a potter etc. That differentiation created favourable circumstances for using signs, symbols and numbers understandable to the inhabitants of a certain settlement. Therefore it is conceivable that with the growth of settlements and urbanisation the preconditions were established for the development of the script.

Archaeological records from Egypt are quite clear in that respect. Pre-Dynastic palettes include symbols (mainly animals), early elite (people with various sceptres, crowns and other head ornaments sitting on the throne), towns (especially fortified, depicted as areas surrounded by walls) and the scenes involving wild animals or people killing other people and animals. Such images were slowly transformed into pictographs and finally into hieroglyphs which became standardized signs even before being included in the writing system. These signs were engraved on stone cobbles, wood or ivory. At the same time in Mesopotamia cuneiform impressed into bricks made of mud replaced mythical images and the script was developed. However, very interesting traces of prehistoric scripts can be found in our neighbouring countries. Vinča culture is particularly interesting and widespread in Serbia, Macedonia, Bosnia and Herzegovina, Greece, Bulgaria and Romania (5,300-4,400 BC). Idols and vessels include signs which were obviously some form of an early script. Pictographs and ornaments that could be explained in the same way can also be found in Vučedol culture (the Eneolithic culture from the 3rd millennium BC) which was spread in several countries - Croatia, Bosnia and Herzegovina, Serbia, Hungary all the way to the Czech Republic. One of the most famous examples is a biconic vessel with circles and crosses which are believed to be astrological-mythical symbols. Otherwise, even before the appearance of the carved and painted symbols communication using various objects was recorded. In the culture of the Slavic people, according to Kulundžić (*Knjiga o knjizi /A Book about the Book*), to send someone an apple meant a marriage proposal, while sending a lemon meant an invitation).

U tom vremenu koje, kako u našem okruženju tako i u Egiptu i Mezopotamiji, odgovara otprilike istome razdoblju, pojavljuju se najraniji piktogrami. Piktogrami (lat. *pictus* = naslikan, grčki gramma = slovo) su slike koje sadrže određeno jasno značenje te ih u komunikologiji smatramo prvim znakovima. Današnja paralela ranim piktogramima su prometni znakovi koji jasno nešto poručuju. na primjer suženje ceste ili prepreku na putu. Oni, dakle, slikom prenose neku informaciju i čine je dostupnom a da onaj tko ih čita ili zamjećuje ne treba i sam doživjeti iskustvo koje se prenosi. Naprotiv, konzument piktograma upozoren je i pripremljen unaprijed na neko tuđe iskustvo. Da bi se razvilo pismo potrebno je htjeti pružiti više i još preciznijih podataka te samo proširiti uporabu pitkograma dodavanjem više znakova. Štoviše, budući da su piktogrami tako izravni i uočljivi po svojoj prirodi, njihova uporaba na digitalnim uređajima za internetsko komuniciranje ponovno je u modi. Tako sve češće ljudima šaljemo „smješka“ ili ruku s podignutim palcem u znak odobravanja, umjesto da pišemo „bravo, drago mi je što si uspio“, ili „veselim se što ću te vidjeti“ i slično.

Međutim, u razdoblju ubrzane evolucije ljudskoga uma pojavila se i potreba da se znakovima prenese što više podataka. I to je dovelo do znatnog razvoja jezika i pisama, ali i do onoga što nazivamo civilizacijom. Odličan primjer za proširivanje ideje piktograma nalazimo u hijeroglifskome pismu Egipćana. Naime, i u fazi razvoja kad su pojedini znakovi već bili razvijeni u pismo te je njihovo slikovno značenje palo u drugi plan (na primjer glas  n /voda/, ili glas  a /ruka/, činili su različite riječi bez obzira na svoj slikovni karakter), Egipćani su ipak zadržali piktograme. U klasičnom egipatskome jeziku i pismu nazivamo ih ideogramima i determinativima. Naime, nakon što ste napisali neku riječ, osobito glagol, na primjer „jesti“, „poljubiti“ ili „reći“, na kraju ste (iza) riječi dodali čovjeka koji drži jednu ruku ispred svojih usta. Taj se znak nije čitao (iako se katkad mogao čitati u nekom drugom okruženju) već je dodavao slikovno–logičnu razinu pismu, odnosno, postao je logogram. Ta sklonost učinila je staroegipatska pisma vrlo bogatim i prilično kićenim.

In that period which, in our region as well as in Egypt and Mesopotamia, corresponds to approximately the same era, we can speak about the earliest pictographs. Pictographs (Lat. *pictus* -painted) are the images which contain clearly defined meanings and are regarded in Communication science as the first signs. Today's parallel to the early pictographs are the traffic signs which clearly indicate e.g. that the road narrows or there is an obstacle ahead. They convey a message in Pic.s and make a certain piece of information available; therefore those who read or notice them do not have to have their own experience. On the contrary the pictogram user is prepared and warned in advance about somebody else's experience. In order to develop a script it is necessary to aim at providing more data and more precise data and diversify the usage of pictographs by adding more signs. Moreover, since the pictographs are so direct and perceptible by their own nature, their usage on digital gadgets in the Internet communication is in again. We send "smileys" more and more often, or "thumbs up" as a sign of approval instead of saying "Well done, I am happy you have made it", or "I'm looking forward to seeing you again" etc.

However, in the era of accelerated evolution of human mind, the need to communicate as much data as possible by means of signs arose. This led to the significant development of the languages and scripts, but also to what we call civilisation. An excellent example for broadening the idea of the pictograph can be found in Egyptian hieroglyphs. Namely, at the early stage of the development certain signs were already developed into script, and their pictorial aspect became of secondary importance (e.g. the sound n/water/, or the sound a /hand/, made different words regardless of their pictorial character), the Egyptians still kept their pictographs. In the classical Egyptian language and script we call them ideograms and determinatives. Namely, after you have written a certain word, especially a verb, e.g. "eat", "kiss" or "say" after that word you would add a man with his hand in front of his mouth. That sign was not read (although sometimes it could have been read in a different setting), it only added a pictorial and logical level to the script, it became a logogram/logograph. This tendency made the ancient Egyptian scripts very rich and decorative.

Kaldejsko pismo / Caldean script

Jezično opravdanje toga načina pisanja jest u tome da su mnoge riječi u njihovu fonogramskome zapisu bile jednake pa su ih determinativi jasno razlikovali. No, težnja k jednostavnosti pisanja pojavila se u toj civilizaciji tek u 7. stoljeću pr. Kr., te je u tu svrhu u upotrebu dospjelo takozvano demotsko pismo u kojemu više nije bilo ideograma i determinativa.

Postupan nastanak i razvoj ranih pisama po nekim je autorima pokazatelj razvoja društva. Nije utvrđeno je li pismo izvorno bilo povezanije s društvenim i ekonomskim aktivnostima ili mitsko-religioznim idejama. Najvjerojatnije je u pitanju bilo i jedno i drugo. Sumerani sami svoje pismo nazivaju „pismom u obliku klina", a taj se naziv javlja u priči o svađi dvaju vladara gradova Uruka i Arate. Dok su u Mezopotamiji najstariji primjerci pisma protoklinaste pločice čija je svrha bila administrativna, u Egiptu su najstariji hijeroglifi pronađeni na etiketama od slonovače u grobovima preddinastijskih vladara i vladara prve dinastije u Abidosu. Klinasto pismo Sumerana od početaka se utiskivalo u opeke raznih oblika od blata, dok u Egiptu nalazimo na urezivanje u različite materijale – drvo,

Linguistic justification for such a way of writing lies in the fact that many words were the same in their phonographic record therefore only determinatives could distinguish them. However, the aspiration towards simplicity appeared only in the 7th century BC and the so called demotic script was developed which had neither ideograms nor determinatives.

According to some authors, the gradual creation and development of early scripts reflects the development of a society. It is not possible to establish whether the script was initially more linked to social and economic activities or myths and religious ideas. It was probably linked to both. Sumerians called their script "wedge shaped script" and this name appears in the story about the conflict between the rulers of the towns of Uruk and Arata. While in Mesopotamia the oldest examples of script were protocuneiform tablets whose purpose was administrative, in Egypt the oldest hieroglyphs were found on ivory tags in the tombs of pre-dynastic rulers and the rulers of the First Dynasty. Sumerian cuneiform script was at first written by pressing a stylus into differently shaped bricks made of clay/mud, while in Egypt the scripts were carved in various materials - wood, ivory and stone. The system that can be called a script was found in both locations - in the Nile Valley and the Euphrates and Tigris basin around 3,100 BC. Both in Sumer and Egypt the script was at the beginning a state administration tool and was used for the purpose of recording inventory and counting which also confirms a direct link between urbanisation and the advent of the script. The famous Narmer palette, which is a testimony of Narmer's victory after which Egypt was united and became one state, depicts six thousand enemy warriors in the form of a symbol - a falcon holding a captive on a leash. Six flowers *ha* (a thousand) come out of the captive.

In all Asian, Near East and South American civilisations since its very beginnings the script has been linked to the institutionalisation of religions. Clerical elite gained higher status than the rest of the people by having the knowledge of the script which was turned into a divine secret. The script, on the other hand changed the very nature of religion. Oral traditions then became systematic acquiring written forms, and such a system enabled the development of theological forms which substituted the old tribal beliefs. An excellent example for that was Egypt during the period of Old Kingdom (2,686-2,181 BC). From the texts found in the pyramids of that time

slonovaču i kamen. Sustav koji možemo nazvati pismom bilježi se na obje lokacije, Dolini Nila i Međurječju Eufrata i Tigrisa oko 3100. pr. Kr.

Kako kod Sumerana tako i kod Egipćana, pismo je od početka alat državne administracije te služi u svrhu inventara, prebrojavanja, što potvrđuje izravnu vezu urbanizacije i pojave pisma. Već se na slavnoj Narmerovoj paleti, spomeniku koji svjedoči o Narmerovoj pobjedi i ujedinjenju Egipta u jednu državu, pojavljuje podatak o šest tisuća poraženih neprijatelja, i to u obliku kraljevskoga simbola sokola koji na uzici drži zarobljenika iz kojega izlazi šest cvjetova *ha* (broj tisuću).

U svim azijskim, bliskoistočnim i južnoameričkim civilizacijama pismo je od svojih početaka povezano s institucionalizacijom religije. Svećenička elita uzdiže se nad ostalim žiteljima koristeći se poznavanjem pisma koje je pretvoreno u božansku tajnu. Pismo s druge strane mijenja samu prirodu religije. Oralne tradicije postaju sustavne dobivajući pisane oblike, time omogućujući razvoj viših oblika teologije koji nadomještaju stare plemenske oblike vjerovanja. Odličan primjer za to je Egipat u vrijeme Starog kraljevstva (2686.–2181. pr. Kr.), u kojem iz tekstova piramida saznajemo kako je niz kultova iz južnoga i sjevernoga Egipta svrstan u henoteističku (henoteizam – gr. εἷς, gen. ἑνός = jedan θεός = bog, štovanje jednog ili primarnog boga uz istovremeno prihvaćanje postojanja različitih božanstava) hijerarhiju božanstava koja vrijedi u čitavoj zemlji. Zanimljivo je da su egipatski mit o tome kako je bog Tot ljudima darovao umijeće pisanja, autentično i u skladu s mitskom sviješću percipirali Grci nazvavši egipatsko pismo „svetim urezanim znakovima“: ἱερός (*hierós* = svet) i γλύφειν (*glýphein* = urezati ili pisati) – hijeroglifima. Kod Sumerana zaštitnica pisma bila je božica Nisaba (ili Nanibgal), gospodarica iz grada Uruka, jednako kao i egipatski bog Tot povezana s umjetnošću i znanjem. Oba božanstva su bila povezana s bilježenjem, znanjem, mudrošću i kronologijom, a i s Mjesecom. Padom Sumerske države, kod Akađana Nisabu zamjenjuje bog Nabu, kojem ona postaje suprugom. Egipatskome Totu (izvorno Tehuti ili Đehuti), čije su svete životinja ibis i pavijan, također je komplementarno

we learned that a series of cults from the South and North Egypt were classified as Henotheistic (Henotheism - (Gr. εἷς θεός heis theos “one God” which means worshipping one god or the supreme deity while accepting the existence of many gods) the hierarchy which is accepted in the whole country. It is interesting that the Egyptian myth about the god Thoth who gave the people the skill of writing was perceived by the Greeks authentically and in accordance with the mythic consciousness calling the Egyptian script “holy engraved signs”. ἱερός (*hierós* ‘holy) and γλύφειν (*glýphein* ‘engrave’ or ‘write’) - hieroglyphs . Sumerian goddess of writing Nisaba (or Nanibgal) the patron deity of Uruk, was associated with arts and knowledge like the God Thoth in Egypt. Both deities were also associated with recording, knowledge, wisdom and chronology. Both Nisaba and Thoth are associated with the Moon. After the fall of the Sumerian state, the Akkadians substituted Nisaba with the God Nabu and she became his wife. The Egyptian god Thoth (originally Tehuti or Djehuti) whose sacred animals were ibis and a baboon also had a complimentary female deity - the goddess Seshat, who is sometimes referred

Pogrebna stela Akua, (Novo kraljevstvo 1550.-1069. pr. Kr.) / Funerary stele of Akw, (New Kingdom 1550-1069 BC)

žensko božanstvo – božica Sešat za koju tekstovi navode da je njegova sestra, a katkad i žena. Totova područja djelovanja proširena su i na ezoterična znanja, magiju, graditeljstvo i medicinu, a u kozmogenezi iz Hermopola prikazan je kao stvoritelj svijeta. U egiptu zamjećujemo i arhaičan odnos s prastarom oralnom tradicijom. Naime, zapisani tekst uz svu svoju važnost u religijsko-obrednoj funkciji, mora biti izgovoren kako bi se postigao magijski utjecaj svetog čina. Izgovorena riječ, po vjerovanju Egipćana, izlazi iz srca kroz govorni aparat i kreativna je u nevidljivoj dimenziji svijeta te će postići i rezultate u vidljivoj stvarnosti.

Za razliku od ovih tradicija Bliskog istoka, invencija kineskoga pisma koje se javlja oko 1600. pr. Kr., pripisuje se čovjeku. Prema predaji riječ je o Huang Dija Cangjiju koji je izumio pismo po naredbi Žutog cara, prema legendama sklonog znanju. Kinesko pismo, čiji se pandani koriste i u Japanu i Koreji, prijelazni je oblik između piktogramskoga i pojmovnoga pisma, i kvadratnoga je oblika. Vrlo je zahtjevno za učenje. Od izvornih 46 000 ideograma, danas se koristi 36 000, no za svakodnevne potrebe dovoljno ih je znati oko 3000. Svaki znak označava neki pojam.

Prije razvoja linearnih pisama i kaligrafskog umijeća pisanja, piktogramsko ili slikovno pismo dobilo je mnoge primjene, pa je tako svijet staroga vijeka na svim kontinentima bogat simbolima koji se koriste u znanosti o svijetu, religiji, astrologiji, kalendarima, brojanju, opisu kemijskih tvari, označavanju dijelova ljudskog tijela, životinjskih i biljnih vrsta itd. Mnogi od njih, poput astroloških znakova koji su tek malo modificirani stigli do nas iz Babilona, preživjeli su sve do današnjeg dana. Ti oblici ranoga znanja, iako često mistificirani, bili su paušalne opservacije raznih pojava i stvari, no oni pojavi pisma pridodaju još jednu važnu komponentu, a to je da s njime započinje i razvoj znanosti.

to as his sister and sometimes as his wife. Toth's areas of activities were also extended to esoteric knowledge, magic, construction and medicine, and in the cosmogenesis from Hermopolis he is depicted as the creator of the world.

There was an archaic relationship with oral tradition in Egypt. Namely, a written text despite its great importance in the religious rituals still had to be spoken in order to accomplish its magical impact of a holy act. A spoken word according to the Egyptian beliefs comes out of the heart through the organs of speech and is creative in the invisible dimension of the world but shall produce results in visible reality.

Unlike these traditions of the Middle East, the invention of the Chinese script, which appeared around 1,600 BC was attributed to a man. According to the legend Ts'ang Chieh invented the script on the orders of the Yellow Emperor, who was allegedly supportive of knowledge and art. The Chinese script and its Japanese and Korean counterparts are transitional forms between pictographic and ideographic scripts. The characters are angular. It is very difficult to learn. Out of 46,00 ideograms only 36,000 are in use today, and for everyday usage 3,000 suffice. Every character denotes one notion.

Before the development of linear scripts and calligraphy writing skills, the pictographic script got many applications so the ancient world on all continents was rich with symbols used in science, religion, astrology, calendars, counting, descriptions of chemical substances, or those standing for various parts of human body and animal or plant species. Many of them like symbols for zodiac signs originated in Babylon and have survived until today only slightly modified. These forms of early knowledge, although often mystified, were only superficial observations of different phenomena and things. However, they add to the script one more important component, i.e. the development of sciences begins with the script.

Ostala pisma bronČanog doba

Sva pisma nastala su u okviru kultura, pa kronološki možemo pratiti njihovo pojavljivanje i razvoj od bakrenog i bronČanog doba, dok u kamenom dobu govorimo o začecima znakova u vidu piktograma. Upravo u bronČanom dobu Bliskog i Dalekog istoka, uz staroegipatsko pismo i klinasto pismo iz Mezopotamije, oko 3200. stare ere javlja se i niz drugih pisama. Među njima je i proto-elamitsko pismo, koje evoluira u elamitski linear, a nakon toga elamitsko klinasto pismo. Proto-elamitsko pismo i linear su nedešifrirana pisma.

Anatolijsko pismo autohtono je hijeroglifsko pismo stanovnika jugozapadne Anatolije i sjeverne Sirije, nastalo u 14. stoljeću stare ere. Njime se pisao luvijanski jezik pa se katkad nazivaju i luvijanskim hijeroglifima. Zapisi su pronađeni na kraljevskim pečatima i malom broju spomenika. Treći naziv je hetitsko hijeroglifsko pismo. Prvi ga je parcijalno dešifrirao Emmanuel Laroche 1960. godine, da bi konačno razumijevanje sustava toga pisma dovršili David Hawkins, Anna Morpurgo-Davies i Günther Neumann 1973. godine. Najraniji zapisi anatolijskih hijeroglifa su sa početka drugoga tisućljeća stare ere, no većina pronađenih tekstova je iz 14. st. stare ere. Iako su ga koristili različiti narodi, utvrđeno je da je pismo prvobitno bilo primijenjeno na luvijski jezik. Nije ustanovljena povezanost anatolijskoga hijeroglifskog i hetitskog klinastoga pisma. To je starije hetitsko pismo bilo usvojeno kao verzija klinastoga pisma kojim se pisao staroasirski. Kako je od 13. st. stare ere, nakon pada Hetitskoga carstva i prelaska iz bronČanog u željezno doba, hetitski jezik zamro, luvijski je postao glavnim govornim jezikom toga područja.

Anatolijsko pismo se sastojalo od oko pet stotina hijeroglifskih znakova, po vrijednosti logograma i fonograma koji su se kombinirali, a koji su mogli označavati glasove ili riječi. Jednako kao i egipatsko pismo i anatolijsko se moglo pisati slijeva nadesno i zdesna nalijevo.

Other Bronze Age Scripts

All scripts were created within cultural frames, therefore we can follow their appearance and development chronologically from the Copper Age and the Bronze Age, while as far as the Stone Age goes we can only speak about the beginnings of signs in the form of pictographs. In the Bronze Age in the Near East and the Far East in addition to the Old Egyptian script and the Mesopotamian cuneiform around 3,200 BC a series of other scripts developed. The Proto-Elamite script is one of them. It later evolved into the Linear Elamite which was replaced by the Elamite cuneiform. The Proto-Elamite script and the Linear Elamite still remain undeciphered.

The Anatolian script is an indigenous hieroglyphic script of the inhabitants of Southwest Anatolia and North Syria and was created in the 14th century. As it was written in the Luwian language it is sometimes called Hieroglyphic Luwian. The inscriptions can be found in official royal seals and a small number of monuments. The third name of this script is Hittite Hieroglyphs. Emmanuel Laroche was the first to partly decipher it in 1960. The system was finally understood and deciphered by David Hawkins, Anna Morpurgo-Davies and Günther Neumann in 1973. The earliest inscriptions in Anatolian Hieroglyphs date back to the beginning of the 2nd millennium BC, but the majority of the texts that have been found are from the 14th century BC. Although it was used by various peoples, it has been established that it was initially written in the Luwian language. The connection between Anatolian Hieroglyphs and Hittite cuneiform has not been confirmed. It is an older version of Hittite script which was adopted as a version of cuneiform which was written in Old Assyrian language. After the fall of the Hittite Empire in the 13th century BC and the transition from the Bronze Age to the Iron Age the Hittite language died and the Luwian language became the most spoken language of that region.

The Anatolian script consisted of some 500 hieroglyphic symbols, which were either logographic or phonographic. They were combined to represent sounds or words. Like the Egyptian script the Anatolian script can also be written from left to right and from right to left.

Feničko pismo razvilo se od proto-kanaanskog alfabeta u 15. stoljeću stare ere. Prije toga Feničani su pisali klinastim pismom, a najstariji poznati zapis toga pisma je iz Biblosa, nastao 1000. godine stare ere. Čini se da je fenička abeceda prva korištena na širokom području, budući da su Feničani trgovali diljem obala Sredozemnog mora. Feničko se pismo do 1. stoljeća proširilo na Tunis, Iberski poluotok, Maltu, južnu Francusku i Siciliju. Naime, varijanta feničkog poznata kao punski jezik govorila se u Kartagi koja je sve do 6. st. bila fenička kolonija na području današnjeg Tunisa. Izvorno ime jezika bilo je *dabari-m*, odnosno *Pōnnīm/ Kana'nīm,* što znači – punsko-kanaanski. Također je fenički alfabet bitno utjecao na razvoj svih kasnijih alfabeta uključujući grčki, latinski, arapski, hebrejski, ali i na alfabetska pisma Indije i ostatka Azije. Simboli feničkoga pisma su fonemi (konsonanti), pišu se zdesna nalijevo. Pismo se ukupno sastoji od 22 znaka. Imena tih znakova su akrofonska (počinju samim slovom, poput grčkih i hebrejskih). Smatra se da oblici znakova potječu od nekih starijih piktografskih pisama. Tako na primjer slovo/znak za A sličan svom latinskom pandanu, porijeklo ima u glavi bika s rogovima.

Linear A i kretsko hijeroglifsko pismo dva su nedešifrirana pisma sa Krete. Linear A je stariji od lineara B. kojim se zapisivao minojski jezik. Otkrio ga je britanski arheolog Arthur Evans. Linear B dešifriran je pedesetih godina 20. stoljeća, no iako ta dva pisma dijele velik broj znakova, to nije dovelo do dešifriranja lineara A. Ako su slogovne vrijednosti u ta dva pisma doista slične, onda zapisi u linearu A ne odgovaraju nijednome poznatome jeziku, pa se stoga pretpostavlja da se njime pisao minojski. Linear A ima više stotina znakova. Vjeruje se da oni predstavljaju slogove i ideograme. Ovih drugih je čak oko 80 posto. Linearom B, koji je njegova adaptacija, pisao se mikenski jezik.

The Phoenician script developed from the Proto-Canaanite alphabet in the 15th century BC. Before that the Phoenicians were using cuneiform. The oldest known inscription in this script comes from Byblos. It was written in 1,000 BC. It seems that the Phoenician alphabet was the first to be used widely as the Phoenicians traded all across the Mediterranean, Europe and North Africa. Until the 1st century AD the Phoenician alphabet spread to Tunisia, Iberian Peninsula, Malta, southern France and Sicily. The variant of the Phoenician language was spoken in Carthage in today's Tunisia, which was a Phoenician colony until the 6th century. Originally the name of the language was *dabari-m*, i.e., *Pōnnīm/Kana'nīm* - meaning – Punic-Canaan. The Phoenician alphabet also had a major influence on the development of all later alphabets including Greek, Latin, Arabian, Hebrew as well as the alphabetic scripts of India and the rest of Asia. The characters of the Phoenician alphabet are phonemes (consonants) written from right to left. The alphabet consists of 22 characters. The names of these characters are acrophonic (they begin with the letter like Greek and Hebrew letters). It is believed that the forms of these characters originate from some older pictographic scripts. For example, the letter - the sign representing A is similar to its Latin counterpart. It evolved from the bull's head with horns.

The Linear A and Cretan hieroglyphs are two undeciphered scripts from Crete. Linear A predates Linear B which was written in the Minoan language. It was discovered by the British archaeologist Arthur Evans. The Linear B was deciphered in the 1950s. Although these two scripts share a great number of symbols it did not lead to deciphering the Linear A. If the syllabaries in these two scripts are similar indeed, then the inscriptions in the Linear A do not correspond to any known language, therefore it is assumed that it was used in the Minoan language. The Linear A has several hundred characters. It is believed that they represent syllables and ideograms, the later accounting for even 80%. The Linear B, which is the variant of the Linear A was used for writing Mycenaean Greek.

Pismo kulture Harapa, ili indsko pismo (po rijeci Ind) još je jedno u nizu nedešifriranih pisama kojim se pisao nepoznat harapski ili hinduski jezik. Koristila ga je indijska pretpovijesna kultura Harapa iz doline rijeke Ind, koja se datira otprilike između 3500. i 1900. godine stare ere. Sastoji se od niza simbola, većinom su pronađeni tekstovi vrlo kratki i ne postoji nijedan dvojezični zapis. Prvi se njime bavio i objavio ga još 1875. godine Alexander Cunningham. Nakon njegovoga rada pronađeno je oko 4000 spomenika s tim pismom. Početkom sedamdesetih godina prošlog stoljeća Iravatham Mahadevan objavio je popis znakova pisma kulture Harapa koje je uspio razlikovati na 3700 pečata. On je prepoznao 417 znakova kojima se to pismo koristilo. Prosječni harapski zapis sadrži pet znakova, a među najdužima su oni koji se sastoje od sedamnaest. Neki indijski stručnjaci pokušali su povezati pismo Harapa s brahmanskim pismom nastalim na indijskom potkontinentu početkom nove ere. Međutim, te teorije ostale su neprihvaćene među većinom lingvista, a odbacio ih je i sam Mahadevan.

The Harappan script or Indus Script (named after the Indus River) is just one more in the series of undeciphered scripts used for writing in the unknown language Harappan or Hindi. It was used in the Indus prehistoric culture of Harappans in the Indus Valley and can be dated between 3,500 and 1,900 BC. It consists of a series of symbols and the majority of the texts that have been found are very short. There is not a single example of a bilingual inscription. The first to study it was Alexander Cunningham who published it back n 1875. After his research about 4,000, inscriptions in that script were found. At the beginning of the 70s of the last century Iravatham Mahadevan published a list of characters belonging to Harappan culture that he had been able to distinguish in 3,700 seals. He recognized 417 characters that this script used. The average Harappan inscription consists of 5 symbols while the longest may have up to 17. Some Indian scholars tried to link the Harappan script to the Brahmi script which evolved on the Indian Subcontinent at the beginning of the New Era. However, those theories remain unaccepted by the majority of linguists, and even Mahadevan refuted it.

V E R B A V O L A N T

Pretpostavlja se da je pisanje u smislu uporabe grafičkih znakova za opisivanje govornoga jezika u svojoj ranoj fazi funkcioniralo kao kombinacija piktograma i znakova koji su imali glasovnu vrijednost. Prvobitna ideja da pojedini predmeti imaju određeno značenje i poruku razvija se u smjeru simbola koji zamjenjuju predmete imajući isto značenje. Korištenje predmeta prilično je jednostavan način komunikacije. Na primjer kad jedno indijansko pleme želi objaviti rat drugome, šalje mu koplje koje označava tu poruku. Poruka s predmetom toga tipa može biti i znatno složenija. Tako, među znakovima Indijanaca Laevamba koplje, slomljeno i zabodeno u zemlju pored puta, na koje je blatom nalijepljeno lišće, znači da netko traži osvetu za nečiju smrt. No, kad urezani ili oslikani simbol dobiva značenje predmeta, već možemo govoriti o pismu (ili barem o piktogramu). Da su na primjer kod sjevernoameričkih Indijanaca uvedene glinene pločice s utisnutim simbolima koplja koje bi se slale u znak objave rata, tada bismo govorili o njihovu pismu.

Prilično se točno može definirati čemu pismo služi. Ono osigurava proširenje ljudske memorije utiskivanjem podataka u medije koji su manje skloni promjenama od ljudskog uma. Načelo je to precizno izrečeno poznatom rimskom poslovicom *Verba volant scripta manent* (Riječi lete, zapisano ostaje). Zanimljivo je, međutim, da je Platon u *Fedru* smatrao da pisanje ide na štetu ljudskog uma jer mu omogućuje da bude lijen. Također, postoje tradicije koje prenose dugačke poeme i prozna djela iz generacije u generaciju isključivo usmenom predajom bez ikakvih izmjena. Međutim, uporaba brojeva u trgovini, u popisivanju poljodjelskih proizvoda, u kalendaru, te vladarsko znakovlje i druge funkcije pisma bili su pokretači urbanizacije i početaka života u organiziranim naseljima. Također, pismo se od svojih početaka koristilo u religiozne svrhe za komunikaciju s bogovima, kao i za provedbu ovlasti od strane vladajućeg sloja.

It is assumed that writing in the sense of using graphic symbols to illustrate spoken language in its early stage of development functioned as a combination of pictographs and phonetic symbols. The original idea that certain objects have certain meanings and message developed towards symbols which substitute objects having the same meaning. Using objects is a fairly simple way of communication. For example, when one Indian tribe wishes to declare war against another tribe, they send them a spear which implies the message. The message conveyed by such an object can be much more complex. Among the symbols of Laevamba Indians a broken spear, stuck in the ground and covered with mud soaked leaves on the side of a road meant that someone was seeking revenge. But when a carved or painted symbol stands for an object it can be considered script (or at least a pictograph). Had the North American Indians had clay tablets with engraved symbols representing spears which would be sent as a declaration of war, then we would be speaking about their script.

The purpose of script can be defined quite accurately. It ensures human memory extension by impressing data into the media which are less prone to changes than human mind. Latin proverb *Verba volant scripta manent* ("Spoken words fly away, written words remain") conveys this principle precisely. It is interesting, however, that Plato in *The Phaedrus* argued that writing harms the human mind as it enables it to be lazy. There are also traditions which are passing long poems and prose works down from generation to generation exclusively by word of mouth without any alterations. The use of numbers in trading, keeping records of agricultural products and the calendar, together with royal insignia and other applications of script stimulated urbanization and life in organized settlements. From its very beginnings script was used for religious purposes and communication with gods while the ruling elite use it for imposing power.

No, iako mu poznajemo svrhu, nejasno je kako točno definiramo pismo. U svojoj knjizi *A History of Writing,* Steven Roger Fischer iznosi mišljenje da nijedna definicija pisma ne pokriva sve ikad postojeće sustave pisanja. Umjesto toga on predlaže tri uvjeta za definiciju pisma: 1. da mu je svrha komunikacija 2. da se mora sastojati od uobičajenih grafičkih oznaka na čvrstoj podlozi 3. da mora označavati relativno konvencionalno artikuliran govor (sustavni rad znakova važnih za izgovor) kako bi se osigurala komunikacija. Nešto jednostavnija definicija čin pisanja određuje kao uporabu grafičkih znakova za opisivanje govornog jezika.

Većina autora slaže se da je pisma moguće podijeliti prema oblicima, prema srodnosti, i prema regiji nastanka. Budući da je evidentno da postoje sličnosti između na primjer azijskih, odnosno pisama Bliskog istoka, te da postoje jezične porodice u čijim pismima također nalazimo sličnosti, ovdje dajemo prednost razvrstavanju oblika pisma od jednostavnijih prema složenijima. Taj niz nije, doduše striktno kronološkog, ali jest razvojnoga karaktera.

Najjednostavniji oblik pisma su piktogrami, odnosno piktografsko pismo, čiji su elementi slike kombinirane u grafičko-interpretacijskim obrascima. Njegova razvojna faza je ideografsko pismo, čiji elementi označavaju ideje kombinirane na logičan način, te logografsko pismo, čiji elementi označavaju ili riječi ili morfeme kombinirane u sintaksi. Za njima slijedi silabičko odnosno slogovno pismo te napokon alfabetsko pismo. Podjeli je moguće dodati još i znakovno pismo, čiji elementi označavaju razlikovne znakove kao što su izgovor i artikulacija, koji su kombinirani fonetski. K tome, neki od jezika i sustava pisama koriste više navedenih kategorija znakova. Primjer je egipatsko pismo, koje ima i ideograme i logograme i silabičke znakove.

Although we know its purpose its definition is still vague. In his book *A History of Writing*, Steven Roger Fischer argues that there is no definition that covers all the writing systems that have ever existed. Instead he suggests that it should meet the three criteria: 1. it must have communication as its purpose; 2. it must consist of standard graphic marks on a durable surface; 3. it must use marks that relate conventionally to articulate speech (the systematic arrangement of significant vocal sounds) in such a way that communication is achieved. The definition which determines the act of writing as using graphic symbols for describing spoken language is somewhat simpler.

Most authors agree that scripts can be categorized according to the forms, similar features and the regions of their origin. Since it is obvious that there are similarities between Asian scripts, i.e. the scripts of the Near East and that there are language families which also share common features in their scripts, we shall apply the principle from simple to more sophisticated scripts. This sequence is not strictly chronological, but it is related to their development.

The simplest forms of writing are pictographs, i.e. pictographic script in which the elements of images are combined in graphic patterns. Its phase of development is ideographic script in which the characters denote ideas combined in a logical way, followed by logographic script in which the elements stand for either words or morphemes combined in syntax. These scripts were followed by syllabic scripts and finally alphabets. This list should also include featural scripts where the elements denote differentiating phoneme signs such as pronunciation and articulation which are combined phonetically. And finally, some of the languages and writing systems use more categories of signs than mentioned here. Egyptian script which consists of ideograms, logograms and syllabic symbols is a good example.

Druga podjela koju predlaže Naveh u *Early History of Alphabet* je nešto složenija:

Another classification suggested by Naveh in *Early History of Alphabet* is somewhat more complex:

VRSTA PISMA TYPEFACE	ŠTO PREDSTAVLJA SIMBOL WHAT THE SYMBOL REPRESENTS	PRIMJER EXAMPLE
Logografsko Logographic	morfem morpheme	kinesko pismo Chinese script
Slogovno Syllabic	slog syllable	japanska *kana* Japanese *kana*
Alfabet Alphabetic	fonem (suglasnik ili samoglasnik) phoneme (consonant or vowel)	latinica Latin script
Abugidsko Abuguda	fonem (suglasnik+samoglasnik) phoneme (consonant + vowel)	indijsko *devanāgāri* Indus script *devanāgāri*
Abjad Abjad	fonem (konsonant) phoneme (consonant)	arapsko pismo Arabic script
Znakovno Featural	fonetski znakovi phonetic symbols	korejski *hangul* Korean *hangul*

U zapadnim je kulturama alfabetsko pismo odnijelo povijesnu pobjedu nad logografskim i slogovnim varijantama. Njegova jednostavnost pri tome je bila najvažniji faktor. Promatrajući razvoj civilizacije vidimo da su pisma staroga vijeka bila iznimno složena i zahtjevna za uporabu. Dobar je primjer staroegipatskoga pisma. Iako je Egipat bio regionalna sila vladajući Nubijom i zemljama Bliskog istoka na području Libije i Palestine, pismo Egipćana nije nikada zaživjelo izvan zemlje. Uzrok tome je njegova tijesna kulturološka povezanost s običajima i kulturom Egipćana, ali i složenost sustava pisanja i kaligrafije. Latinica u vrijeme Rimskog Carstva i nešto kasnije ćirilica na istoku Europe, pojavile su se kao jednostavna pisma s malim brojem znakova, ali i razvijenijim oblicima jezika, kao dva pisma koja se lako uče i koriste. I konačno, u digitalnoj eri prevlast latinice još je očitija. Tipkovnice za kineski, japanski, arapski i *devanāgāri*, doduše postoje, ali su prilično nepraktične i više su na tragu kurioziteta nego istinskoga sredstva za pisanje.

In Western cultures the Alphabetic script ensured a historic victory over logographic and syllabic variants. Its simplicity was the most important contributing factor. Observing the development of civilisation it becomes clear that the ancient scripts were extremely complex and challenging to use. Ancient Egyptian script is a good example. Although Egypt was a regional power which ruled over Nubia and the countries of the Near East on the territory of Libya and Palestine, the Egyptian script was not used outside the country. The reason for it lies in the fact that it was closely tied to Egyptian customs and culture, but also in the complexity of the writing system and calligraphy. The Latin alphabet in the Roman Empire and somewhat later the Cyrillic script in Eastern Europe were developed as simple scripts with a small number of characters but more advanced language forms which were easy to learn and use. And finally, in the digital era the domination of the Latin alphabet is even more obvious. The keyboards for Chinese, Japanese, Arabic and *devanāgāri*, exist, but are quite impractical and are closer to curiosities than true writing gadgets.

Pisma svijeta
Scripts of the World

Egipatska pisma
Egyptian Scripts

Kristina Šekrst
Igor Uranić

Pisma Egipta i Sumera pojavljuju se otprilike u isto vrijeme, početkom trećeg tisućljeća stare ere. Egipatski jezik čini zasebnu jezičnu porodicu unutar afrazijskih jezika. Afrazijskim jezicima pripadaju još čadski, berberski, omotski, kušitski i semitski jezici. U Africi uz afrazijske jezike postoje još i druge porodice, kao što su nilosaharski jezici, nigersko-kordofanski jezici te khoisanski jezici. Nekoć je prevladavala spomenuta teorija o semitskim i hamitskim jezicima, no s vremenom je ona odbačena jer nije pronađeno lingvističkih dokaza da bi takozvani hamitski jezici bilo nešto bliže međusobno srodni i činili veću potporodicu. Većinom se taj termin upotrebljavao kao koš za sve nesemitske jezike, a često se to čini i danas.

Sam egipatski jezik podosta se mijenjao, stoga govorimo o nekoliko njegovih faza: arhajski egipatski (otprilike oko 2600.–2000. pr. Kr.), zatim srednjoegipatski od 2000. do 1300. pr. Kr. – klasične faze egipatskoga jezika, i kasnoegipatski oblik (od 672. pr. Kr.), koji je dosta promijenjen u odnosu na srednjoegipatski. Potom se od 7. stoljeća pr. Kr. do 5. stoljeća nove ere stvara demotski jezik, a od 1. stoljeća pa čak do 17. stoljeća preživljava i koptski jezik, kojim se služe kršćani u koptskoj crkvi.

The Egyptian and Sumerian scripts developed at more or less the same time, at the beginning of the 3rd millennium BC. The Egyptian language belongs to the separate language family within Afro-Asiatic (Afrasian) language family. The Chadic, Berber, Omotic, Cushitic and Semitic languages belong to Afro-Asiatic language family. There are other language families in Africa such as Nilo-Saharan, Niger-Kordofanian and Khoisan. The theory of Semitic and Hamitic languages was prevalent in the past but it has been abandoned over time since no linguistic evidence has been found to support the theory that the so called Hamitic languages were so closely related to form a bigger language family. This name has often been used as a basket for all non-Semitic languages, which is still often done.

The Egyptian language underwent many changes, therefore we speak about several phases: Archaic Egyptian (approx. 2,600-2,000 BC), Middle Egyptian (2,000 - 1,300 BC) - the Classical phases of the Egyptian language and the Late Egyptian form (from 672 BC) which was considerably changed compared to Middle Egyptian. After that the Demotic language was in use from the 7th century BC until the 5th century AD, while the Coptic language appeared in the 1st century AD and survived until the 17th century used by the Christians in the Coptic Church.

Fragment od kamena s urezanim hijeroglifima (Egipat, Novo kraljevstvo 1550.-1069. pr. Kr.) AMZ
Stone slab with incised hieroglyphs (Egypt, New Kingdom 1550-1069 BC) AMZ

Hijeroglifi

Hijeroglifske (grč. ἱερός, *hierós* = svet, γλυφή, *glyphḗ* = znak, prevedenica prema egipatskom *mdw.w-nṯr* = božje riječi) zapise iz faraonskoga Egipta nalazimo na kamenim i drvenim spomenicima, na keramici i papirusima. Hijeroglifi variraju od vrlo detaljno prikazanih i obojenih do sasvim jednostavnih kurzivnih, a to ovisi o svrsi i mediju na kojem se pisalo. Hijeroglifi su se mogli pisati horizontalno ili okomito, slijeva nadesno ili zdesna nalijevo. To je omogućavalo estetsko usklađivanje pisma s predmetom ili građevinom na kojoj je tekst bio napisan. Pismo je u Egipćana imalo i dekorativnu funkciju. Kad je estetika bila u drugom planu, na primjer na papirusima, tada je uobičajeno da je tekst smješten horizontalno i teče zdesna nalijevo. Prepoznavanje smjera u kojem tekst teče jednostavno je i svodi se na to da su znakovi okrenuti u smjeru iz kojeg tekst teče, odnosno prema njegovu početku. To je najlakše uočiti iz položaja znakova koji prikazuju ljude, ptice i druge životinje. U tekstu koji je položen okomito također se može razlikovati smjer, naime, ovdje on pokazuje kojim se redoslijedom trebaju čitati stupci – slijeva ili zdesna.

Jean-François Champollion otkrio je da su egipatski znakovi fonogrami, to jest da imaju glasovnu vrijednost, što je bilo revolucionarno otkriće jer je demantiralo neke tradicionalne zablude o hijeroglifima kao isključivo religioznim simbolima. Preciznije rečeno, egipatski znakovi imaju tri funkcije. Oni mogu biti: fonogrami, ideogrami i determinativi.

Fonogrami (od grč. φωνή, *phōnḗ* = zvuk i γράμμα, *grámma*= slovo, pismo) su znakovi s glasovnom vrijednošću jednoga, dvaju ili triju glasova. Stoga govorimo o jednoslovima, dvoslovima i troslovima (uniliterali, biliterali i triliterali). Ideogrami ponekad imaju, a determinativi uopće nemaju glasovnu vrijednost, već dodaju pismu isključivo vizualnu dimenziju. Razlika je u tome što se ideogrami mogu koristiti i u kompoziciji riječi kao fonogrami, dok su determinativi bliži pojmu simbola nego znakova pisma.

Hieroglyphs

Hieroglyphic (Gr. ἱερός, *hierós* = holy, γλυφή, *glyphḗ* = sign, translation according to Eg. *mdw.w-nṯr* = god's words) inscriptions from the time of the Egyptian Pharaohs can be found on stone and wooden monuments, ceramics and papyruses. Hieroglyphs vary from very elaborate and colourful to simple and cursive, which depends on their purpose and the media they were written in. They could be written both horizontally and vertically, from left to right and right to left. This made it possible to harmonize script with an object or a structure the text was written on. The Egyptian script also had a decorative function. When the aesthetics was of secondary importance, e.g. in papyruses, the text would usually be written horizontally from right to left. Recognizing the direction in which the text is written is simple as the symbols are facing the direction they are written in, i.e. towards the beginning of a line. The symbols depicting people, birds and other animals make it easier to determine the direction. The direction can also be determined in the vertically written texts as the text shows in which order the columns are to be read - from left or right.

Jean-François Champollion discovered that the Egyptian symbols are phonograms, that is, that they have a phonetic value, which was a revolutionary discovery since it refuted some of the traditional theories about the hieroglyphs being exclusively religious symbols. To be more precise, the Egyptian symbols have three functions. They can be: phonograms, ideograms and determinatives.

Phonogrames (Gr. φωνή, *phōnḗ* "sound" i γράμμα, *grámma* "letter", "written", "writing") are the symbols with phonetic values of one, two or three sounds. Therefore we speak about uniliterals, biliterals and triliterals. Ideograms sometimes have while determinatives never have phonetic value. They only add visual dimension to the script. The difference lies in the fact that ideograms can be used as phonograms in the composition of words, and determinatives are closer to symbols than script signs.

JEDNOSLOVI (UNILITERALI) / PHONOGRAMS FORMED WITH ONE CONSONANT (UNILITERAL SIGNS)

ZNAK SYMBOL	GLAS SOUND	TRANSLITERACIJA TRANSLITERATION	OPIS DESCRIPTION
	a (glotalni zatvor/ glottal closure)	*A*	strvinar / vulture
	i, j	*i,y*	trska / flowering reed
	a (faringalno/ pharyngeal)	A	podlaktica / forearm
	u, v	*W*	prepelica / quail chick
	b	*B*	noga / leg
	p	*P*	sjedalo / stool
	f	*F*	rogata vipera / horned viper
	m	*M*	sova / owl
	n	*N*	voda / water
	r	*R*	usta / mouth
	h	*H*	sklonište od trske / reed shelter
	h (faringalno/ pharyngeal)	*H*	povoj od lana / twisted flax
	h (uvularno/ uvular)	X	placenta ili vulva / placenta or vulva
	h (palatalno/ palatal)	X	životinjska utroba / animal's viscera
	s	*S*	presavinuto platno, šal / folded cloth, shawl
	s, z	*s, z*	zasun / door bolt
	š	S	bazen, ribnjak / pool, fish pond
	k, q	*Q*	strana brda / hill slope
	k	*K*	košara s ručkom / basket with handle
	g	*G*	podmetač za posudu / jar stand
	t	*T*	kruh / bread
	ć (č)	T	povodac / tethering rope
	d	*D*	dlan (šaka) / hand (fist)
	đ (dž)	D	kobra / cobra/snake

Determinativi pokazuju vrstu kojoj neka riječ pripada. Tako, tekućine će imati svoj determinativ, ljudi svoj i slično. Ideogrami pak predstavljaju upravo to što je napisano, baš tu sliku.

Determinatives identify a word as belonging to a certain class or category. Hence, the liquids, people, etc. have their own determinatives. Ideograms represent precisely what is written, the exact picture.

U popisu jednoslova ujedno su i svi glasovi koje poznajemo u srednjoegipatskome jeziku.

U kasnijemu jeziku kao n javlja se i , a kao m . Poslije će se *o* znati pisati kao , a *e* kao fonogram *i*. Primjerice u kasnijim imenima: Kleopatra (*Qlqpdrt*)

 ili Ptolemej (*Ptolmys*) 

The list of uniliterals also contains all the sounds known in The Middle Egyptian language.

In the later language also appears as n, and as m. Later on *o* was often written as , and a *e* as the phonogram *i*. For example in later names Cleopatra (*Qlqpdrt*)

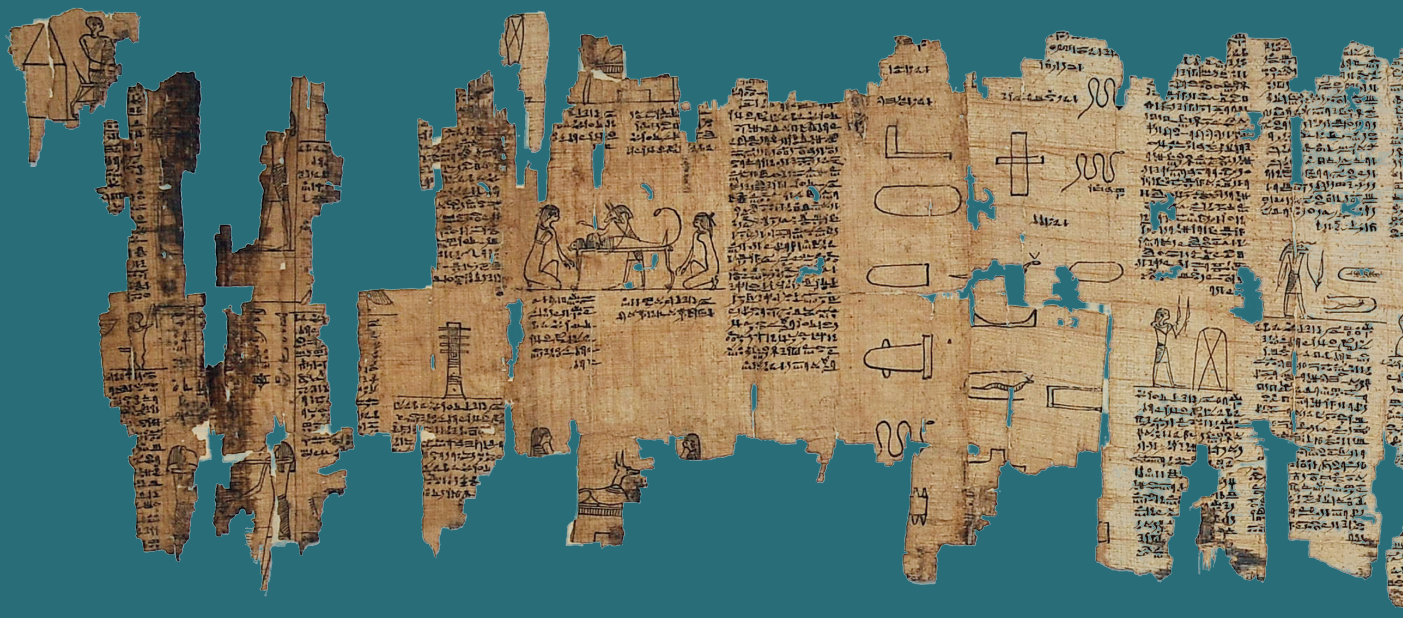
 or Ptolemy 

Najbolji primjer je detarminativ čovjeka s rukom na ustima. On uvijek stoji nakon glagola poput: jesti, piti, ljubiti, reći itd. Katkad se u literaturi ideogramima nazivaju općenito znakovi koji stoje bilo za to što prikazuju, bilo za klasu toga, te su to zapravo i determinativi.

Transliteracija je prijepis hijeroglifskih znakova u latinične grafeme. To je pisanje u egiptologiji standardizirano kako bi se u svim jezicima staroegipatski pisao na isti način. Naime, razni jezici služe se raznim znakovima kako bi napisali neki znak. Primjerice, glas [š] u hrvatskom se piše „š", Nijemci pišu „sch", a Britanci „sh", u transliteraciji se upotrebljava isti znak kao u hrvatskom š, dok se grleni glas *alef* piše *A*.

The best example is a determinative of a man holding his hand over his mouth. It always follows the verb as in: to eat, drink, kiss or say etc. Sometimes ideograms are referred to in literature as signs because they stand for either something they represent, or its class, and are therefore determinatives.

Transliteration is a transcript of hieroglyphic symbols into Latin graphemes. This kind of writing was standardized in Egyptology so that the Old Egyptian could be written in the same way in all languages. Namely, different languages use different symbols to write a certain sign. For example, the sound [š] in Croatian is written as "š", in German as "sch", and in English as "sh"; in transliteration the same sign is used as for the Croatian š, while the glottal aleph is written as *A*.



Hijeratsko pismo

Hijeratika ili svećeničko pismo pisani je oblik hijeroglifa. Hijeratika zamjenjuje hijeroglife u pisanju na papirusu i ne razlikuje se u sustavu upotrebe znakova.

Hieratic Script

Hieratic script is a form of Egyptian hieroglyphics used especially by the priests. It replaced hieroglyphs in writing on papyrus and it doesn't differ in the system of sign usage.

Demotsko pismo

Demotika ili narodno pismo razvila se iz ekstremno pojednostavljene hijeratike. Ideogrami i determinativi su sasvim izbačeni a znakovi se spajaju u riječi. Također se piše na papirusu. Uz ugovore, sudske zapise, inventare u ptolemejskom razdoblju (332. – 30. pr. Kr.) ima i književnih djela na demotici.

Demotic Script

Demotic script was a popular script which developed from the extremely simplified version of Hieratic script. Ideograms and determinatives were completely abandoned and signs merged into words. It is mostly written on papyrus. While it was mostly used for writing contracts, legal records and inventory records during the era of Ptolemaic reign (332 - 30 BC) there are also literary texts which were written in Demotic.

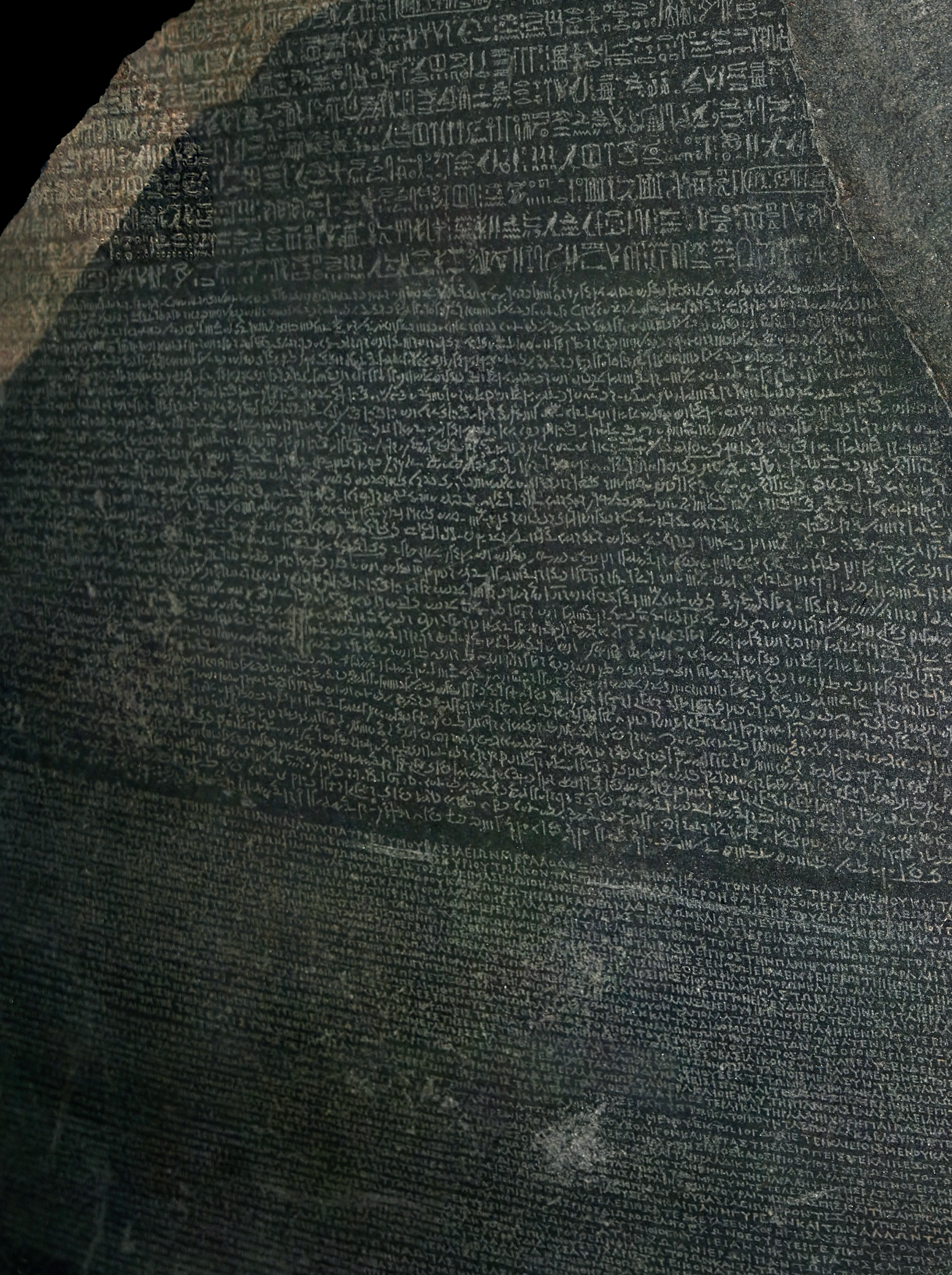
Koptsko pismo

Rani kršćani počeli su pisati velikim slovima grčkog pisma u 3. stoljeću nove ere. Uz grčku abecedu koristili su još nekoliko znakova kojima su zapisivali specifične egipatske glasove. Danas se koptski jezik rijetko koristi samo u liturgiji koptske crkve.

Coptic Script

The early Christians started using Greek capital letters in the 3rd century AD. Along with the Greek alphabet they were also using a few more signs for specific Egyptian sounds. Coptic is very rarely used today, only in the Coptic Church liturgy.

Papirus Zagreb 602 (hijeratika) *Knjiga mrtvih* Paher Honsa i Nesi Hensu, ptolemejsko razdoblje 332.-30. pr. Kr., AMZ
Papyrus Zagreb 602 (hieratic script), *Book of the Dead* of Paher Khons and Nesy Khons, Ptolemaic period 332.-30. BC, AMZ



Ploča iz Rosette

Kameni fragment poznat po tome što je zahvaljujući trima pismima koji se nalaze na njegovu licu Jean-François Champollion otkrio način čitanja i značenje egipatskoga hijeroglifskoga pisma. Francuskom jezikoslovcu to je uspjelo nakon što je egipatski bio zaboravljen gotovo 15 stoljeća. Taj spomenik, odnosno stela, visine 112,3 cm, težine 762 kilograma, tek je nešto više od polovice spomenika nastala 196. pr. Kr., čijim je dijelom bila. Nazvana je po gradu u delti Nila kod kojega je pronađena 1799. godine.

Tekst stele postao je sinonim za egipatsko pismo otkriveno na brojim papirusima, kamenim spomenicima, građevinama i predmetima, te je staroegipatske kulture u cijelosti. Ujedno tekst svjedoči o povezanosti grčke i egipatske kulture u ptolemejskom razdoblju (332.–30. pr. Kr.). Tekst je napisan na grčkom, demotskom i hijeroglifskom pismu. Hijeroglifski zapis je u 14 redaka na vrhu, ispod njega je također egipatsko pismo kasnog razdoblja – takozvano demotsko u 32, a na dnu se nalazi zapis istoga teksta na grčkom pismu i jeziku u 54 retka.

Godine 1801. francuska vojska predala se britansko-turskim snagama te im pri tome predala i spomeničku građu. Tako je stela konačno završila u Ujedinjenom Kraljevstvu, gdje se i danas čuva u Britanskom muzeju. Champollion je proučavao kopiju na pausu koju su izradili Francuzi i uspio prepoznati znakove kojima su bila napisana imena Ptolemeja V. Epifana i kraljice Kleopatre I. Imena su, naime, bila napisana jednokonsonantima, koji su odgovarali jednom glasu.

Rosetta Stone

It is a famous stone fragment with inscriptions written in three scripts which enabled Jean-François Champollion to deduce the way of reading and the meaning of the Egyptian hieroglyphic script. This French philologist succeeded in deciphering it after it had been forgotten for nearly 15 centuries. The monument, a rock stele, carved in 196 BC, is 112.3 cm long and weighs 762 kg which is just a little bit more than the half of the original weight of the monument it was a part of. It was named after the town in the Nile Delta where it was found in 1799.

The text of the stele became synonymous for the Egyptian script discovered on many papyruses, stone monuments, buildings and various objects, and the Egyptian culture altogether. Also, the text provides evidence of a bond between the Egyptian and Greek culture in Ptolemaic period (332–30 BC). It was written in the Greek, Demotic and hieroglyphic script. The 14 lines of hieroglyphic inscription are written on the top, the text written also in the Egyptian script of the late period (Demotic script) in 32 lines is below it, and the 54 lines at the bottom of the text are written in the Greek language and script.

In 1801 the French army surrendered to the Anglo - Ottoman forces and handed over the collected artefacts. Thus, the stele finally ended up in the United Kingdom where it is still kept in the British Museum. Champollion studied the copy made by the French on tracing paper and managed to recognize the signs used in writing the names of Ptolemy V Epiphanes and Queen Cleopatra I. The names were written using mono-consonants which corresponded to individual sounds.

Ploča iz Rosette, 196. pr. Kr., British Museum / Rosetta Stone, 196 BC, The British Museum

Pisma Mezopotamije
Mesopotamian Scripts

Jasmina Osterman

U doba velikih otkrića koje je slijedilo iza renesanse, Europljani su počeli otkrivati i Bliski istok. Prvo su im pažnju privukli perzijski lokaliteti na kojima su nalazili niz natpisa i reljefa uklesanih u stijene. Natpisi su bili napisani tada nepoznatim klinastim pismom. O njemu piše Herodot (Hdt. IV, 87) spominjući da je Darije podigao dva stupa na Bosporu, jedan s asirskim pismom (vjerojatno je mislio na perzijsko), a drugi s grčkim. Herodotova *grammata assyria* može se odnositi samo na klinasto pismo. Osim tog usamljenog slučaja, klinasto je pismo nestalo iz ljudskog sjećanja. Pravi ključ za dešifriranje klinastog pisma bio je trojezični (elamski, babilonski i staroperzijski) natpis iz Behistuna. Prvi ga je ozbiljno proučavao 1835. godine britanski diplomat Henry Rawlinson koji je, uz istovremen nezavisan rad Georga Friedricha Grotefenda, učitelja iz Göttingena, uspio pročitati dio staroperzijskog trojezičnog natpisa ahemenidskih kraljeva, čime je postavio temelje dešifriranju klinastog pisma.

Klinasto pismo dobilo je ime po obliku znakova od kojih se sastojalo (lat. *cuneus* = klin). Prvi ga je tako nazvao Engelbert Kämpfer (1651.–1716.), a to ime i danas koristimo. Oblik pisma bio je uvjetovan materijalom na kojem se pisalo, glinom i oruđem kojim se pisalo, pisaljkom od trske. Otisak koji je pisaljka ostavljala u glini imao je klinasti oblik. Simboli koji su sačinjava-

At the time of great discoveries which followed the Renaissance the Europeans started discovering the Near East. Their attention was first drawn to the Persian sites where a series of inscriptions and reliefs cut into the rocks were found. The inscriptions were written in the then unknown cuneiform script. Herodotus wrote about it (Hdt, IV, 87) mentioning that Darius erected two pillars in Bosporus, one with the inscription in the Assyrian script (he probably meant Persian) and the other in Greek. Herodotus' *Assyria grammata* can refer only to cuneiform script. Except for this one case, cuneiform script disappeared from human memory. The right key to deciphering cuneiform was a trilingual (Elamite, Babylonian and Old Persian) Behistun inscription. The British diplomat Henry Rawlinson was the first to study it seriously in 1835, and together with Georg Friedrich Grotefend, a teacher from Göttingen, who was independently studying a trilingual Achaemenid Royal Inscriptions and managed to read a part of it, laid foundations to deciphering it.

Cuneiform script was named according to the form of the signs it consists of (Lat. *cuneus* = wedge). Engelbert Kämpfer (1651–1716) was the first to use that name, and we still use it today. The appearance of the script was determined by the material it was written on (clay) and the writing implement (reed stylus) . The impression that the stylus left in clay was wedge-shaped. The symbols that the script consists of were shaped by horizontal, vertical, slanted

li pismo oblikovani su pomoću horizontalnih, vertikalnih, kosih i trokutastih oznaka koje su se utiskivale u vlažnu glinu. Posebna kombinacija tih utisnutih znakova stvarala je jedinstven izgled svakog simbola.

Najstarije pločice s pretečom klinastog pisma datiraju se oko 3200. pr. Kr. U svojem razvojnom putu klinasto pismo je prolazilo kroz dvije faze. Prva faza (protoklinasto pismo) odgovara pojavi prvih tekstova a karakteriziraju je piktogrami, dok druga počinje fonetizacijom pisma oko 2600. pr. Kr. Paralelno se razvija i izgled samih znakova, od onih koji još odražavaju slike stvarnih stvari prema onim apstraktnim, oblikovanim pomoću malih klinastih otisaka. Kao mjesto izuma pisma često se spominje grad Uruk, budući da su tamo, u slojevima hramskog kompleksa božice Inane (Eanna) pronađene pločice s najranijim protoklinastim zapisima. U protoklinastom pismu postojao je jedan znak ili grupa znakova za svaki termin i pri tome se nisu bilježili nikakvi gramatički elementi jezika. Najstariji su se tekstovi sastojali od simboličkih ili ideografskih indikatora koji su se mogli čitati na bilo kojem jeziku. Gotovo 85 posto od oko 7000 pločica koje pripadaju ovoj fazi sačinjavaju administrativni dokumenti, dok ostalih 15 posto čine razni leksički popisi koji su vjerojatno služili kao podsjetnik novoj kategoriji administratora, pisarima.

Namjena pločica, to jest način na koji su informacije na njima bile organizirane, uvjetovala je i daljnji razvoj klinastog pisma. Pločice su bile podijeljene na nekoliko stupaca koji su se zatim dijelili na još manje dijelove u koje se onda bilježio pojedinačni unos. Svaki taj najmanji dio sadržavao je podatke o jednoj transakciji. U tim najranijim zapisima često nije jasna ni priroda pojedinih transakcija. Na primjer, je li određena količina ječma donesena u hram ili se iz njega odnosila, jer je na pločici nacrtan samo simbol ječma, njegova količina i ponekad institucija u kojoj (ili za koju) se vršila transakcija. U početnom stadiju to i nije predstavljalo ozbiljniji problem budući da su se zapisivali uglavnom samo šturi administrativni podatci. Mnogo ozbiljniji problem nastaje kada se pokušaju zapisati osobna imena, što naposljetku dovodi do fonetizacije. Prelazak na silabičko pismo i uključivanje gramatičkih elemenata zahtijevalo je da

and triangle tokens that were pressed into wet clay. A special combination of these pressed signs created a unique appearance of each symbol.

The oldest tablets containing proto-cuneiform script date back to around 3,200 BC Cuneiform script had two phases of development. The first phase (proto-cuneiform script) corresponds to the appearance of the first texts and is characterised by pictograms, while the second phase begins with phoneticization of the script around 2,600 BC. The shape of the signs developed at the same time, from the signs still depicting real objects towards abstract signs, pressed with small wedge-shaped stamps. The city of Uruk is often mentioned as the place where script was invented, since the tablets with the earliest proto-cuneiform inscriptions were found there in the layers of the temple complex of the goddess Inanna (Eanna). In proto-cuneiform script there was one sign or a group of signs for each term while no grammatical elements were recorded. The oldest texts consisted of symbolic and ideographic indicators which could have been read in any language. Almost 85% out of 7,000 tablets that belong to that phase are administrative documents, while the remaining 15 percent are various lexical lists which probably served as reminders to the new category of administrators, the scribes.

The purpose of the tablets, i.e. the way that the information they contained was organised had an impact on the later development of the cuneiform script. The tablets were divided into several columns which were further divided into smaller sections in which a certain value was recorded. Even the smallest sections contained data about one transaction. In these earliest records the nature of transactions is not often clear. For example, it was not clear whether a certain quantity of barley was brought to the temple or taken out, since the tablets only contained the symbol for barley, the quantity and sometimes the name of the institution where the transaction took place. At the beginning it did not pose a serious problem as only scanty administrative data were recorded. Writing personal names caused far more serious problems which eventually led to phoneticization. The transition to syllabic script and the incorporation of grammatical elements required that the signs should be written in the same order they were read. This lead to certain confusion within the cuneiform script system. It was particularly evident in the existence of

se znakovi zapisuju po redu kojim su se i čitali. Unutar sistema klinastog pisma tada dolazi do određene zbrke. U prvom redu to se ogledalo u postojanju *homofonije* i *polifonije*. Da bi se razlikovale riječi koje su se isto čitale i koje bi se mogle teorijski izraziti istim znakom, koristili su se fonetski indikatori, determinativi.

To omogućava i zapisivanje prvih povijesnih i literarnih tekstova. U to vrijeme mijenja se i smjer kojim se pisalo i sami izgled pločica. Do tada, pločice su bile blago izdužene, a znakovi su bili raspoređeni nasumično unutar pravokutnih polja koja su bila organizirana da se čitaju zdesna nalijevo. Pločicama se sada širina naspram visine smanjuje, a znakovi se čitaju slijeva nadesno. Znakovi koji su bili namijenjeni da se čitaju kao slike, uz razvoj samog izgleda simbola prema klinastom pismu, sad se okreću za 90°.

Danas se znanstvenici uglavnom slažu da izum pisma treba pripisati Sumeranima, narodu čije porijeklo još nije utvrđeno. Sumerski jezik bio je svojevrsni lingvistički otok te nije srodan ni s kojom danas poznatom grupom jezika. On je bio osnovni jezik pisma sve do akadskog razdoblja (oko 2300. pr. Kr.) kad akadski postaje službenim jezikom. Akadski pripada istočnosemitskoj skupini jezika kao i njegovi mnogo poznatiji nasljednici, babilonski i asirski jezici koji su govoreni i pisani sve do kasnog 1. tisućljeća. Akadska dinastija dolaskom na vlast preuzima i dalje razvija sumersku administrativnu organizaciju, a s njom i pismo. Pri tome koriste sumerske znakove koje su prilagodili svom jeziku. Broj klinastih znakova je tada pao na 600, dok je u protoklinastom pismu postojalo oko 2000 znakova. Sumerski jezik izlazi iz svakodnevne upotrebe od starobabilonskog razdoblja, ali ga pisari i dalje upotrebljavaju za kraljevske natpise (u smislu nastavljanja tradicije) i za leksičke liste, koje još dugo prepisuju i čuvaju u svojim arhivima. Poznavanje sumerskog jezika smatralo se obilježjem pravog školovanja i mudrosti čak gotovo tri tisuće godina kasnije. Kao i sanskrt i latinski jezik, on je zadobio kulturnu vrijednost kao veza sa starim ali još aktualnim tradicijama.

Klinasto pismo (Ur 2111.-2003. pr. Kr.), AMZ
Cuneiform writing (Ur 2111-2003 BC) AMZ

homophony and *polyphony*. In order to distinguish words which were read in the same way and which could theoretically be represented by the same sign, phonetic indicators and determinatives were used.

It enabled writing the first historical and literary texts. At that time the direction of writing changed. Until then the tablets were slightly elongated and the signs were randomly written within square fields which were organized to be read from right to left. Then the width was reduced and the signs were read from left to right. The signs were supposed to be read as pictures, and as they developed towards the cuneiform script they were rotated by 90°.

Today the scholars mainly agree that the creation of script should be attributed to the Sumerians, the people whose origins are still not known. The Sumerian language was a sort of a linguistic isolate, not related to any group of languages known today. It was the principal language of script until the Akkadian period (around 2,300 BC) when Akkadian became the official language. Akkadian belongs to the East Semitic language family like its more famous successors Babylonian and Assyrian which were both spoken and written until the late 1st millennium. The Akkadian dynasty established their reign and further developed the Sumerian administrative organization and script too. They used Sumerian signs and adapted them to their language.

Klinasto se pismo kao i ostale tekovine mezopotamskih kultura, počevši od sredine 3. tisućljeća pr. Kr., širi u susjedna civilizacijska središta: Anadoliju, Levant, prostor Iranske visoravni. Na tim se prostorima tijekom sljedećih stoljeća javljaju brojni novi narodi koji klinasto pismo preuzimaju i djelom prilagođavaju vlastitom jeziku. Tako su do danas uz one na sumerskom i istočno-semitskim (akadskom, babilonskom i asirskom) jeziku sačuvani i klinasti tekstovi pisani indoeuropskim hetitskim, raznim dijalektima zapadno-semitskih jezika (amoritski, kanaanski...), elamskim i huritskim (kojima kao i za sumerski nije poznato porijeklo ni jezična pripadnost) te najmlađe staro perzijsko pismo za perzijski, indo-iranski jezik. Najmlađi do danas pronađeni klinasti tekst datira se u 1. stoljeće poslije Krista. Riječ je o jednom astronomskom tekstu koji je gotovo u cijelosti pisan sumerskim logogramima.

Hamurabijev zakonik, 1750. pr. Kr., Louvre
/ The Code of Hammurabi, 1750 BC, The Louvre

The number of cuneiform signs then dropped to 600. The proto-cuneiform script had around 2,000 signs. The Sumerian language was no longer used in everyday speech since the Old Babylonian period, but the scribes were still using it in royal inscriptions (in the sense of preserving tradition), for lexical lists which they continued copying and kept in their archives. Knowledge of the Sumerian language was considered to be a sign of a decent education and wisdom almost 3,000 years later. Like Sanskrit and Latin it gained cultural value as a bond with old but still relevant traditions.

From the middle of the 3rd millennium BC the cuneiform script, like other achievements of the Mesopotamian cultures, started spreading to the neighbouring centres of civilisation: Anatolia, Levant and the Iranian plateau. New nations were born in these territories over the next few centuries. They adopted the cuneiform script and adapted it to their languages. Except for the cuneiform texts written in the Sumerian and East-Semitic languages (Akkadian, Babylonian and Assyrian), the cuneiform texts written in Indo-European languages e.g. Hittite, various dialects of the Western-Semitic languages (Amorite, Canaanite etc.), Elamite and Hurrian (the languages whose origin or language family remains unknown) and the youngest Old Persian script written in Persian and Indo-Iranian language, are still preserved. The most recent texts found until today date from the 1st century AD. It is a text on astronomy which was almost completely written in the Sumerian logograms.

Hamurabijeva stela

Hamurabijeva stela je 213 cm visok spomenik pronađen u Iranu u mjestu Suza koji se danas čuva u pariškom muzeju Louvre. Na vrhu monolita nalazi se 71,1 cm visok prikaz cara Hamurabija ispred akadskoga boga sunca Šamaša. Ostatak spomenika ispisan je zakonikom koji je Hamurabi dobio od boga, tekstom poznatim kao Hamurabijev zakonik. Riječ je o 300 izreka napisanih klinastim pismom na akadskom jeziku koje se odnose na stvarno, obiteljsko, bračno i kazneno pravo. Hamurabijevo ime napisano klinastim pismom otkriva njegovo amoritsko porijeklo, a značenje mu je „Očinski iscjelitelj". Zakonik napisan na velikom crnom spomeniku učinio ga je jednom od istaknutijih ličnosti staroga vijeka.

The Code of Hammurabi

It is a 213 cm tall monument found in the Iranian city of Susa. Today it is kept in the Louvre, Paris. The Emperor Hammurabi is portrayed standing in front of Shamash the sun god on the top of the 71.1 cm tall monolith. The laws Hammurabi received from the god himself are inscribed on the remaining part of the monument. The text is known as "the Code of Hammurabi" It contains 300 sayings written in the cuneiform script in Akkadian. They relate to common, family, marital and criminal law issues. Hammurabi's name, written in the cuneiform, reveals his Amorite descent, and means "the (paternal) kinsman is a healer". The code is inscribed on a black monument and made him one of the most distinguished personalities of antiquity.

Nepoznata pisma i jezici
Unknown Scripts and Languages

Igor Uranić

Otkrivanje načina čitanja starih pisama, često popularno nazivano dešifriranjem, osobito je intrigantan dio lingvistike i arheologije. Najpoznatija je priča o Jeanu-Françoisu Champollionu, koji je oko 1830. godine otkrio način čitanja egipatskih hijeroglifa i time vratio u život golem opus egipatskih zapisa nakon što je to znanje bilo zaboravljeno gotovo petnaest stoljeća. Champollionov „proboj u šifru" tog drevnog pisma dogodio se ponajviše zahvaljujući usporednom tekstu na hijeroglifima, demotici i grčkom jeziku koji je otkriven na Ploči iz Rosette. Raspoznavši imena Kleopatre i Ptolemeja shvatio je da se hijeroglifi čitaju kao fonogrami. Nakon toga preostalo je da se u mnogobrojnim egipatskim tekstovima definiraju svi znakovi pisma i riječi. Njegovo djelo postalo je legenda moderne orijentalistike.

No nisu svi bili takve sreće. Mnogi su znanstvenici proveli čitav život pokušavajući otkriti tajne starih pisama, a da nisu u tome uspjeli. Zasigurno ima i pisama s kojima to nitko nije ozbiljnije ni pokušao. Naime, kod većine nepoznatih pisama starih civilizacija problem je u nedovoljnom opusu koji bi služio za usporedbu koja bi dovela do razumijevanja. Primjer za to je nedešifrirano kretsko pismo sačuvano jedino na disku iz Festosa koje podsjeća na elamitske

Discovering the ways of reading ancient scripts, popularly called deciphering, is a particularly intriguing branch of linguistics and archaeology. The most popular story is the story of Jean-François Champollion who deciphered the Egyptian hieroglyphs in 1830 and thus brought back to life a large opus of the Egyptian inscriptions after they had been forgotten for nearly 15 centuries. Champollion's breaking the "code "of this ancient script was possible mainly owing to the fact that there were three parallel texts in hieroglyphic, demotic and Greek on the Rosetta Stone. Having recognized the names of Cleopatra and Ptolemy he realized that the hieroglyphs are read as phonograms. What was left to be done after that was to decipher all signs and words in numerous Egyptian documents. His work became legendary in Oriental studies.

Not everyone was that lucky. Many scholars spent their entire lives trying to reveal the secrets of the ancient scripts, and failed. There certainly are scripts that no one tried seriously to decipher. The problem with the majority of the undeciphered scripts is the insufficient number of written documents which could be compared thus enabling understanding. One of such examples is the undeciphered script from Crete, preserved only on one disc from Phaistos and which is reminiscent of the Elamite and Egyptian hieroglyphs. Perhaps its usage

i egipatske hijeroglife. Možda je njegova upotreba bila vrlo lokalnog karaktera, ili je trajala relativno kratko. Iz kružno odnosno spiralno poslaganih dvjestotinjak znakova nemoguće je išta zaključiti, iako je jasno da je riječ o pismu.

Među simbolima i protopismima iz neolitika dobar je primjer protopismo iz Vinče, kulture nazvane po mjestu u predgrađu Beograda. Pismo je otkrila mađarska arheologinja Zsófia Torma 1875. godine u Rumunjskoj. Najvjerojatnije je riječ o preteči pisma, gdje sama ideja pisma već postoji, no kao takvo ne možemo ga razumjeti. U nizu pisama iz brončanog doba koja su ostala nedešifrirana najpoznatija su linear A, indsko i proto-elamitsko pismo. U nedešifrirana se ubraja i niz pisama iz Srednje Amerike poput olmečkoga, isthimijanskoga, zapotečkoga i mikstečkoga. Riječ je o pretežno piktografskim pismima.

Nemoguće je nabrojati sva pisma čije značenje nikad nije odgonetnuto. Jedno od najzanimljivijih nalaza s zapisom neodgonetnutoga jezika jest takozvana *Liber linteus Zagrabiensis* ili Zagrebačka lanena knjiga, sačuvana u Arheološkom Muzeju u Zagrebu. Taj jedinstven spomenik nulte kategorije najduži je etruščanski tekst ikada pronađen, a mumija s kojom je povezan naziva se Zagrebačkom mumijom. Te su dvije iznimne starine izložene u zasebnoj prostoriji na trećem katu Muzeja, uz Egipatsku zbirku.

Povijest Zagrebačke mumije poznata nam je od vremena njezine akvizicije u Egiptu davne 1847. ili 1846., kad je Mihael Barić, Hrvat nastanjen u Beču, posjetio Egipat. Mumija i *liber* ostali su u Barićevoj kući do njegove smrti 1859., a onda su ih njegovi nasljednici, prema njegovoj oporuci, darovali novoj instituciji koja je u to vrijeme trebala postati jednim od simbola nacionalnoga buđenja u Hrvatskoj: Narodnome muzeju u Zagrebu.

Godine 1892. u posjet zagrebačkoj Egipatskoj zbirci doputovao je bečki egiptolog Jakob Krall i upoznavši se s tekstom na *liberu* prvi shvatio da nije riječ o staroegipatskom nego etruščanskome rukopisu. Tako je u javnosti postalo poznato da se u Zagrebu čuva najduži poznati etruščanski tekst u svijet te je rukopis dospio u središte pozornosti etruskologa i lingvista diljem svijeta.

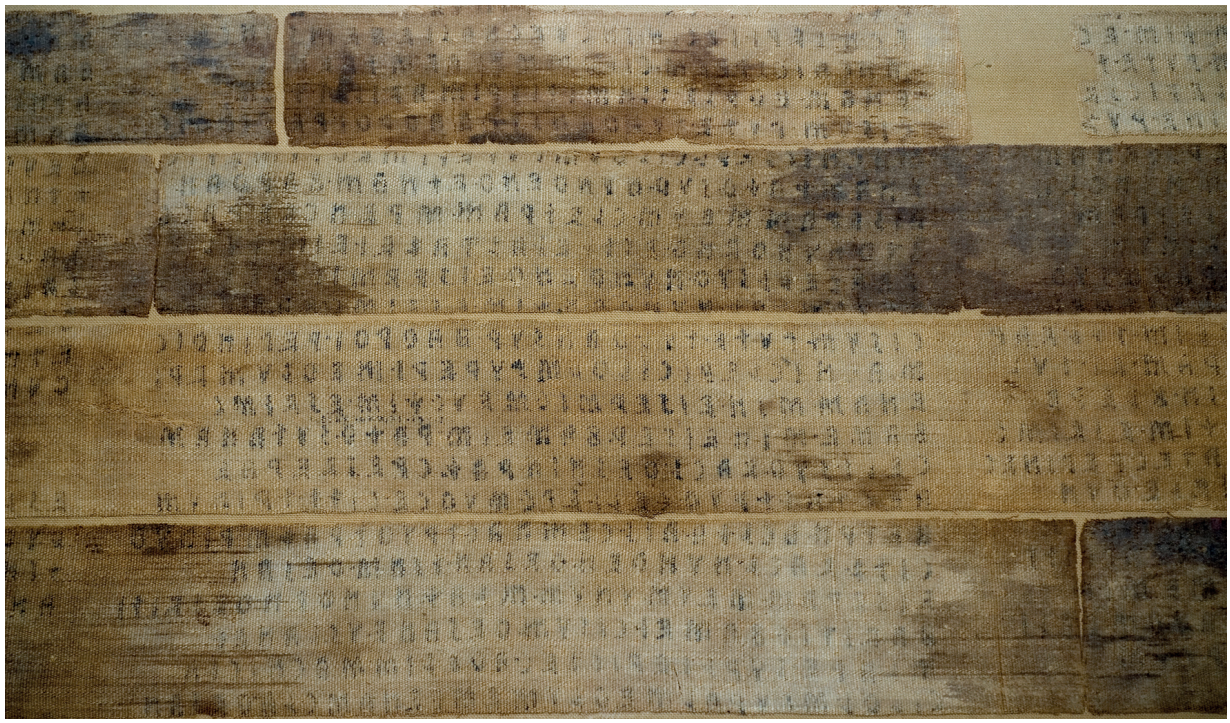
was very localized or lasted for a very short period of time. Although it is clear that it is an inscription, it is impossible to deduce anything from some 200 stamped signs in a spiral formation.

The Vinča proto-script, named after a Belgrade suburb, is a very good example of symbols and proto-scripts from the Neolithic Age. The script was discovered by a Hungarian archaeologist Zsófia Torma in Romania in 1875. It is most probably a predecessor of a script, where the very idea of a script already existed, but we cannot understand it as such. Among the Bronze Age scripts which still remain undeciphered are Linear A, the Indus script and the proto-Elamite script. A number of scripts from Central America e.g. the Olmec, Isthimian, Zapotec and Mixtec scripts are still among the undeciphered scripts. They are mostly pictographic scripts.

It is impossible to list all the scripts that have never been deciphered. One of the most interesting finds with the inscription in an undeciphered language is the so called *Liber linteus Zagrabiensis* or the Linen Book of Zagreb kept in the Archaeological museum in Zagreb. This unique item of a Zero Category (the highest category) is the longest Etruscan text ever found, and the mummy which was wrapped in it is called the Zagreb Mummy. These two unique antiquities are on display in the Archaeological museum on the 3rd floor, next to the Egyptian collection.

The history of the Zagreb mummy is known from the time of its acquisition in Egypt in 1847 or 1846, when Mihael Barić, a Croat who was living in Vienna at the time, visited Egypt. The mummy and the book (*liber)* remained in Barić's home until his death in 1859 and the his inheritors, respecting his will, donated it to a new institution which was to become one of the symbols of national revival in Croatia - the National Museum in Zagreb.

In 1892 a Viennese Egyptologist Jakob Krall visited Zagreb and having seen the text he realised that it was not an Egyptian but an Etruscan manuscript. So it was publicly acknowledged that the longest known Etruscan text in the world was kept in Zagreb and it became the focus of attention of the experts in Etruscology and linguists worldwide.



Zagrebačka lanena knjiga, detalj, AMZ / *Linen Book of Zagreb*, a fragment, AMZ

Na povojima Zagrebačke mumije, odnosno na *Liberu linteusu* detektirano je 1130 više-manje čitljivih riječi. Gotovo polovina izvornog teksta je izgubljena. Tekst je bio složen u 12 kolumni s najviše po 35 vodoravnih redaka. Knjige ispisane na lanu često su prikazane u terakoti ostavljanoj u etruščanskim grobnicama. Zagrebačka je Lanena knjiga jedini očuvani obrednik toga tipa.

Sve u svemu, ni izvor ni točnu namjenu *libera* nije moguće točno odrediti. Stoga porijeklo i svrha Zagrebačke lanene knjige i dalje ostaje zagonetkom.

More than 1130 more or less illegible words were detected on the wrappings of the Zagreb Mummy, i.e. *Liber linteus.* Almost a half of the original text has been lost. The text was arranged in 12 columns which had 35 horizontal lines at most. The books written on linen were often depicted in terracotta often placed in Etruscan tombs. The Linen Book of Zagreb is the only preserved book of rites of that kind.

All things considered, neither the origins nor the purpose of the Linen Book of Zagreb can be determined precisely. Therefore, the origins and the purpose of the Linen Book of Zagreb still remains a mystery.

Lineari A, B, C i kretski hijeroglifi
Linears A, B, C and Cretan Hieroglyphs

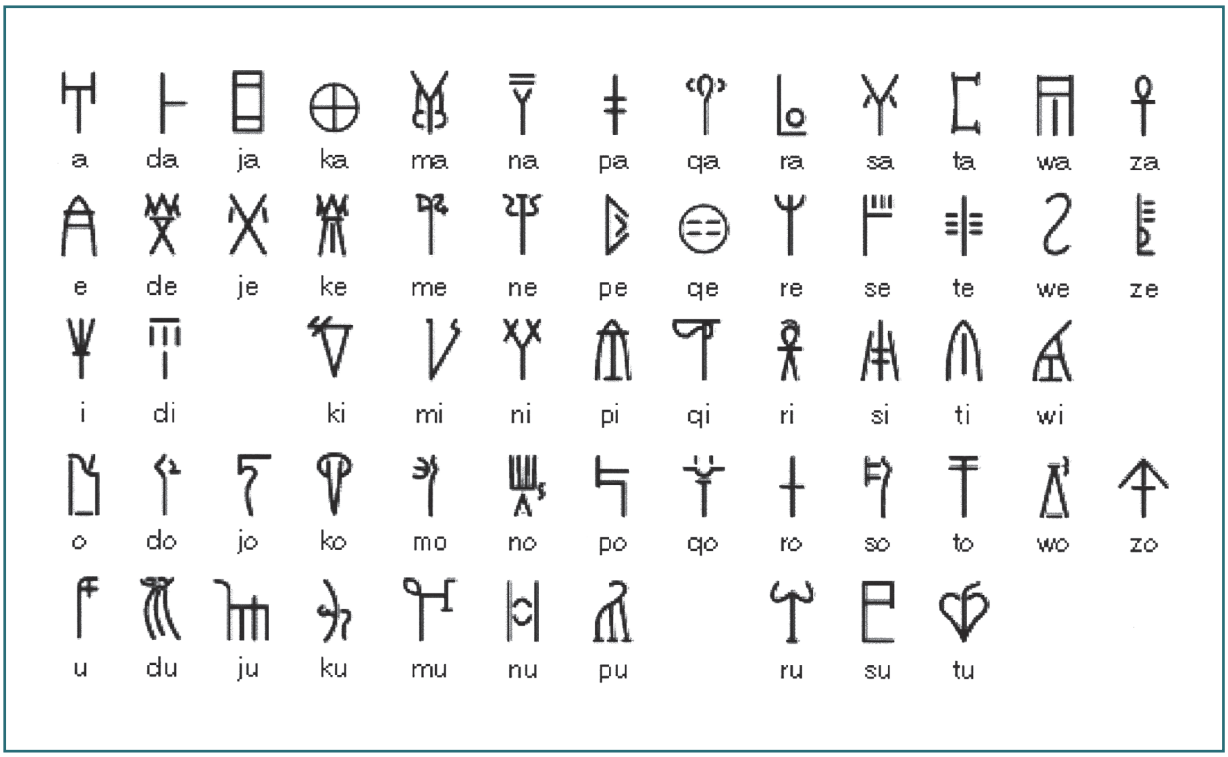
Kristina Šekrst

Linear B slogovno je pismo kojim se pisao mikenski grčki, a najstariji spomenici datirani su sredinom 15. stoljeća pr. Kr. Njegov je uzor linear A, koji je još uvijek nedešifrirano pismo za minojski jezik s Krete. Linear B sastoji se od oko 90 slogovnih i 100 ideogramskih znakova koji simboliziraju razne objekte, a nemaju fonetsku vrijednost.

Britanski arheolog Sir Arthur Evans dobio je 1886. kamen s pismom za koji je smatrao da je mikensko, a potom je nastavio istraživanje te je uočio još sličnih zapisa. Godine 1894. kreće na Kretu potražiti još primjera te objavljuje svoje teorije o tome linearnome pismu s piktografskim elementima. Osnovao je Kretski istraživački fond koji je isprva sam financirao, a potom je nastavio istraživanja na Kreti. To je privuklo i druge istraživače da se pozabave ovim pismom, posebice Alice Kober, koja je uočila korijene i sufikse u riječima te je zaključila da je riječ o flektivnome jeziku gdje se imenice mijenjaju po padežima. Godine 1935. tada 84–godišnji Evans izlagao je u Londonu o minojskome jeziku, a u publici je bio i Michael Ventris, koji će se u budućnosti nastaviti baviti tom problematikom. Zajedno s Johnom Chadwickom između 1951. i 1953. dešifrirao je veći dio toga pisma slažući se s Evansovom hipotezom da nije riječ o grčkome jeziku, a radeći i na temelju velikoga istraživanja Alice Kober.

Linear B is a syllabic script that was used for writing Mycenaean Greek. The oldest inscriptions date from the 15th century BC. It is descended from the older Linear A, still an undeciphered script used for writing the Minoan language from Crete. Linear B consists of around 90 syllabic signs and over 100 ideographic signs which symbolize various objects but don't have phonetic value.

The British archaeologist Sir Arthur Evans was presented in 1886 with a stone engraved with a writing he took to be Mycenaean. He continued his research and found more similar inscriptions. In 1894 he embarked for Crete in search of more samples and later published his theories on this linear script with pictographic elements. He established the Cretan Exploration Fund which he financed at first, and afterwards continued his research in Crete. That attracted other researchers to study this script, especially Alice Kober, who noticed common roots and suffixes in words and concluded that the script represented an inflected language where the nouns change depending on their case. In 1935 at the age of 85 Evans hosted an exhibition in London on the Minoan language. Michael Ventris was in the audience and he continued to study the script afterwards. Together with John Chadwick he deciphered a greater part of the script between 1951 and 1953. Based on Alice Kober's massive research he accepted Evans's hypothesis that the language was not Greek.



Pločice sa sačuvanim linearom A uglavnom su upravnoga karaktera: popisi imovine, hrane i darova raznim božanstvima. Znakovi su na tim pločicama urezivani stilusom u glinu koja je potom bila sušena na suncu. Pločice su pronađene u arhivima raznih palača, u Knosu, Mikeni i Pilu, a nađeno je i razno posuđe na drugim lokalitetima, npr. u Tebi i Eleuzini. U palači u Knosu nađeno je oko 5000 tablica, u Pilu oko 1000, a u Tebi stotinjak. Sveukupno je nađeno oko 6000 zapisa.

The contents of the tablets with the preserved Linear A script were mainly administrative: lists of possessions, food and offerings to gods. The characters in the tablets were imprinted with a stylus while the clay was still wet and then were Sun dried. The tablets were found in the archives of various palaces in Mycenae, Knossos and Pylos. Various pottery items were also found at other sites e.g. Thebes and Eleusis. Around 5,000 tablets were found in the Palace of Knossos, 1,000 in Pylos and around 100 in Thebes. Altogether 6,000 inscriptions were found.

Linear A trenutačno je nedešifrirano grčko pismo, zajedno s nedešifriranim kretskim hijeroglifima. Također ga je otkrio Arthur Evans, a utvrđeno je da povezivanje s vrijednostima iz lineara B ne urađa plodom. Stoga se čini da je u pozadini neki novi nepoznati jezik, koji se obično naziva minojskim jezikom, pretpostavljenim jezikom minojske civilizacije na Kreti i koji se zapisivao kretskim hijeroglifima i linearom A. Linear A sastoji se od nekoliko stotina znakova, a pretpostavlja se da su kombinacija slogovnih i ideogramskih vrijednosti kao i u linearu B. Većina zapisa dolazi s Krete, no korpus sadržava oko 7300 znakova, među kojima su neki nađeni

Linear A is still an undeciphered Greek script like the undeciphered Cretan Hieroglyphs. It was also discovered by Arthur Evans, and it was established that linking it to the values of the Linear B did not produce results. Therefore it appears that the underlying language was another unknown language which is usually referred to as the Minoan language, the hypothetical language of the Minoan civilisation in Crete and which was written in Cretan hieroglyphs and the Linear A script. The Linear A script consists of several hundred signs, which are probably a combination of syllabic and ideographic values like in the Linear B. The majority of inscriptions come from Crete, but the corpus, comprises

i u drugim dijelovima Grčke te u Turskoj i Izraelu. Neke od mogućih teorija povezivale su linear B s grčkim (posebice Vladimir Georgiev), luvijskim (Leonard Palmer) i feničkim jezikom (Jan Best), a neki ga povezuju s etrurskim, retskim i lemnijskim jezikom unutar pretpostavljene tirenske skupine jezika (Giulio Facchetti). Pojedini istraživači gledali su ga kao mogući indoiranski jezik (Hubert La Marle), a moguće je i da se radi o zasebnoj indoeuropskoj grani (Gareth Owens).

some 7,300 signs some of which were found in other parts of Greece, Turkey and Israel, Some of the plausible theories were linking Linear a to Greek (e.g. Vladimir Georgiev), Luwian (Leonard Palmer) and Phoenician (Jan Best), and some link it to the Etrurian, Raetic and Lemnian languages within the supposed Tyrrhenian group of languages (Giulio Facchetti). Some suggested it could belong to the Indo-Iranian family of languages (Hubert La Marle) and it is also possible that it could belong to an Indo-European branch (Gareth Owens).

Cipro-minojsko slogovno pismo rabilo se u brončano doba oko 1550. do 1050. pr. Kr. na Cipru. Arthur Evans uočio je njegovu sličnost s linearom A i smatra se da je iz njega nastao. Korpus se sastoji oko 250 objekata, većinom glinenih pločica, a još je neznano koji je jezik u pozadini. Poslije se razvio u ciparsko slogovno pismo, u čijoj je pozadini bio grčki jezik. Obično se cijelo pismo zna nazivati linearom C, a tako se zna nazivati i ciparsko slogovno pismo u željezno doba.

The Cypro-Minoan syllabary was used in the Bronze Age around 1550-1050 BC in Cyprus. Arthur Evans spotted its similarity to Linear A from which it is believed to be derived. The corpus consists of 250 artefacts, mainly clay tablets, while the underlying language is still unknown. Cypriot syllabary developed later and the underlying language was Greek. The whole script is usually called Linear C. Sometimes the Cypriot syllabary from the Iron Age is also called Linear C.

Kretski hijeroglifi dolaze iz brončanoga doba Krete, a sastoji se od 96 slogovnih znakova, od čega 10 funkcionira i kao logogrami, uz 23 logograma za brojeve i interpunkciju. Većina je zapisa s pečata i drugih dokumenata na glini ili oltarima te raznim objektima poput diskova i sjekira. Pretpostavlja se da su se kretski hijeroglifi upotrebljavali oko 2100. do 1700. pr. Kr., linear A oko 2500. do 1450. pr. Kr., a linear B od 1450. do 1200. pr. Kr.

Cretan hieroglyphs date from the Bronze Age Crete, and they incorporate 96 syllabograms, 10 of which function also as logograms, and 23 logograms representing numbers and punctuation symbols. The majority of inscriptions are on seals and other documents in clay, on altars and various objects like discs and axes. It is believed that Cretan hieroglyphs were used from 2100 till 1700 BC, Linear A from 2500 till 1450 BC and Linear B from 1450 till 1200 BC.

Prasinajsko pismo, feničko pismo, aramejsko pismo i derivati

Proto-Sinaitic Script, Phoenician Script, Armaic Script and Derivatives

Kristina Šekrst

Feničko pismo najstariji je potvrđeni alfabet, a sastojalo se od 22 znaka da bi se pisao fenički, semitski jezik kojim su govorili Puni. Smatra se da se pismo razvilo iz egipatskih hijeroglifa, a potom proširilo po svijetu. Poznati su natpisi iz Wadi el-Hola, koji pokazuju velik utjecaj hijeroglifa, posebice u znakovima koji se nisu čitali alfabetski. Pismo je otkriveno u 17. stoljeću, a identificirano je i proučavano tek u 19. stoljeću.

Najstariji fenički zapisi nazivaju se prasinajskima i datiraju se između 19. i 16. stoljeća pr. Kr., a otkrili su ih Hilda i Flinders Petrie 1904. i 1905. godine. U prasinajske natpise ubrajaju se i prakanaanski zapisi iz Kanaana, iz 17. stoljeća pr. Kr. Prakanaanskim se u literaturi često nazivaju i fenički zapisi prije 1050. pr. Kr. Alan Gardiner, poznati egiptolog, proučavao je prasinajske zapise, a istraživanje se nastavilo proučavanjima Williama Albrighta sredinom 20. stoljeća.

Feničko je prvo pismo u kojemu je jedan znak stajao za jedan zvuk, za razliku od kompleksnih drugih pisama poput klinopisa ili egipatskih hijeroglifa. Razvilo se iz spomenutoga prasinajskoga pisma koje se razvilo u Starome Egiptu za komunikaciju među semitskim radnicima, a na njega je utjecala i egipatska hijeratika.

The Phoenician script is the oldest known alphabet, which consisted of 22 characters. It was used for writing the Phoenician Semitic language spoken by the Punic people. It is presumed that the script evolved from Egyptian hieroglyphs and then spread all over the world. The inscriptions that exhibit great influence of hieroglyphs, especially those that were not read alphabetically are the inscriptions from Wadi el-Hol. The script was discovered in the 17th century but it was not identified or analysed until the 19th century.

The oldest Phoenician inscriptions are called Proto-Sinaitic and are dated from 19th to 16th century BC. They were discovered by Hilda and Flinders Petrie between 1904 and 1905. The Proto-Canaanite inscriptions found in Canaan, dated from the 17th century BC, are also considered as Proto-Sinaitic. In literature, Phoenician inscriptions dated before 1050 BC are often called Proto-Canaanite. A famous egyptologist Alan Gardiner studied Proto-Sinaitic inscriptions and the research was continued by William Albright in the mid20th century.

The Phoenican script was the first script where one character represented one sound, unlike other complex scripts like the Cuneiform or Egyptian hieroglyphs. The script was developed from the above mentioned Proto-Sinaitic script, which originated in Ancient Egypt. The script was used for communication between Semitic workers and was influenced by the Egyptian sacred script.

Egipatski hijeroglifi prilagodili su se za zapisivanje pojedinačnih zvukova, primjerice egipatski znak *pr* za kuću počeo se rabiti za *glas b* jer je to bilo prvo slovo riječi *bayt*, semitske riječi za kuću. Fenički je sustav sadržavao i znakove za brojeve, odnosno posebne simbole za 1 (vertikalna linija), 10 (horizontalna linija), 20 (kombinacija znakova za 10 ili znak sličan „z") te nekoliko raznih znakova za 100.

The Egyptian hieroglyphs were adapted for the recording of single sounds, e.g. the Egyptian character for "house" (*pr*) began to be used for the sound *b*, because that was the first letter of the word *bayt* - the Semitic word for "house". The Phoenician system was comprised of special symbols for numbers, as well as sounds. It contained special symbols for 1 (vertical line), 10 (horizontal line), 20 (a combination of symbols for 10 or a character resembling "z") and several other symbols for 100.

Paleohebrejsko pismo razvilo se direktno iz feničkoga alfabeta, a rabilo se za pisanje hebrejskoga jezika do 10. stoljeća pr. Kr. Nakon babilonskoga osvajanja Judeje smanjuje mu se uporaba, a ostaju ga rabiti Samaritanci te se razvija u samaritanski alfabet koji je u uporabi i za hebrejske i aramejske tekstove i danas. Židovi su počeli rabiti asirski aramejski alfabet, a s vremenom se to pismo kvadratiziralo i stiliziralo u aramejski alfabet. Razvojem aramejskoga pisma u 8. stoljeću pr. Kr. aramejski jezik dobiva svoje pismo, a također i neko vrijeme hebrejski umjesto paleohebrejskoga pisma. Za vrijeme Ahemenida u Perziji i Darija I., aramejsko se pismo rabilo za službenu komunikaciju među različitim regijama Perzijskoga Carstva. Pismo se standardiziralo i na nj je utjecao staroperzijski jezik. Aramejsko pismo prethodnik je većine modernih azijskih i sjevernoafričkih alfabeta. Iz njega su se razvili moderni hebrejski alfabet, arapski alfabet, sirijski alfabet – koji se razvio u lokalne varijante kao što je npr. mongolsko pismo – te gruzijski alfabet. Daljnjim razvojem nastaju grčko pismo te pisma Latina i Etruščana, odakle se razvija latinica.

The Paleo-Hebrew script was developed directly from the Phoenician alphabet and was used for writing the Hebrew language until the 10th century BC. Its use diminished after the Babylonian conquest of Judea, and the script remained to be used by the Samaritans. It evolved into the Samaritan alphabet, which has been in use for the Hebrew and Aramaic texts to the present day. The Jews started to use the Assyrian Aramaic alphabet and with time the script was (squared) and stylised into Aramaic alphabet. With the development of the Aramaic script in the 8th century BC, the Aramaic language got its own script and for some time used Hebrew too instead ofPaleo-Hebrew. The Aramaic script was used for official communication between different regions within the Persian Empire during the reign of Ahemenid and Darius I. The script was standardised and influenced by Proto-Persian language. The Aramaic script precedes most of the modern Asian and North African alphabets. The Aramaic alphabet was a basis for the development of the contemporary Hebrew alphabet, the Arabic alphabet, the Syrian alphabet - which evolved into local variants, such as the Georgian alphabet. With further development the Greek script and the scripts of the Latin and Etruscan people evolved, i.e. the Latin script.

Grčki alfabet

Greek Alphabet

Jelena Marohnić
Porin Šćukanec Rezniček

Grčki alfabet prvo je pravo fonetsko pismo, u kojemu jednome glasu dosljedno odgovara jedan znak. Pretpostavlja se da je nastao otprilike krajem 9. ili početkom 8. stoljeća pr. Kr., a najstariji sačuvani natpisi potječu iz druge polovice 8. st. pr. Kr.

Nastao je na temelju feničkoga pisma i antički su Grci toga bili svjesni; npr. o tome je pisao Herodot (V, 58) u 5. st. pr. Kr. Slova i njihova nazivi od alfa do tau direktno su preuzeti iz feničkog pisma, ali su promijenjene neke fonetske vrijednosti. Najvažnija je promjena da su i vokali dobili svoje znakove, jer su u grčkom jeziku, koji je indoeuropski, promjene vokala ključne za razumijevanje značenja, za razliku od semitskog feničkoga jezika. Znakovi za vokale (A, E, I, Y, O, H) nastali su tako da su znakovi za feničke konsonante kojih nije bilo u grčkom jeziku prenamijenjeni za grčke vokale.

Smatra se sigurnim da je alfabet osmislila jedna osoba, tj. da svi rani grčki alfabeti imaju zajedničko porijeklo, zato jer svi rani alfabeti imaju niz zajedničkih obilježja, uključujući i neke „pogreške“ u odnosu na feničko pismo. Ne znamo, međutim, gdje je ni kad točno živjela osoba koja je sastavila alfabet, niti kako se zvala.

Prvotno se je smatralo da je alfabet nastao radi lakšeg i bržeg bilježenja podataka u vezi s trgovinom, no takvih je ranih tekstova na alfabetu sačuvano iznimno malo. Najstariji tekstovi u pravilu su u stihu. Stoga je nastala i teorija da je alfabet sastavljen radi zapisivanja Homerovih epova, no nesigurnost i te teorije je u tome što najstarije varijante alfabeta ne bilježe duljine vokala, koje su presudne za grčku metriku.

The Greek alphabet is the first proper phonetic script to have distinct letters for vowels as well as consonants. It is presumed that it originates from around the end of the 9th and the beginning of the 8th century BC, and the oldest preserved inscriptions are dated from the second half of the 8th century BC.

The alphabet was created on the basis of the Phoenician alphabet. Ancient Greeks were aware of this fact and Herodotus (V, 58) wrote about it in the 5th century BC. The letters and their names from alpha to tau were a direct copy from the Phoenician script, but some of the phonetic values were changed. The most important change was the fact that vowels were ascribed to symbols since in the Greek language, which is an Indo-European language, vowel changes are crucial for understanding the meaning, contrary to the Phoenician Semitic language. The symbols for vowels (A, E, I, Y, O, H) were created so that the Phoenician consonants, which were non-existent in the Greek language, were reused for Greek vowels.

It is presumed that the alphabet was created by one person, i.e. that all of the earlier Greek alphabets have a common origin due to the fact that all of the earlier alphabets had a series of common features, including some “mistakes” in relation to the Phoenician script. However, the name of the person who invented the alphabet as well as where and when he or she lived is unknown.

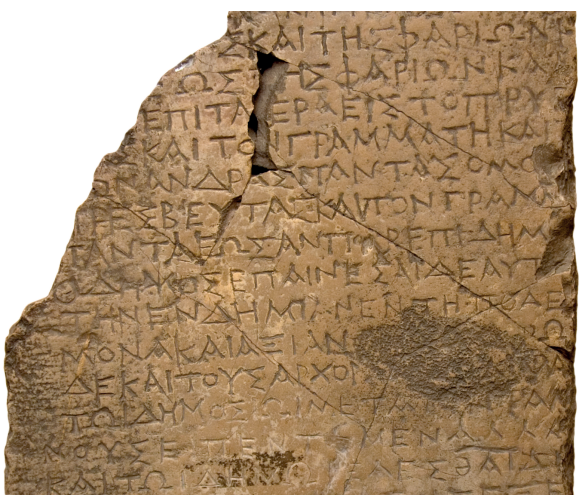
It was originally assumed that the alphabet was created for the easier and quicker way of recording data related to trade, but such early documents are extremely rare. The oldest texts were in most cases rhymed. That lead to the theory that the alphabet

U početku se alfabetom pisalo zdesna nalijevo, kao i feničkim pismom, a čest je bio i način pisanja zvan *boustrofedón* (grč. „okrećući se kao vol pri oranju“) tj. naizmjence jedan redak slijeva nadesno pa sljedeći zdesna nalijevo i tako redom. Pritom su se i slova okretala u smjeru retka pa je npr. epsilon (E) moglo biti napisano E ili Ǝ. Od 5. st. pr. Kr. uobičajilo se je pisati slijeva nadesno.

Mali broj znakova i velika preciznost u bilježenju jezika omogućili su da poznavanje pisma postane dostupno širem krugu ljudi, a ne, kao na Starom istoku, samo privilegiranoj društvenoj grupi pisara. Upotreba alfabeta brzo se proširila. Nastalo je više regionalnih varijanti alfabeta, koje se u stručnoj literaturi nazivaju epihorskim alfabetima i dijele u tri skupine: južni (ili kretski ili zeleni) alfabeti, zapadni (ili eubejski ili crveni) alfabeti, i istočni (ili jonski ili plavi) alfabeti.

Krajem 5. st. pr. Kr. pojavila se potreba za standardizacijom pa su Atenjani 403./402. pr. Kr. donijeli zakon po kojem je uporaba jonskog alfabeta postala obvezna za sve atenske službene dokumente. Kroz nekoliko desetljeća preuzeli su ga gotovo svi antički Grci te ga suvremeni Grci koriste i danas.

Od eubejske varijante grčkog alfabeta nastalo je etruščansko pismo i razna rana italska pisma pa naposljetku i latinsko pismo, a grčki je alfabet utjecao i na nastanak glagoljice i ćirilice. Stoga se bez pretjerivanja može ustvrditi da je grčki alfabet bio presudan za nastajanje svih suvremenih europskih pisama.



Ploča s Farosa s urezanim grčim pismom, detalj (Starigrad, Hvar 3.-2. st. pr. Kr.), AMZ
Stone from Pharos with incised Greek writing, a fragment (Starigrad, Hvar island 3-2 century BC), AMZ

was created for the purpose of recording Homer's epic poems, but the reservations regarding this theory are confirmed by the fact that the older variants of the alphabet do not note the length of vowels, which are crucial in Greek metrics.

In the beginning the alphabet was written from right to left, as is the case with Phoenician script, and a common way of writing called *boustrofedón* (Greek "to turn like an ox while ploughing") was also common, i.e. alternately writing one line from left to right and the next from right to left. The letters were also facing in the direction of the line, so for example epsilon (E) could have been written as E or Ǝ. From the 5th century BC writing from left to right became common.

The small number of signs and great precision in writing the language made scripts available to a significant number of people, unlike the Near East where it was a privilege of the scribes. The use of the alphabet spread fast. There were several regional variants of the alphabet which are in professional literature called epichoric alphabets and are divided into three types: southern (or Cretan or green) alphabets, western (or Euboean or red) alphabets, and eastern (or Ionian or blue) alphabets.

At the end of the 5th century BC the need for standardization arose so the Athenians passed the law in 403/402 which made the use of the Ionian alphabet compulsory for all official documents in Athens. Over the next few centuries it was adopted by all ancient Greeks and it is still used by modern Greeks today.

The Etruscan script, various Italic scripts and finally the Latin script developed from the Euboean variant of the Greek alphabet, and the Greek alphabet also influenced the Glagolitic and Cyrillic scripts. Therefore, without any exaggeration it can be said that the Greek alphabet was crucial in the development of all modern European scripts.

Ilijada i Odiseja

Jedno od najznačajnijih djela u povijesti čovječanstva pripisuje se mitskom pjesniku Homeru i smatra se najstarijim djelom zapadnjačke književnosti. Datira se u otprilike 8. st. pr. Kr., točnije 760.–710. pr. Kr. po zadnjim jezičnim analizama, u vrijeme arhajskog perioda klasične Grčke. Radnja se pak smješta u kasno brončano doba, otprilike 12. st. pr. Kr. Ilijada je napisana u epskom heksametru, a radnja je smještena u posljednjih nekoliko tjedana desetogodišnjeg rata, kada su se posvađali Ahilej i Agamemnon. Napisana je na homerskom grčkom, književna verzija jonskog i drugih dijalekata te u standardno prihvaćenoj verziji sadrži 15 693 retka. Najstarija kompletno sačuvana verzija je u rukopisu Venetus A (Codex Marcianus Graecus) iz 10. st.

Za Odiseju se pretpostavlja da je napisana negdje u Maloj Aziji, vjerojatno Joniji u Anatoliji. Nešto je kraća od Ilijade, ima „samo" 12 110 stihova, također u epskom heksametru. Po astronomskim pojavama koje se spominju u tekstu, poput pomrčine oko podneva kada se Penelopini prosci pripremaju ručati, smatra se da se Odisej vratio 16. travnja 1178. pr. Kr., što odgovara približno arheološkoj dataciji uništenja Troje i desetogodišnjem ratu koji se datira oko 1190. pr. Kr.

Djelo se u klasičnoj Grčkoj koristilo u odgojno-obrazovne svrhe te su ga prije zapisivanja putujući pjesnici (aoidos) prenosili kao pjesmu, koja se potom prilagodila pisanoj formi, jer je djelo originalno zamišljeno da se čuje, a ne čita. Danas postoji preko 2000 sačuvanih rukopisa s dijelovima Ilijade i Odiseje, poput Papirusa Oxyrhynchusa 20 ili Ambrozijanske Ilijade (najstariji fragment iz 3. st. pr. Kr.). Smatra se da je atenski tiranin Pizistrat (6. st. pr. Kr.) zadužio komisiju da uredi Homerova djela i izbaci sve pogreške te se time sistematizirao tekst. Smatra se da je zapisana tako da je nepismeni „Homer" diktirao pisaru (hipoteza transkripcije).

Homer je još uvijek nepoznanica budući da se ne zna kad je i je li uopće postojao, niti išta iz njegova života (otud i poznata šala da djela nije napisao on nego drugi čovjek istoga ime-

The Iliad and the Odyssey

The Iliad and the Odyssey are among the most important works of literature in the history of mankind attributed to the mythical poet Homer and considered the oldest literary works of Western literature. They date from 8th century BC, more precisely from 760-710 BC, according to the latest linguistic analyses and belong to the Archaic Period of Ancient Greece. The story of the epics is placed in the Bronze Age, approximately in the 12th century BC. The Iliad was written in dactylic hexameter. The story covers the last few weeks of the ten-year war when Achilles and Agamemnon started a dispute. It was written in Homeric Greek, a literary version of the Ionic and other dialects. The standard version has 15,693 lines. The oldest completely preserved version is in the manuscript Venetus A (Codex Marcianus Graecus) from the 10th century.

The Odyssey was supposedly written somewhere in Asia Minor, probably in Ionia in Anatolia. It is somewhat shorter than The Iliad and has "only" 12,110 lines also written in dactylic hexameter. According to astronomical phenomena depicted in the text, such as the total eclipse of the sun at noon when Penelope's suitors were about to have lunch, the Odysseus' return has been pinned down to April 16 1178 BC which corresponds to the archaeological dating of the sack of Troy and the ten-year war roughly around 1190 BC.

The Odyssey was in Ancient Greece used for educational purposes. It was performed orally by the travelling poets (aoidos) as a poem. It was later on adjusted to the written form, since it was originally intended to be heard and not read. Today there are over 2,000 preserved manuscripts containing fragments from The Iliad and The Odyssey (e.g. Papyrus Oxyrhynchus 20 or The Ambrosian Iliad - the oldest fragment from the 3rd century BC. The Athenian tyrant Peisistratos, (6th century BC), is believed to have established a Commission of Editors of Homer to edit the text of the poems and remove any errors, thus establishing a canonical text. It is believed that illiterate Homer dictated the poems to the scribe (transcription hypothesis).

Homer remains a mystery since it is neither known where he came from nor whether he existed at all. Nothing about his life is known (hence the famous quip that he didn't write the epics himself but an-

na). Herodot navodi da je djelovao oko 850. pr. Kr., dok drugi izvor navodi 1102. pr. Kr. i time pokazuje zapravo koliko je malo konkretnih podataka o njemu. Njegova navodna djela, koja su uglavnom govori, bila su temelj za poznate grčke tekstove uvjeravanja, koji će kasnije biti prisutni u gotovo svim djelima. Tek je oko 350. pr. Kr. prihvaćeno da je Homer autor oba djela, a teorija se temelji na izrazito dosljednim stilističkim sličnostima. Ponekad se sugerira da je Ilijadu i Odiseju pisao u različitim fazama života.

other man of the same name). Herodotus placed him around 850 BC, while other source mentions 1,102 BC which shows how scarce the concrete data about him are. His alleged works, mainly speeches, provided models in persuasive speaking and writing that were later present in almost all literary works. Not earlier than 350 BC the consensus was reached that Homer was the author of both epics based on consistent stylistic similarities. It is sometimes suggested that The Iliad and The Odyssey were written in different phases of his life.

Lumbardska psefizma

Jedan od najvažnijih grčkih spomenika Lumbardska je psefizma, zapis zaključka skupštine iz grčkog doba iz mjesta Lumbarda na otoku Korčuli. Tekst je to uklesan na kamenu, a sadrži odluku kojom se reguliraju imovinski odnosi grčkih naseljenika na Korčuli te njihov odnos prema domicilnom ilirskome stanovništvu, kao i popis njihovih imena. Sačuvano je 158 imena Grka. Riječ je o nizu ulomaka grčkoga teksta s prijelaza s 4. na 3. st. pr. Kr., čime je taj spomenik jedan od najstarijih hrvatskom tlu uopće. Psefizma je pronađena slučajno 1877. godine, na vrhu brežuljka Koludrta, u ruševinama srednjovjekovne crkve sv. Ivana. Uklesena u vapnencu, sastoji se od šest fragmenata zapisanih na grčkom alfabetu. Spomenik se nalazi na drugom katu Arheološkog muzeja u Zagrebu, u okviru stalnog postava antičke zbirke.

Psephisma from Lumbarda

One of the most important Greek artefacts is the Psephisma from Lumbarda, a record of the decisions made by the people in Lumbarda on the island of Korčula. The text engraved in stone contains a decree which regulates property issues among Greek settlers on the island of Korčula, their relation towards the aboriginal Illyrian population as well as the register record. The names of 158 Greeks are recorded. It comprises a series of fragments of a Greek text from the beginning of the 4th-3rd century BC, which makes it indeed the oldest inscription on Croatian soil. The psephisma was found by accident in 1877 on the top of the hill Koludrt in the ruins of the medieval church of St John. It was engraved in limestone and consists of six fragments written in the Greek alphabet. The psephisma is kept on the second floor of the Archaeological Museum in Zagreb on permanent display.

Latinica
Latin Script

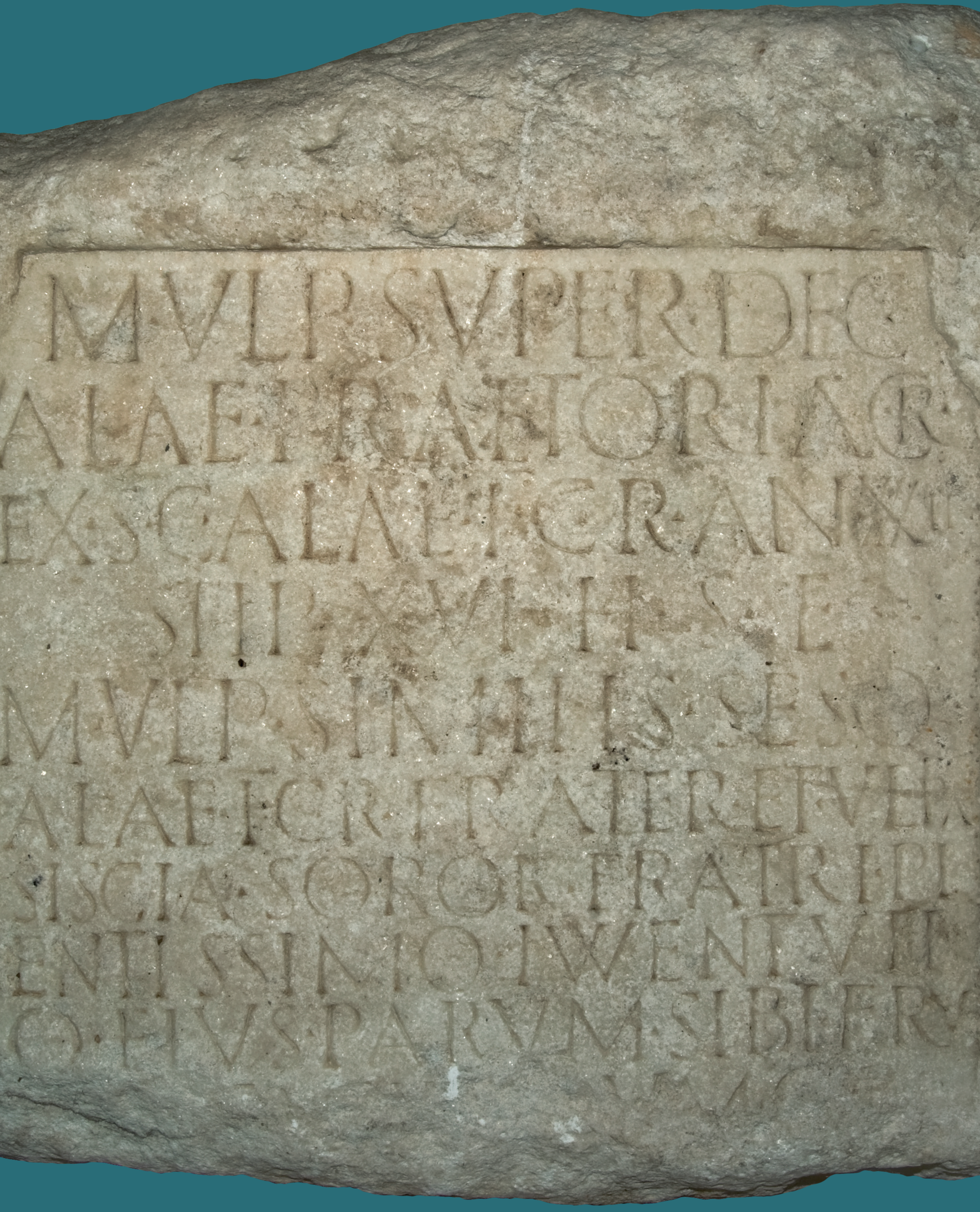
Inga Vilogorac Brčić

Latinsko je pismo oblikovano u 7. stoljeću prije Krista. Njegove značajke jasno ukazuju da je nastalo prema etruščanskome, a ne izravno iz grčkog alfabeta kako se dugo smatralo. Rimljani su iz etruščanskoga pisma preuzeli dvadeset jedno slovo. Nisu uzeli pet etruščanskih znakova za glasove koje latinski nije imao. Glas K Rimljani su označavali slovima C, K i Q, no doskora je preostalo samo C. Slovo je K, naime, gotovo potpuno izašlo iz upotrebe (zadržalo se samo ispred A i to rijetko, primjerice *kalendae*), a Q se bilježilo samo u nekim riječima. Glas G isprva se pisao slovom C. U 3. stoljeću prije Krista izbacili su Z (grčka *zeta*) i na njegovo mjesto uveli slovo G, za što se smatra da je zaslužan Spurije Karvilije.

Pred kraj republikanskoga doba, nakon što su Rimljani osvojili grčki svijet, alfabet je stekao klasičnu formu: ponovo su uveli slovo Z i dodali Y da bi bilježili grčke posuđenice. Latinsko je pismo tako konačno dobilo dvadeset tri znaka, a o tome piše Marko Tulije Ciceron (*De natura deorum*, II, 37, 93). Grčka slova *theta, phi i khi* Rimljani su koristili samo kao numeričke znakove. Slovo V bilježilo je glasove U i V, a slovo I glasove I i J. Tek u srednjem vijeku svaki je od navedenih glasova dobio svoje slovo.

The Latin script was created in the 7th century BC. Its features clearly indicate that it evolved from the Etruscan, and not directly from the Greek alphabet, as was the general belief for a long time. Romans adopted twenty two characters from the Etruscan script. They did not take five Etruscan characters for the sounds which Latin did not have. The Romans noted the sound K with the letters C, K and Q, but it was soon reduced to just C. The letter K, therefore, was completely out of use (it remained in use only when in front of the letter A, e.g. *kalendae*), and the letter Q was used only in short words. The sound G was first recorded with the letter C. The letter Z (Greek *zeta*) was replaced by the letter G in the 3rd century BC. The credits for that change are given to Spurius Carvilius.

Towards the end of the Republican period, after the Romans had conquered the Greek world, the Latin alphabet gained its classical form: the letter Z was reintroduced and the letter Y was added in order to record Greek loanwords. The Latin script was then finally comprised of twenty three characters, which was also noted by Marcus Tullius Cicero (*De natura deorum*, II, 37, 93). The Greek letters *theta, phi and khi* were used by the Romans only as numeric characters. The letter V was used to record sounds U and V, and I for the sounds I and J. It was not until the Middle Ages that each of the mentioned sounds got its corresponding letter.


M·VLP·SVPER·DEC
ALAE·I·PRAETORIA·C·R
EX·S·C·ALAE·I·C·R·AN·XX
STIP·XVI·H·S·E
M·VLP·SIN·HI·IS·SESQ
ALAE·I·C·R·FRATER·ET·VLP
SISCIA·SOROR·FRATRI·PI
ENTISSIMO·IWENTV
O·EIVS·PARVM·SIBI·FR

Prvim se latinskim natpisom smatra onaj sa zlatne Prenestinske kopče (*Fibula Praenestina*, 7. stoljeće prije Krista). Urezan je zdesna nalijevo: *Manios med fhefhaked Numasioi* (klasični latinski: *Manius me fecit Numerio*, prijevod: *Manije me načinio Numeriju*). Iako je donedavno smatrana krivotvorinom, na temelju najnovijih spoznaja – kemijske analize površine te pronalaska natpisa s gentilicijem *Numasiana* – znanstvenici su se složili da je autentična. Uz natpis na Prenestinskoj kopči valja spomenuti i onaj na Crnome kamenu s Rimskoga Foruma, pisan *boustrofedón* stilom (kraj 7. ili početak 6. stoljeća prije Krista) te natpis s rimskoga Duenova vrča (6. stoljeće) pisan zdesna nalijevo.

Rimljani su, dakle, isprva pisali u oba smjera, da bi se u 5. ili 4. stoljeću ustalilo isključivo pisanje slijeva nadesno. Kapitala je bila reprezentativno pismo – velikim, pravilnim slovima klesali su i urezivali natpise ponajviše na kamenim spomenicima. Riječi su nerijetko kratili te ih razdvajali kružićima, kvadratima, trokutima, strelicama ili listićima – hederama. Kamenoresci su nekad klesali i naglaske. Kapitala na brončanim predmetima, gdje se najčešće bilježilo administrativne natpise, bila je nešto izduženija i manje pravilna. Kurzivno se pismo koristilo za brže pisanje. Primjeri su grafiti na zidovima te natpisi s voštanih tablica iz Pompeja. U 3. stoljeću prvi se put bilježi uncijala – polukurzivno pismo. U srednjem su se vijeku iz kapitale, kurziva i uncijale razvila i druga pisma.

Latinsko se pismo, zajedno s jezikom, raširilo po čitavu Rimskome Carstvu. Kasnije se, putem rimskoga kršćanstva te potom i kolonijalizma, pojavilo na svim kontinentima te je danas najzastupljenije pismo na svijetu.

Fibula Praenestina, dated from 7th century BC is considered to be the first Latin inscription. It is written from right to left: *Manios med fhefhaked Numasioi* (Classical Latin: *Manius me fecit Numerio*, in translation: *Manius made me for Numerius*). Even though it was considered to be a forgery until recently, based on the new insights (chemical analysis of the surface and the discovery of the gentilicium *Numasiana inscription*) general consensus has been reached that it is authentic. Apart from the inscription on the Fibula Praenestina, worthy of mention is the inscription on the Lapis niger (Black stone) found in the Roman Forum. It was written in *boustrofedón* style (dated from 7th or beginning of the 6th century BC), and the inscription from the Duenos kernos/vase (the 6th century) written from right to left.

The Romans were writing in both directions until the 5th of 4th century when writing from left to right was established. The Roman Square Capital was a prestigious type of script. Capital, square letters were used for engraving inscriptions mostly in stone monuments. The words were often shortened and split by circles, squares, triangles, arrows, or leaves - Hedera. The stonecutters sometimes inscribed accents as well. The capital letters inscribed on bronze artefacts, used mostly for administrative purposes, were somewhat elongated and less regular. The Italic script was used for faster writing. The graffiti on the walls and inscriptions on the wax tablets from Pompeii are such examples. The Uncial script (semi-italic script) was for the first time used in the 3rd century. Other scripts developed from the Capital, Italic and Uncial script in the Middle Ages.

The Latin script, as well as the language spread all over the Roman Empire. Later on, due to Roman Christianity and colonialism it appeared on all continents and is the most common script in the world today.

Natpis veterana iz Siska. Mramorni nadgrobni spomenik Marka Ulpija Supera, dekuriona pretorijske ale rimskih građana i bivšeg konzularova singulara, AMZ / Inscription of a veteran from Sisak. Marble funerary monument of Marcus Ulipius Super, decurions of Praetorian ale, and the Roman citizen, AMZ

Ogamsko pismo
Ogham Script

Kristina Šekrst

Ogamsko pismo rani je alfabet kojim se pisala arhaična varijanta irskoga jezika, a poslije i staroirski jezik. Riječ ogham opisuje oblik slova, a sam se alfabet naziva *beith-luis-nin,* prema prvim slovima. Imena slova davana su prema biljkama (prema staroirskome spisu *Bríatharogam*), pri čemu *beith* označava brezu, *luis* vjerojatno biljku vrste *Sorbus*, a *nin* jasen. Ogamsko pismo sastoji se od crtica koje izlaze iz dulje linije. Kraće linije mogu biti usmjerene lijevo ili desno ili pak biti nakošene. U aktivnoj je uporabi bilo od 4. do 10. stoljeća, a pretpostavlja se i ranija uporaba, već od 1. stoljeća (James Carney).

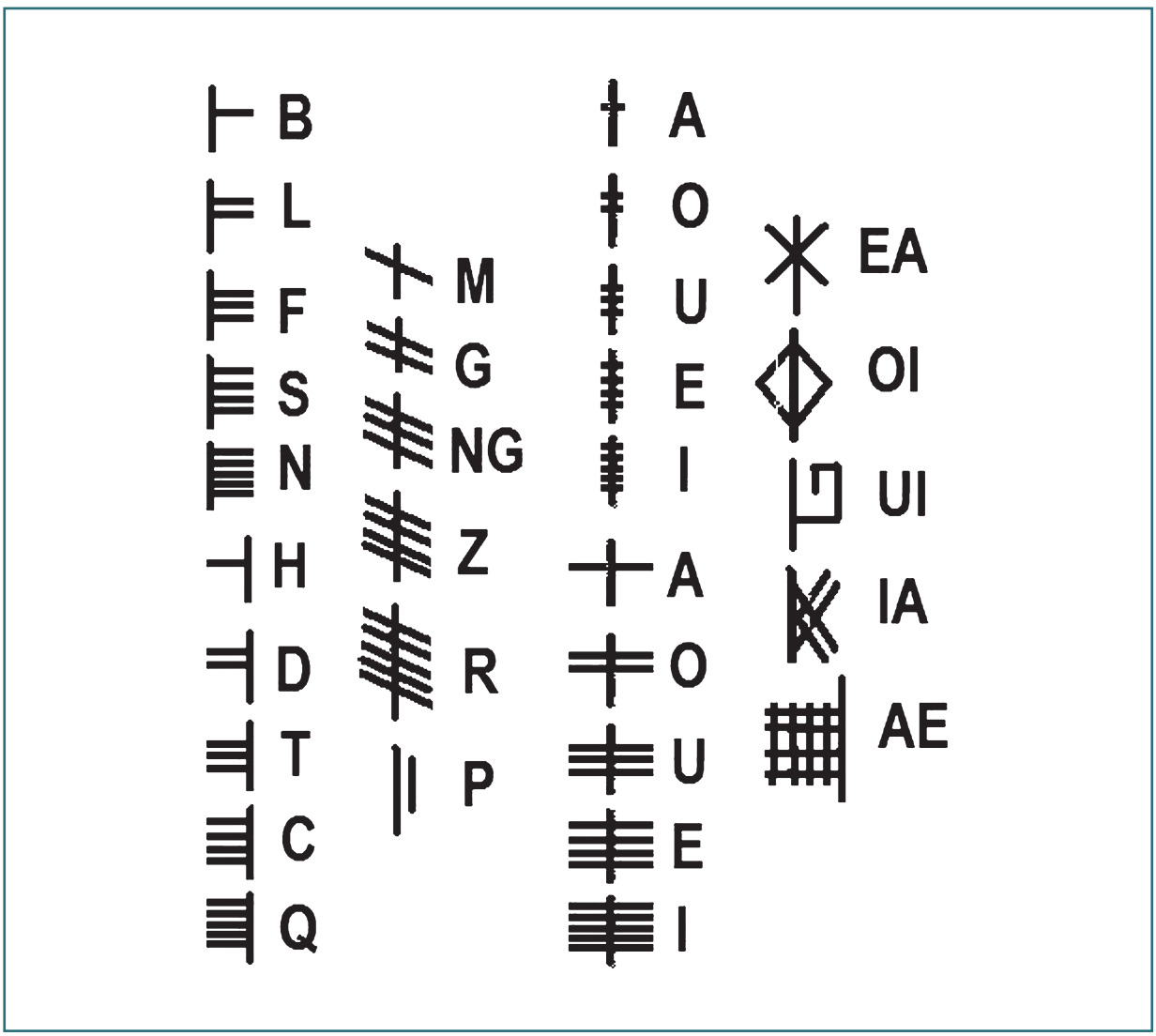
Uzori za ovo pismo vjerojatno su bili latinica, a moguće i grčki alfabet i rune. Neki istraživači (James Carney) smatraju da se prvo stvorilo kao kriptično pismo da ga ne razumiju ostali narodi koji pišu latinicom, odnosno rabilo bi se za političke ili vojne svrhe, katkad i religijske. Drugi pak istraživači (Damian MacManus) smatraju da su ga izmislile kršćanske zajednice zbog kompliciranih glasova i glasovnih promjena u irskome jeziku za koje latinica nije bila pogodna. Staroirska pak legenda tvrdi da je ogamsko pismo izmišljeno nakon pada Kule babilonske, uz gaelski jezik, a glavni mu je tvorac bio skitski kralj Fénius Farsaid. *In Lebor Ogaim* (Knjiga ogama) ili *Ogamski traktat* pak kao tvorca navodi mitološki lik Ogmu, vjerojatno povezanoga s galskim bogom Ogmijem.

The Ogham script is an old alphabet used to record the archaic variant of the Irish language, and later the Old Irish language. The word ogham describes the shape of the letters, and the alphabet itself is called *beith-luis-nin*, according to the first letters of the alphabet. The letters were named after plants (according to the Old Irish manuscript *Bríatharogam*), *beith* meaning birch, *luis* most probably a type of *Sorbus*, and *nin* meaning ash tree. The Ogham script consists of a long vertical line with shorter lines that branch off. The shorter lines point to the left or right, or are slanted. The script was actively used from the 4th to the 10th century, and it is supposed that it was in use as early as the 1st century (James Carney).

The script was probably modelled after the Latin, and possibly the Greek alphabet, as well as the Runes. Some researchers (James Carney) claim that the script was created as a cryptic script not to be understood by other people that used Latin script. It was used for political or military, and sometimes religious purposes. Other researchers (Damian MacManus) think that the script was created by Christian communities due to the complicated sounds and sound changes in the Old Irish, for which the Latin script was not suitable. An Old Irish legend has it that the Ogham script was invented after the fall of the Tower of Babel and that its creator was FéniusFarsaid, the king of Scythia. *In LeborOgaim* (The Book of Ogams) or the Ogam Tract, the mythological character Ogma, most probably connected to the god Ogmios is stated as the creator of the script.

Sačuvano je oko 400 ogamskih zapisa u Irskoj i Walesu, a podijeljeni su na ortodoksne zapise iz arhaičnoga doba jezika te skolastičke zapise vezane uz staroirski jezik. Ortodoksni su zapisi bili urezivani u drvo ili uklesani u kamen, a čitaju se od lijevoga donjega ugla kamena prema gore sve do desne strane. Većina zapisa sadržava osobna imena ili različite formule vezane uz njihovo porijeklo ili plemena. Skolastički zapisi inspirirani su različitim rukopisima te se počinju javljati u 6. stoljeću, preko staroirskoga i srednjoirskoga jezika, sve do modernoga doba. Većinom sadržavaju imena, kraće tekstove i poslovice.

Around 400 hundred fragments of the Ogham inscriptions have been preserved in Ireland and Wales. The fragments are divided into orthodox inscriptions of the archaic language and scholastic inscriptions related to the Old Irish language. Orthodox inscriptions were carved in wood or stone, and were read from bottom left corner to the upper right side. Most of the inscriptions state personal names or different formulae regarding their ancestry or clans. Scholastic manuscripts were inspired by various manuscripts and started to appear in the 6th century, through the Old Irish and Middle Irish language to the Modern Period. The manuscripts mostly list names, shorter texts, and proverbs.



Hebrejsko pismo
Hebrew Script

Igor Kusin

Kad se danas spomene sintagma „hebrejsko pismo", obično prva na pamet pada hebrejska kvadrata, kojom se tiskaju knjige, novine, časopisi... No Hebreji su za bilježenje svoga jezika u povijesti koristili barem pet pisama.

Najstariji spomenici hebrejskog jezika pisani su pismom koje je danas uglavnom poznato kao feničko ili prakanaansko, jer su se njime, kao što vidimo, služili i govornici drugih sjeverozapadnosemitskih jezika.

Whenever the syntagm "Hebrew script" is mentioned, what first comes to mind is the Hebrew quadrangular script used for printing books, newspapers, magazines... But the Hebrews used at least five other scripts for recording their language.

The oldest inscriptions of the Hebrew language were written in a script which is now referred to as the Phoenician or Proto-Sinaitic script, used by the speakers of other North-Western languages.

Pismo se po svemu sudeći razvilo iz egipatskih hijeroglifa posredstvom prasinajskog pisma. Spomenici pisani tim pismom javljaju se oko 1200. pr. Kr., a najstariji spomenici hebrejskog jezika koje stoljeće kasnije: *Kalendar iz Gezera* (10. st. pr. Kr.), *Natpis is Šiloama* (8. st. pr. Kr.), te *Ostrakoni iz Lahiša* (6. st. pr. Kr.). To su pismo krajem 9. ili početkom 8. st. pr. Kr. od Feničana preuzeli Grci, okrenuli slova za 90°, prilagodili fonetske vrijednosti nekih slova i tako stvorili poznati nam grčki alfabet. Čak su i imena slovā, kao i samo ime alfabet preuzeli od Semita. U grčkome, naime, ta imena nemaju značenja, dok u Hebrejskome, primjerice, znače redom: *vol*, *kuća*, *deva*, *vrata*... Grčki alfabet su preuzeli

The script most likely evolved from the Egyptian hieroglyphs, under the influence of Proto-Sinaitic script. The monuments inscribed in this script appeared around 1200 BC, and the earliest inscriptions in the Hebrew language some centuries later: *The Calendar from Gezer* (10th century BC), *The Shiloah (Siloam) Inscription* (8th century BC), *Lachish Ostracons* (6th century BC). The Greeks took over the script from the Phoenicians, at the end of the 9th or at the beginning of the 8th century BC, rotated the letters by 90°, and adapted the phonetic values of some characters and thus created the Greek alphabet as we know it. Even the names of the letters, like the alphabet itself were taken over from the Semites. In Greek those

i svojem jeziku prilagodili Etruščani i Rimljani. S druge strane su krajem 9. ili početkom 10. st. Slaveni prilagodbom grčkog uncijalnog pisma svojem jeziku stvorili ćirilicu.

Kao što su Hebreji biblijski potomci Ebera, praunuka Noina sina Šema, tako su i Aramejci potomci Šemova sina Arama. Njihova se zemlja nalazila sjeverozapadno od zemalja govornika hebrejskoga. Iako sami Aramejci nikada nisu izgradili neki imperij na Bliskom istoku, njihov utjecaj je teško zanemariti. Jezik im je postao *linguom francom*, a potom i jezikom administracije raznih država između 8. st. pr. Kr. i 7. st. n. e. U zadnjim stoljećima stare ere aramejski je postupno zamijenio hebrejski kao jezik svakodnevne komunikacije Hebreja, te je ujedno utjecao na sam hebrejski jezik. Kako je aramejski kao službeni jezik pomalo istiskivao akadski, tako se i pismo kojim se bilježio, tzv. carsko aramejsko pismo, širilo Azijom, pa se danas smatra izvorištem glavnine pismenosti središnje, južne i istočne Azije, osim područja na kojima je prevladala kineska pismena tradicija.

names have no meaning, while in Hebrew their meanings are as follows: ox, house, camel, door... The Greek alphabet was taken over by both the Etruscans and the Romans, who adapted the script to their languages. On the other hand, by the end of the 19th or the beginning of the 10th century the Slavs made adaptations to the Greek Uncial script and thus created the Cyrillic script for their own language.

Like the Hebrews were the descendants of Eber, the great-granddaughter of Noah the descendant of Shem, so were the Aramaic descendants of Shem, the son of Aram. Their land was located north-west from the lands of Hebrew speaking people Even though the Arameans never built an Empire in the Middle East, their influence is hard to disregard. Their language became *lingua franca*, and later the language of administration in several states between the 8th and 7th century BC. In the last centuries of the Ancient Period, the Aramaic was gradually replaced by the Hebrew language as the language of everyday communication among the Hebrew people, and had influence on the Hebrew language itself. Since the Aramaic slowly replaced the Akkadian as the official language, the script used for writing it, the so-called Royal Aramaic script, spread throughout Asia. It is today considered to be the cradle of literacy of the Middle, South and East Asia except for the areas were the Chinese literary tradition prevailed.

Iz ovoga se pisma razvila aramejska kvadrata, koju su po povratku iz babilonskog sužanjstva povratnici donijeli natrag u Kanaan, te je iz njega potekla i dan-danas korištena hebrejska kvadrata.

From this script the Aramaic quadrangular script evolved, which was brought back to Canaan by the slaves on their return from Babylon, and it further evolved into the contemporary Hebrew quadrangular script.

Naziv pisma potječe iz činjenice da se većina slova može upisati u kvadrat. Među iznimkama se nalazi i jod – י – koje ne samo da je uže od većine grafema, već je i visinom upola manje. Otud biblijski citat: „Jer, zaista, kažem vam, dok

The name of the script originates from the fact that the majority of the letters can be inscribed into a square. One of the exceptions is jod –י – which is not only narrower, but half the height of the other graphemes. Hence the Biblical quote: "For truly I

opstoji nebo i zemlja, ni jedna *jota*, ni jedna kovrčica slova iz Zakona sigurno neće nestati, a da se sve ne ostvari." (Mt.5:18) *Jota* ovdje simbolizira najmanje od svih hebrejskih slova.

Nažalost, nijedno od navedenih pisama nije bilo u potpunosti prilagođeno hebrejskom jeziku te su neki grafemi služili za bilježenje različitih glasova. Oznake samoglasnika su uvedene tek znatno kasnije, kako bi se u doba kad je hebrejski uglavnom prestao funkcionirati kao jezik svakodnevne komunikacije i postao jezikom učenosti i književnosti (poput latinskog u srednjem vijeku ili sanskrtskog u Indiji) spriječilo pogrešno čitanje Tore kao svetog teksta. U drugoj polovini 1. tis. n. e. stvoreno je nekoliko sustava bilježenja samoglasnika dijakritičkim znakovima oko (uglavnom ispod, ali i iznad) slova ne dirajući u izvorni suglasnički tekst. Od svih njih danas je u uporabi još uvijek samo sustav smišljen po masoretima, židovskim pisarima i učenjacima iz Tiberijasa u Palestini. Izvorno je svaki od tih znakova označavao drugačiji samoglasnik, no u međuvremenu su se neki izgovori slili u isti glas.

Danas se ove samoglasničke dijakritike koriste tek u gramatikama, rječnicima, udžbenicima za učenje jezika, tekstovima namijenjenim početnicima, ponekad i za bilježenje stranih imena (primjerice u novinama). Uz ove, masoreti su uveli i druge dijakritike, za udvajanje suglasnika te za pojanje, kao upute za pravilno čitanje Tore u sinagogama.

Šlomo Jichaki, polatinjeno Salomon Isaacsides, bio je jedan od velikih rabina srednjovjekovne Europe, a živio je krajem 9. st. u Troyesu u pokrajini Champagne. Njegovi su komentari židovske Biblije i Talmuda i dan-danas stožer židovskog nauka, te su izazvali cijeli niz tzv. superkomentara kasnijih velikana židovske misli. Postao je poznat po akronimu Raši, koji je tumačen dvojako, bilo kao ,,rabin Izraela", bilo kao ,,rabin, neka (nam) živi". U tiskanim izdanjima su Rašijevi komentari tiskani posebnim pismom, odvjetkom kasnijeg, petnaestostoljetnog sefardskog polukurziva, koje je nazvano po njemu.

tell you, until heaven and earth disappear, not the smallest letter, not the least stroke of a pen, will by any means disappear from the Law until everything is accomplished." Jota here represents the smallest of all Hebrew letters.

Unfortunately, none of the mentioned inscriptions were completely adapted to the Hebrew language, so some other graphemes were used to record different sounds. The characters for vowels were introduced significantly later, in the times when Hebrew lost its function as a language of everyday communication and became a Scholarly or Literary language (as was the case with Latin in the Middle Ages or Sanskrit in India), which prevented the incorrect reading/interpreting of the Torah as the Holy script. Several other systems of recording vowels with diacritic symbols around (mostly below, but sometimes above) the letters without interfering with the original text were created in the second half of the 1st millennia BC. Out of all of them, only the system devised by the Masoretes, the Jewish scribe-scholars based in the cities of Tiberias and Jerusalem is still in use. Originally, each of the symbols denoted a different consonant, but in the meantime some came to be pronounced as the same sound.

At present these consonant diacritics are used only in grammar books, dictionaries, textbooks, beginner textbooks, and sometimes for writing foreign names (e.g. in the newspapers). Apart from these, the Masoretes introduced other diacritics in order to ingeminate vowels, for cantillation and for instructions for correct reading of the Torah in the synagogues.

Salomon Isaac Sides, who lived in Troyes, Champagne at the end of the 9th century, was one of the great rabbis of Medieval Europe. His commentaries on the Jewish Bible and the Talmud are a cornerstone of Judaism and provoked a plethora of the so-called super-commentaries by the great Jewish thinkers. He was known by the acronym Rashi, which was interpreted twofold - as a "Rabbi of Israel" or "Our Rabbi, may (he) live". In printed editions Rashi's commentaries are printed in a special script, a scion of the later 15th century Sephardic Semi-Italic script, which was named after him.

Talijanski tiskari 15. st. su prvi uporabili to pismo, kako bi se u njihovim izdanjima Rašijevi komentari i vizualno razlikovali od izvornog, komentiranog teksta. Ovo se pismo tradicionalno koristi i za tiskanje tekstova na judeo-španjolu, jeziku Sefarada porijeklom s Iberskog poluotoka, koji su odande protjerani 1492. te su nove domove našli raspršeni po Osmanskom Carstvu. Pritom ne treba smetnuti s uma da nije svaki tekst tiskan rašijem na judeo-španjolu!

U 13. st. se u srednjoj Europi među Aškenazima, Židovima koji su se pretežito služili jidišem (koji se u ovdašnjim židovskim tekstovima iz prve polovine 20. st. naziva židovskim jezikom, kako bi ga se razlikovalo od hebrejskoga) kao glavnim sredstvom svakodnevne komunikacije, razvilo kurzivno, rukopisno pismo, koje se i danas koristi u Izraelu. (Među Sefardima sjeverne Afrike se nešto ranije razvio drugačiji tip kurziva, zvan *solitreo*, koji se i danas koristi za pisanje judeo-španjola.)

The Italian printers of the 15th century used the script in order to make the Rashi's commentaries differ visually from the original text. This script was traditionally used for printing texts in Judeo-Español language, a Sephardic language originating from the Iberian penninsula. The Sephardic Jews were exiled from the region in 1492 and found their new homes across the Ottoman Empire. Having that in mind, one must not forget that not every text citing Rashi was printed in Judeo-Español.

Among the Ashkenazi Jews in Europe in the mid-13th century, the Jews who predominately used Yiddish (which was in the first half of the 20th century texts called the Jewish language in order to differentiate it from Hebrew), for everyday communication the Italic, handwritten script developed, It is still used in present-day Israel. (A different, earlier type of the Italic called Solitreo, developed among the Sephardic from North Africa, and is used to record the Judeo-Español language).

Kurzivni oblici hebrejskog pisma su daleko stariji od oba navedena, najstarije zapise nalazimo u katakombama u Venosi, u talijanskoj provinciji Potenza u Basilicati, iz 4.–6. st., te na glinenim posudama iz Babilona, datiranim u 7. i 8. st.

Od svih navedenih pisama se danas za bilježenje hebrejskog jezika koriste jedino kvadrata (za tiskane tekstove) i kurziv (za svakodnevnu, rukopisnu uporabu), osim u slučajevima koje smo naveli za pismo raši.

The Italic forms of the Hebrew script are far older than the two mentioned. The earliest inscriptions were found in the catacombs of Venosa in the Italian province of Potenza, Basilicata dated from 4th-6th century and on the clay vessels from Babylon dated from the 7th and 8th century.

Of all the mentioned scripts the Quadrangular (used for printed texts) and the Italic (used in everyday handwriting), are still in use today for writing Hebrew, except in the cases already mentioned regarding Rashi.

صرف الغلة الى اولاد الاولاد وتقسم بين ولد الا احدهما وكل واحد من
الآخر على السوية وقف على ذوي قرابته لم يدخل والده وجده وولده رجل قال
ارضي هذه موقوفة على اقاربي او على قرابتي او على ذوي قرابتي قال هلال
ولا يفضل الذكر على الانثى ولا يدخل فيه والد الواقف ولا جده ولا ولده كذا في الكافية
في يده برهن آخر انها وقفت عليه وبرهن قيم الوقف انها للمسجد فان ارخا فللسابق
والا فبينهما نصفان كما هو الحكم في دعوى الملك وقف بين اخوين مات احدهما
وبقي في يد الحي واولاد الميت ثم الحي برهن على واحد من اولاد الاخ ان الوقف
بطنا بعد بطن والباقي غيب والواقف واحد يقبل وينتصب خصما عن الباقين
ولو برهن اولاد الاخ ان الوقف مطلق علينا وعليك فبينة مدعي الوقف بطنا
بعد بطن اولى كذا في القنية

كتاب البيوع

جمع البيع الذي دل على البيوع
لغة مبادلة مال بمال مطلقا وهو من الاضداد يقال باع الشيء اذا اشتراه او باعه
ويتعدى الى المفعول الثاني بلا حرف وبحرف يقال باعه الشيء وباعه منه والجمع
لكونه انواعا اربعة باعتبار المبيع لانه اما بيع سلعة بمثلها ويسمى مقايضة او
بيعها بالثمن بيعا لكونه اشهر الانواع او بيع ثمن بثمن كبيع النقدين ويسمى صرفا
او بيع دين معين ويسمى سلما وباعتبار الثمن ايضا لان الثمن الاول ان اعتبر
يسمى مساومة او اعتبر مع زيادة يسمى مرابحة او بدونها يسمى تولية او مع نقص
يسمى وضيعة وشرعا مبادلة مال بمال بطريق الاكتساب اي التجارة خرج به مبادلة
رجلين بمالهما بطريق التبرع او الهبة بشرط العوض فانه ليس ببيع ابتداء وان كان
في حكمه بقاء لم يقل على سبيل التراضي ليتناول بيع المكره فانه منعقد وان لم يلزم ينعقد
الانعقاد تعلق كلام احد العاقدين بالآخر شرعا على وجه يظهر اثره في المحل بالايجاب
وهو الاثبات سمي به اول كلام احد العاقدين سواء كان بعت او اشتريت لانه يثبت
للآخر خيار القبول والقبول وهو ثاني كلام احدهما سواء كان بعت او اشتريت الا
صيغتين قال في الهداية البيع ينعقد بالايجاب والقبول اذا كانا بلفظي الماضي ثم
قال لان البيع انشاء تصرف والانشاء يعرف بالشرع والموضوع للاخبار قد استعمل
فيه فينعقد به واراد بالموضوع للاخبار لفظ الماضي اذ اللام فيه للعهد فلا وجه للاعتراض
عليه بانه لا بد من ضم شيء الى ذلك وهو ان يقال وكان استعماله بلفظ الماضي والا
لا يتم الدليل ثم قال ولا ينعقد بلفظين احدهما لفظ المستقبل بخلاف النكاح وقد مر
الفرق هنالك واراد بلفظ المستقبل صيغة الامر كقوله بعه مني بكذا فقال بعت لانه
قال هنالك مثل ان يقول زوجني فيقول زوجتك فلا وجه لحمله على المضارع كما ذهب
اليه بعض شراحه ثم ينعقد به البيع اذا قارنه النية كما نقل صاحب النهاية عن
تحفة الفقهاء وينعقد ايضا بما معناهما اي الماضيين نحو رضيت واعطيتك
بكذا وخذه يعني بكل ما دل على معنى بعت واشتريت ينعقد به البيع ايضا فاذا
قال بعت منك هذا بكذا فقال رضيت او قال اشتريت هذا منك فقال خذه يعني

[illegible] خذه فانه امر بالاخذ بالبدل وهو لا يكون الا بالبيع فكانه قال
[illegible] خذه تقدير البيع اقتضاء فيثبت العقد باعتباره لا بلفظين احدهما
[illegible] فان المعنى هو المعتبر في هذه العقود وان اعتبر اللفظ في بعضها
[illegible] لا يصح اذا لم يبينا جميع ما يقتضيه حتى التعاطي اي اعطاء
[illegible] من الجانبين فان البيع ينعقد به بلا وجود اللفظ فضلا عن الماضيين
[illegible] وهو التراضي والملتقى اي في النفيس والخسيس هو الصحيح لا كما قال
[illegible] في الخسيس فقط كالبقل ونحوه وينعقد ايضا بلفظ واحد
[illegible] من طفله بان يقول بعت هذا منه بكذا او شراه منه بان يقول
[illegible] هذا من ابني فان عبارة الاب لكمال شفقته اقيمت مقام العبارتين
[illegible] القبول وكان اصيلا في حق نفسه ونائبا عن طفله حتى اذا بلغ
[illegible] ابني فبلغ كانت العهدة على ابنه فاذا لزم عليه الثمن في صورة شرائه
[illegible] ينصب القاضي وكيلا يقبضه للصغير فيرده على الاب فيكون
[illegible] اذا قال بعت منك هذا بدرهم فقبضه المشتري ولم يقل شيئا ينعقد
قابل في المجلس لانه لو لم يخير لزمه حكم العقد جبرا وهو منتف بين
[illegible] والترك يعني ان البائع اذا اوجب في شيء فقبل المشتري في بعضه
[illegible] المشتري في شيء فقبل البائع في بعضه لم يجز لان فيه تفريق الصفقة
[illegible] لا يملك ذلك لان فيه ضررا للمشتري او البائع لان المبيع
[illegible] ضرر الشركة للمشتري وان كان متعددا فالعادة ضم الجيد الى
[illegible] بين الجيد ليروج الرديء فلو ثبت خيار قبول العقد في البعض لقبل
[illegible] العقد في الجيد وترك الرديء فزال الجيد عن يد البائع باقل من ثمنه
[illegible] لم يجز اخذ البعض بالبعض فلان لا يجوز اخذ الكل بالبعض اولى
[illegible] الصفقة فله ذلك لانتفاء الضرر عن البائع واليه اشار بقوله الا اذا
[illegible] بلفظ بعت وفصل الثمن اشارة الى ما ذكر في الكافي ان قوله وفي
[illegible] بين ثمن كل واحد لانه صفقتان معنى لا يتم الا ان يدرج تكرار لفظ
[illegible] الصفقة لا بمجرد بيان ثمن كل واحد وقال الزيلعي وليس له ان يقبل
[illegible] البعض وان فصل الثمن الا اذا كرر البائع لفظ بعت مع ذكر الثمن
[illegible] وعندهما له ذلك ان فصل الثمن بان قال بعتك هذين كل واحد
[illegible] هذه العشرة كل واحد منهما بكذا او رضي اي البائع بقوله اي بقول المشتري
[illegible] قال القدوري ان رضي البائع في المجلس بتفريق الصفقة يصح ويكون
[illegible] في الحقيقة استئناف ايجاب لا قبولا ورضي البائع قبولا والشرط
[illegible] اذا كان للبعض الذي قبله المشتري حصة من الثمن كالعبد المذكورة
[illegible] العشرة لان الثمن ينقسم عليهما باعتبار الاجزاء فيكون حصة كل بعض
[illegible] الثاني العقد الى عبدين او ثوبين فلم يصح العقد بقبول احدهما وان

Arapsko pismo
Arabic Script

Tatjana Paić-Vukić

Arapski jezik

Arapski je najmlađi i danas najrasprostranjeniji semitski jezik. Prema uvriježenoj podjeli, pripada jugozapadnim semitskim jezicima, no posljednjih se desetljeća iznose argumenti u prilog njegovu svrstavanju u centralnosemitske jezike, zajedno s hebrejskim i aramejskim. Najstariji spomenik arapskoga, natpis iz An-Namare u južnoj Siriji, datira iz 328. godine. Od pojave islama i početka snažnijeg širenja pismenosti u 7. stoljeću, može se kontinuirano pratiti razvoj toga jezika od klasičnog, čiji su najvažniji spomenici Kur'an i predislamska poezija, do modernog standardnog. Danas u svijetu ima više od 300 milijuna izvornih govornika arapskoga. To je službeni jezik dvadeset i dvije države članice Arapske lige i jezik vjerskoga obreda muslimana.

Arabic Language

Arabic is the youngest and most widespread Semitic language in the world today. According to the established classification it belongs to the Semitic group of languages. In the previous decades the arguments that it belongs to the Central Semitic, along with the Hebrew and Aramaic languages have been put forward. The oldest inscription in Arabic is The Namara inscription from southern Syria, dated from 328 AD. From the advent of Islam and the spreading of literacy in the 7th century the development of the Classical Arabic language can be followed in continuity to modern standard Arabic, the most important sources being the inscriptions of Qur'an and Pre-Islamic poetry. There are more than 300 million native speakers of Arabic in the world today. It is the official language of twenty two states (members of the Arabic League) and the language of Muslim religious ceremony.

Pismo

Arapsko pismo razvilo se iz nabatejske inačice aramejskog pisma. Iz razdoblja prije pojave islama sačuvalo se samo pet spomenika toga ranog pisma. Ono je bilo konsonantno i imalo je 22 grafema. Budući da je u arapskom 28 suglasnika, neka su slova služila za bilježenje dvaju ili triju fonema. U 7. stoljeću, kako bi se tekst Kur'ana što pouzdanije zapisao, pojedinim su slovima pridodane dijakritičke točkice (npr.

Script

The Arabic script developed from a Nabataean variant of the Aramaic script. Only five monuments inscribed with this script were preserved from the time before the appearance of Islam. It was a consonant script and had 22 graphemes. Since the Arabic script consisted of 22 vowels, some of the letters were used to record two or three phonemes. In order to record the text of Qur'an most accurately, the diacritic dots were added to some letters in the 7th

Šerijatsko pravo, Durar al-Hukkam Fi Šarh Gurar al-Ahkam, Osmansko carstvo 1167./1753., HAZU (Arhiv) / Sharia law, Durar al-Hukkam Fi Sharh Gurar al-Ahkam, Ottoman Empire 1167/1753 AD, Croatian Academy of Sciences and Arts (Archive)

/b/, ت /t/, ث /ṯ/), čime se broj grafema povećao na dvadeset i osam. Iz istog razloga uvedene su i oznake za kratke samoglasnike. Isprva su to bile crvene, zlatne ili srebrne točkice, a kasnije se, do 10. st., ustalilo bilježenje samoglasnika /a/ kosom crticom iznad grafema za suglasnik koji mu prethodi, samoglasnika /i/ kosom crticom ispod, a samoglasnik /u/ označen je umanjenim oblikom grafema *wāw* (و). Dugi samoglasnici označuju se grafemima *alif* (ā), *wāw* (ū) i *yā'* (ī). Pridodana je i oznaka za udvostručeni suglasnik, šadda, te kružić nazvan *sukūn* kao pokazatelj odsustva samoglasnika. Grafem *hamza*, znak za glotalni okluziv, također je uveden naknadno, i ima oblik umanjenog gornjeg dijela grafema *'ayn*.

Arapsko je pismo kurzivno i piše se zdesna nalijevo. Nema velikih i malih slova. Slova se vežu jedno uz drugo, uz iznimku šest onih koja se ne vezuju s lijeve strane (u donjoj su tablici označena zvjezdicom). Oblik im ovisi o tome pišu li se samostalno, na početku, u sredini ili na kraju riječi. Budući da je arapsko pismo konsonantno (*abǧad*), i da su u tiskanim tekstovima samoglasnici označeni jedino u Kur'anu, dječjim knjigama i udžbenicima, ispravno čitanje ovisi o poznavanju sintaktičkog i semantičkog konteksta.

Širenjem islama i arapsko se pismo proširilo u Aziji, Africi i Europi. Uvođenjem dodatnih grafema prilagođavalo se fonološkim ustrojima tamošnjih, većinom nesemitskih jezika. Njime su se među prvima služili perzijski i drugi iranski jezici (kurdski, paštu, beluči), zatim indoarijski jezici indijskoga potkontinenta (urdski, sindhski, kašmirski), brojni jezici naroda središnje Azije (tadžički, uzbečki, tatarski...) i Afrike (berberski, svahili, somalski, hausa, harari...), neki malajsko-polinezijski jezici, kao i turski u osmanskom razdoblju i u prvim godinama Republike Turske, do 1928. kada je uvedena latinica. Arapskim se pismom na Pirenejskom poluotoku pisalo na portugalskom, španjolskom i ladinu. Muslimani jugoistočne Europe njime su pisali pučke ljubavne, nabožne i didaktičke pjesme, prozne sastavke i rječnike na slavenskim jezicima i albanskome.

century (e.g. ب /b/, ت /t/, ث /ṯ/), which made the number of graphemes rise to twenty eight. The symbols for short vowels were added for the same reason. At first they were marked with red, golden or silver dots, and later by the 10th century it became common to note the vowel /a/ with a slanted line above the grapheme, the vowel /i/ that is preceded by a consonant with a slanted line below the letter, and the consonant /u/ with a diminutive form of the grapheme *wāw* (و). Other vowels are recorded with the graphemes *alif* (ā), *wāw* (ū) and *yā'* (ī). The diacritic mark Shaddah was added to denote a double vowel, as well as the circle called ***sukūn*** denoting the absence of vowels. The grapheme hamza, a symbol for glottal occlusive consonant was also introduced later and bears the shape of a diminutive upper part of the grapheme *'ayn*.

The Arabic script is an Italic script, written from right to left. The letters are not case sensitive. The letters are linked to one another, with the exception of the six letters which are not linked on the left side (marked with * in the bottom table). The shape of the characters depends on whether they are written on their own, at the beginning, in the middle or at the end of a word. Since the Arabic script is a consonant script (*abǧad*), and in the printed manuscripts the vowels are recorded only in Qur'an, children's books and text books, the correct way of reading depends on the knowledge of the syntactic and semantic context.

With the spread of Islam, the Arabic script spread all over Asia, Africa and Europe. By introducing additional graphemes it adapted to the phonological systems of the local, mostly non-Semitic languages. Among the first languages to use the script were the Persian and other Iranian languages (Kurdish, Pashto, Balochi), and the Indo-Aryan languages of the Indian subcontinent (Urdu, Sindhi, Kashmiri), numerous languages of the peoples from middle Asia (Tajik, Uzbek, Tatar...) and Africa (Berber, Swahili, Somalian, Hausa, Harari), and some of the Malay-Polynesian languages, as well as Turkish in the Ottoman Period in the first years of the Republic, until 1928, when the Latin script was introduced. The Arabic script was used in the Iberian Peninsula to record Portuguese, Spanish and Ladin languages. The Muslims of the South-Eastern Europe used the script to write love, religious and didactic poems, prose, and dictionaries in the Albanian and Slavic languages.

ARAPSKA ABECEDA

ARABIC ALPHABET

TRANSLITERACIJA TRANSLITERA-TION	**IZGOVOR** PRONUNCIATION	**OBLIK SLOVA NA KRAJU RIJEČI** SHAPE OF LETTERS AT THE END OF THE WORD	**OBLIK SLOVA U SREDINI RIJEČI** SHAPE OF LETTERS IN THE MIDDLE OF THE WORD	**OBLIK SLOVA NA POČETKU RIJEČI** SHAPE OF LETTERS AT THE BEGINNING OF THE WORD	**SAMOSTALNO NAPISANO SLOVO** A LETTER ON ITS OWN	**NAZIV SLOVA** NAMES OF THE LETTERS
-, ā	Ø, a:	ـا	ـا	ا	ا	alif *
’	ʔ	-	-	-	ء	hamza
b	B	ـب	ـبـ	بـ	ب	bā’
t	T	ـت	ـتـ	تـ	ت	tā’
ṯ	Θ	ـث	ـثـ	ثـ	ث	ṯā’
ǧ	ʤ	ـج	ـجـ	جـ	ج	ǧīm
ḥ	Ħ	ـح	ـحـ	حـ	ح	ḥā’
h̲	X	ـخ	ـخـ	خـ	خ	h̲ā’
d	D	ـد	ـد	د	د	dāl *
d̲	Ð	ـذ	ـذ	ذ	ذ	d̲āl *
r	R	ـر	ـر	ر	ر	rā’ *
z	Z	ـز	ـز	ز	ز	zā’ *
s	S	ـس	ـسـ	سـ	س	sīn
š	ʃ	ـش	ـشـ	شـ	ش	šīn
ṣ	$s^{ʕ}$	ـص	ـصـ	صـ	ص	ṣād
ḍ	$d^{ʕ}$	ـض	ـضـ	ضـ	ض	ḍād
ṭ	$t^{ʕ}$	ـط	ـطـ	طـ	ط	ṭā’
ẓ	$ð^{ʕ}$	ـظ	ـظـ	ظـ	ظ	ẓā’
‘	ʕ	ـع	ـعـ	عـ	ع	‘ayn
ġ	ɣ	ـغ	ـغـ	غـ	غ	ġayn
f	f	ـف	ـفـ	فـ	ف	fā’
q	q	ـق	ـقـ	قـ	ق	qāf
k	k	ـك	ـكـ	كـ	ك	kāf
l	l, ɬ	ـل	ـلـ	لـ	ل	lām
m	m	ـم	ـمـ	مـ	م	mīm
n	n	ـن	ـنـ	نـ	ن	nūn
w, ū	w, u:	ـو	ـو	و	و	wāw *
h	h	ـه	ـهـ	هـ	ه	hā’
y, ī	j, i:	ـي	ـيـ	يـ	ي	yā’

Stilovi arapskog pisma

Najstariji pisani spomenici islamske civilizacije fragmenti su Kur'ana na pergameni i papirusu. Zapisani su različitim varijantama arapskog pisma koje se danas nazivaju *hidžaskima*, a upotrebljavale su se od sredine do kraja 7. stoljeća. Njih je potisnulo krupno i uglato *kufsko* (kūfī) pismo koje je ime dobilo po iračkome gradu Kufi. Ono se iz Hidžaza proširilo u sjevernu Afriku i Španjolsku, gdje su se razvile njegove magripske inačice. Isprva su se njime služili samo prepisivači Kur'ana, a s vremenom je postalo i važan dekorativni element islamske arhitekture i ukras na uporabnim predmetima. U 10. stoljeću, koje se smatra zlatnim dobom *kufskoga*, javlja se oblo pismo *nash*. Oštre kutove karakteristične za *kufski* stil zamijenile su blage linije, čemu je pogodovala sve šira uporaba papira koji je potisnuo papirus kao podlogu za pisanje. S vremenom je *nash* postalo najšire prihvaćeno književno pismo, a od 18. stoljeća i obrazac za oblikovanje slova u tiskarstvu. Uz njega se do 13. stoljeća ustalilo još pet književnih i kancelarijskih stilova – *ṯuluṯ*, *riqā'*, *rayḥān*, *muḥaqqaq* i *tawqī'*, a svi zajedno poznati su pod nazivom *al-aqlām as-sitta* (šest perâ).

Procvat kaligrafije kao najcjenjenije vizualne umjetnosti islamske civilizacije iznjedrio je i brojne regionalne stilove. U perzijskome kulturnom krugu u 14. stoljeću razvilo se tzv. viseće pismo, *ta'līq*, kojim su se najčešće prepisivala pjesnička djela, i kitnjasti *nasta'līq* koji se koristio za prepisivanje knjiga, ali ne i Kur'ana, za izradu kaligrafskih albuma i ukrasnih ploča, *levhi*, te u natpisima na novcu, uporabnim predmetima i građevinama. U Osmanskom Carstvu uvriježila se posebna vrsta *nasta'līq*a koji će uz *nash* postati prevladavajuće osmansko književno pismo. Od 15. stoljeća razvija se *divānī*, pismo osmanske carske kancelarije, čija su obilježja vrlo izražene, duge petlje slova, posebne ligature (spajaju se slova koja se inače ne vezuju s lijeve strane) i naviše izvijeni završeci redaka. Brojni regionalni stilovi razvili su se i izvan tih velikih kulturnih središta muslimanskoga svijeta. Težnja usavršavanju oblika slova i ispitivanju njihovih dekorativnih potencijala potaknuta je ugledom arapskog pisma kao pisma muslimanske Svete knjige, i poimanjem čina pisanja, osobito prepisivanja Kur'ana kao bogougodnog djela.

Styles of the Arabic Script

The oldest written inscriptions of the Islamic civilisation are the fragments of Qur'an, written on parchment and papyrus. They were written in different variants of the Arabic script, which to this day are called Hajj scripts, and were used from the middle to the end of the 7th century. They were suppressed by the large angular kūfī script, named after the city of Kufi. It spread from Hidzaz to North Africa and Spain, where its Maghrib variants evolved. At first it was used only by transcribers of Qur'an, and in time it became an important decorative element of the Islamic architecture and objects of everyday use. The round script *Nash* appeared in the 10th century, which was considered to be the Golden Age of *Kufic*. The sharp angles characteristic of the *kufic* style were replaced by soft lines, due to the wider usage of paper to write on instead of the papyri. Over time *nash* became one of the accepted literary scripts, and a pattern for forming letters in typography since the 18th century. Apart from *nash* five other literary and administrative styles were established until the 13th century - *ṯuluṯ*, *riqā'*, *rayḥān*, *muḥaqqaq* and *tawqī'*, all of them known under the name *al-aqlām as-sitta* (six feathers).

Due to the flourishing of calligraphy as the most prestigious visual art of the Islamic civilisation numerous regional styles were born. In the 14th century within the Persian cultural circle the so-called hanging script *ta'līq* developed. It was used for transcribing poetic works, the ornate *nasta'līq,* which was used for transcribing books, but not Qur'an, and for making calligraphic albums and ornate plates, *levhi,* and for the inscriptions on coins, everyday objects and buildings. In the Ottoman Empire a special kind of *nash* became common, which along with *Nash* became the prevailing Ottoman script. From the 15th century onwards *divānī* developed. It was a script of the Imperial offices, whose characteristics include accentuated long loops, special ligatures (the letters which are not otherwise connected are linked on the left), and most of all curved endings of the lines. Numerous regional styles developed outside these large cultural centres of the Muslim world. The aspiration to perfect the letters and questioning their decorative potentials was prompted by the status of the Arabic script as the script of the Muslim Holy Book, and the understanding of the act of writing, especially transcribing Qur'an, as blasphemy.

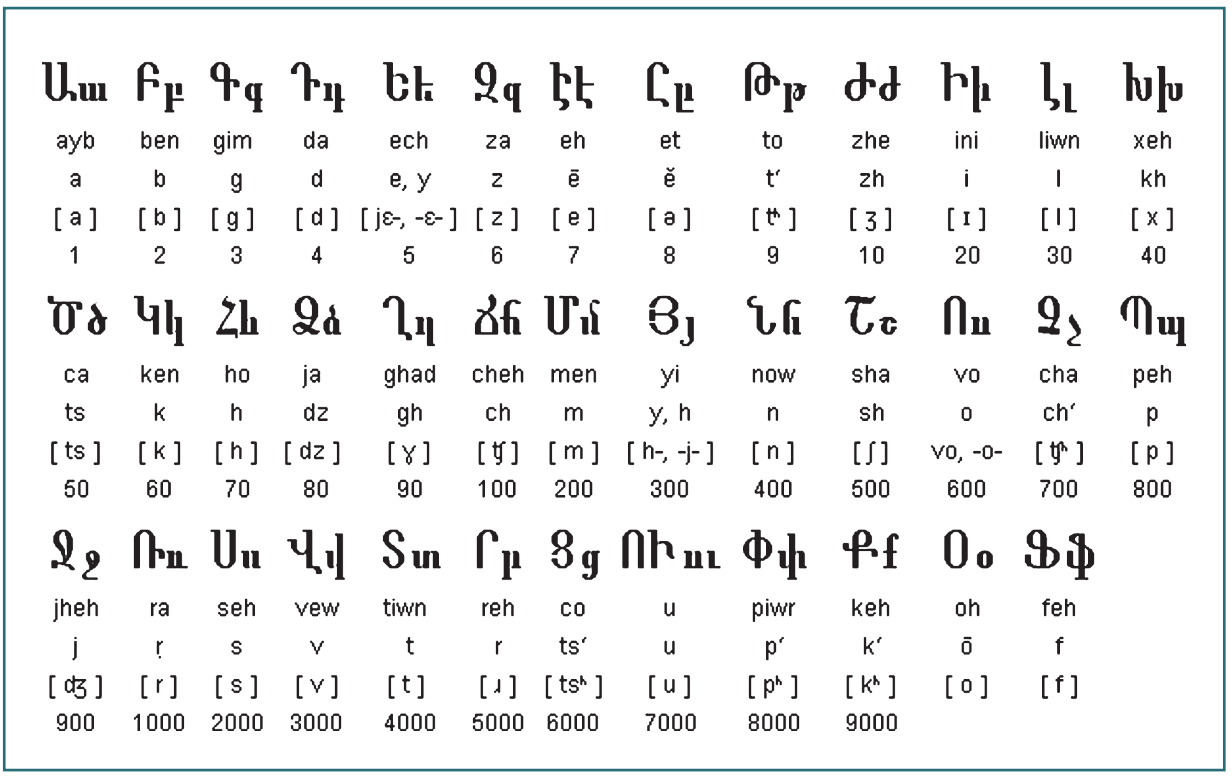
Kavkasko albansko, gruzijsko i armensko pismo

Caucasian Albanian, Georgian and Armenian Scripts

Kristina Šekrst

Kavkasko albansko pismo rabilo se na teritoriju današnjega Azerbejdžana i Dagestana od 5. do 12. stoljeća, uglavnom za religijske svrhe, a katkad i za svjetovne. Pismo je spominjano u povijesnim izvorima, pripisuje se Mesropu Mashtotsu, no nanovo je otkriveno tek 1937. godine, kad je profesor Ilia Abuladze pronašao zapis iz 15. stoljeća gdje se spominju razna pisma s primjerima, uključujući i kavkasko albansko pismo. Tek je 2003. otkriveno prvo književno djelo na palimpsestu, pergamentu s kojega je sastrugan jedan sloj da bi se napisao novi. Datira se u 4. ili 5. stoljeće nove ere, a sadržava dijelove Poslanice Korinćanima.

The Caucasian Albanian script was used in the territory of today's Azerbaijan and Dagestan, its creation usually attributed to Mesrop Mashtots. The script was in use from the 5th till the 12th century, mostly for religious purposes, but sometimes also for profane. It was mentioned in historical sources, but it was rediscovered in 1937, when professor Ilia Abuladze found a record from the 15th century that listed different scripts with examples, including the Caucasian Albanian script. It was only in 2003 that the first literary work was discovered written on a palimpsest – parchment from which the text had been scraped off so that it could be reused – dated to the 4th or 5th century AD, containing parts of the Epistle to the Corinthians.



Armensko pismo alfabetsko je pismo. Piše se slijeva nadesno, a izvorno je imalo 36 znakova, dok danas ima 39. Ovo pismo sadržava brojne ligature i znakove interpunkcije.

Mesrop Mashtots, lingvist i crkveni vođa, i Isaac Armenski (Sahak Partev), armenski patrijarh, stvorili su ovo pismo oko 405. godine, a neki izvori Mashtotsu pripisuju i stvaranje gruzijskih pisama te pisama kavkaske Albanije. Prvom se pisanom frazom armenskoga jezika tradicionalno smatra izreka iz Mudrih izreka Staroga zavjeta. Pehlevsko pismo rabilo se u Armeniji prije prodora kršćanstva, uz sirijski i grčki alfabet. Općenito stručnjaci smatraju da je armenski nastao po uzoru na grčki alfabet, što se vidi i po redoslijedu u armenskoj abecedi te obliku slova.

The Armenian script is an alphabetic script. It is written from left to right and it originally consisted of 36 characters, while now it has 39 characters.

Mesrop Mashtots, a linguist and a church leader, and Isaac of Armenia (Sahak Partev), Patriarch of the Armenian Church, invented this script around the year 405 AD. Some sources also attribute the invention of the Caucasian Albanian and Georgian scripts to Mashtots. A proverb from the *Old Testament's Wisdom books* is traditionally considered to be the first written phrase in the Armenian language. The Pahlavi script was used in Armenia, alongside with the Syrian and the Greek alphabet, before the spread of Christianity. In general, experts believe that the Armenian script was based on the Greek alphabet, which can be seen in the organization and the shape of the letters.

Gruzijska pisma služe pisanju istoimenoga jezika, a postoje tri vrste: asomtavruli, nuskhuri i mkhedruli. Sva tri pisma pišu se slijeva nadesno, a uzor im je vjerojatno grčki alfabet, što se pretpostavlja po sličnome redoslijedu slova.

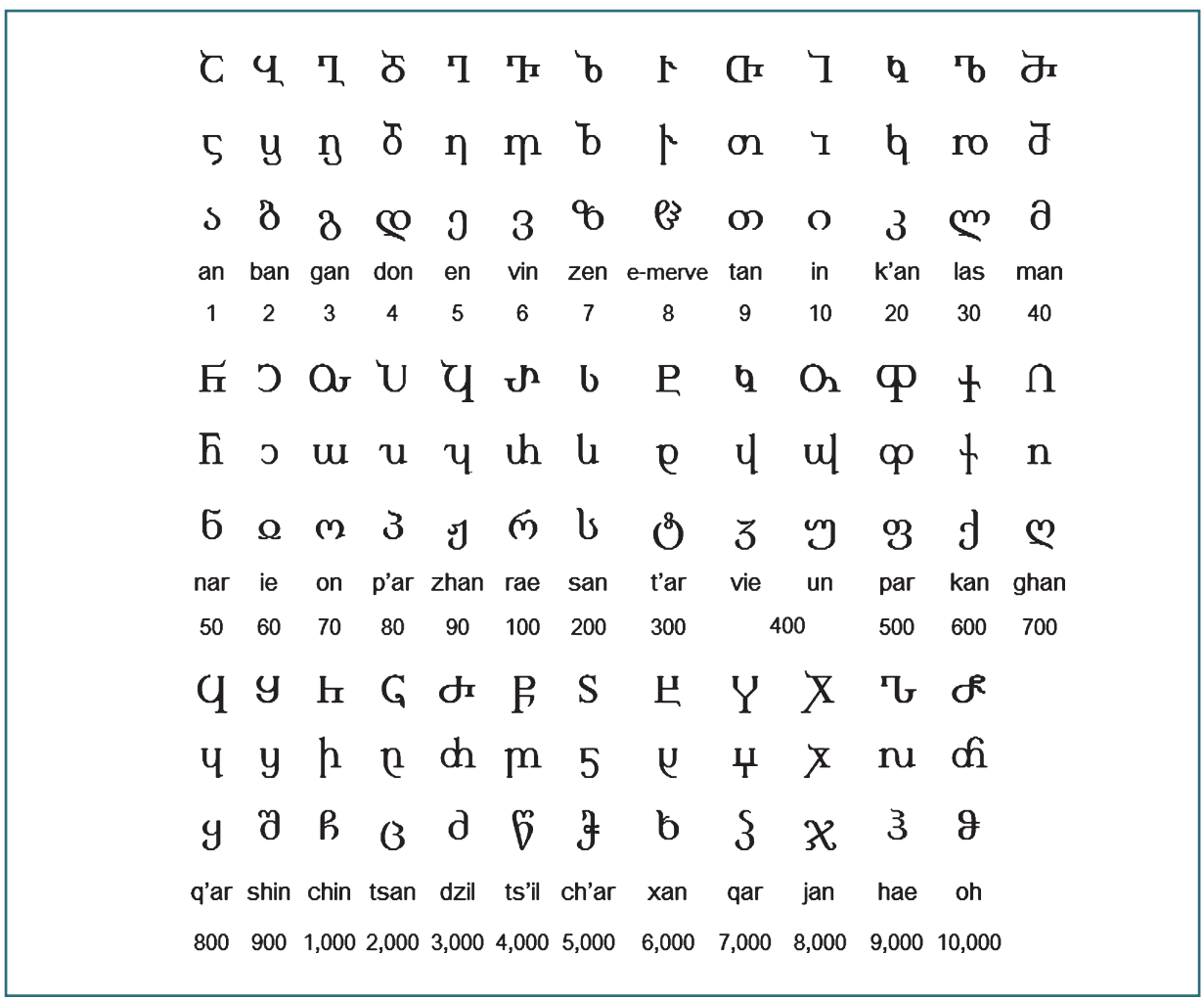
Astomtavruli, nuskhuri i mkhedruli

Prvo je posvjedočeno pismo asomtavruli iz 5. stoljeća, a povezuje se sa širenjem kršćanstva u Gruzijskome Kraljevstvu te je vjerojatno stvoreno oko 4. stoljeća. Rabilo se za prijevode Biblije i kršćanskih spisa na gruzijski. Legendarni je tvorac gruzijskoga pisma kralj Pharnavaz I. iz 3. stoljeća pr. Kr. Asomtavruli doslovno znači „velika slova" (*aso* = slovo, *mtavari* = glavni).

The Georgian scripts are used for writing Georgian language, and there are three writing systems: Asomtavruli, Nuskhuri, and Mkhedruli. All three scripts are written from left to right, and were based on the Greek alphabet, because of the similar organization of letters.

Astomtavruli, Nuskhuri and Mkhedruli

The oldest Georgian script is Asomtavruli, invented probably in the 4th century, while the oldest inscriptions date from the 5th century. It is connected to the spread of Christianity in the Kingdom of Georgia. The script was used for translations of the Bible and other Christian documents into the Georgian language. By legend, the inventor of the Georgian script was king Pharnavaz I from 3rd century BC. Asomtavruli literally means "capital letters" (*aso* = letter, *mtavari* = principal).



Pismo nuskhuri počinje biti dominantno od 9. stoljeća te asomtavruli postaje više dekorativan nego upotreban, no zapisi ostaju sve do 11. stoljeća. Ime dolazi od nuskha = „inventar", „raspored", a u kombinaciji s asomtavrulijem naziva se khutsuri (od khutsesi = „klerički") te se primjenjuje u hagiografskim tekstovima. Najstariji zapisi potječu iz 9. stoljeća.

Današnje je standardno gruzijsko pismo mkhedruli, a ime je dobio po riječi mkhedari = „konj", a znači doslovno „vojska" ili „konjica". To se pismo javlja u 10. stoljeću, a najstariji je zapis iz 982. godine. Rabilo se izvorno za kraljevske spise, povijesne dokumente i razne zapise, isključivo za nereligijske i svjetovne svrhe. Kombinacija khutsuri u primjeni je sve do 19. stoljeća, a mkhedruli je postupno počeo dominirati. Od 19. stoljeća univerzalno je pismo za pisanje gruzijskoga jezika.

The Nuskhuri script became dominant in the 9th century, when the Asomtavruli script became more decorative than practical, but inscriptions continue till the 11th century. Its name comes from nuskha = "inventory", "schedule", while in combination with the Asomtavruli script it is called Khutsuri (from khutsesi = "clerical") and it is used for hagiography. The oldest inscriptions date to the 9th century.

Mkhedruli is the current Georgian script, deriving its name from mkhedari = "horse", literally meaning "military" or "cavalry". This script appeared in the 10th century, with the oldest inscription dating back to 982 AD. It was originally used for royal charters, historical documents and other inscriptions of non-religious character and secular purposes. The combination of Khutsuri was in use till the 19th century, while Mkhedruli gradually became more dominant. In the 19th century it became the universal script for writing the Georgian language.

Anatolijska pisma
Anatolian Scripts

Kristina Šekrst

Hijeroglifski luvijski bila je varijanta luvijskoga jezika koji se pisao anatolijskim hijeroglifima. Sačuvan je u kraljevskim natpisima i sličnim spomenicima. Anataolijski hijeroglifi logogramsko su pismo koje se sastoji od petstotinjak znakova, a u literaturi se često pogrešno naziva hetitskim hijeroglifima, dok se još nije znalo da je jezik u pozadini luvijski. Najraniji se hijeroglifi javljaju u 2. tisućljeću pr. Kr., ali tek od 14. st. pr. Kr. dolazi u aktivnu uporabu. Tipološki su slični egipatskim hijeroglifima, no s njima nemaju nikakve veze. Riječi su bile pisane s logogramima, fonogramima ili s kombinacijama te s determinativima, slično egipatskim hijeroglifima, dok je jedina razlika u tome što su fonogrami označavali slogove, a ne glasove. Anatolijski hijeroglifi pisali su se u stilu *boustrophedon* (doslovno „kako se vol okreće" dok ore polje), odnosno izmjenjivali su se kao pisanje slijeva nadesno i zdesna nalijevo.

The Luwian hieroglyphs were a variant of the Luwian language written in the Anatolian hieroglyphs. They were preserved in royal inscriptions and similar monuments. The Anatolian hieroglyphs are a logographic script consisting of some 500 signs. Before it was known that the language of the inscriptions was Luwian, they were wrongly called the Hittite hieroglyphs in literature. The oldest hieroglyphs appeared in the second millennia BC, but they were actively used from the 14th century BC. Although they are typologically similar to the Egyptian hieroglyphs, there is no connection between them. The words were written logographically, phonetically or in combinations or with determinatives, similar to Egyptian hieroglyphs, the only difference being that the phonograms denoted syllables, not sounds. The Anatolian hieroglyphs were written alternately from left to right and right to left, a style known as *boustrophedon* (literally "as the ox turns" – when ploughing a field).

Anatolijski hijeroglifi – slogovni fonogrami

Kako se počeo proučavati luvijski u 19. stoljeću, tako je veći dio hijeroglifa već početkom 20. stoljeća dešifriran pomoću luvijskoga koji se znao iz klinopisa, a veći su dio posla obavili Emil Forrer, Ignace Gelb, Bedřich Hrozný i Piero Meriggi, dok je J. D. Hawkins 1973. potvrdio da je riječ o luvijskome jeziku.

Klinopisni luvijski i hetitski jezik pisali su se i klinopisima, izvedenim iz mezopotamskih klinopisa.

Anatolian Hieroglyphs - Syllabary Phonetic Glyphs

As the Luwian language studies began in the 19th century, the majority of hieroglyphs were deciphered at the beginning of the 20th century from the Luwian language recorded in the cuneiform script. Major contributions to this research were from Emil Forrer, Ignace Gelb, Bedřich Hrozný and Piero Meriggi, while in 1973 J. D. Hawkins confirmed that it was the Luwian language.

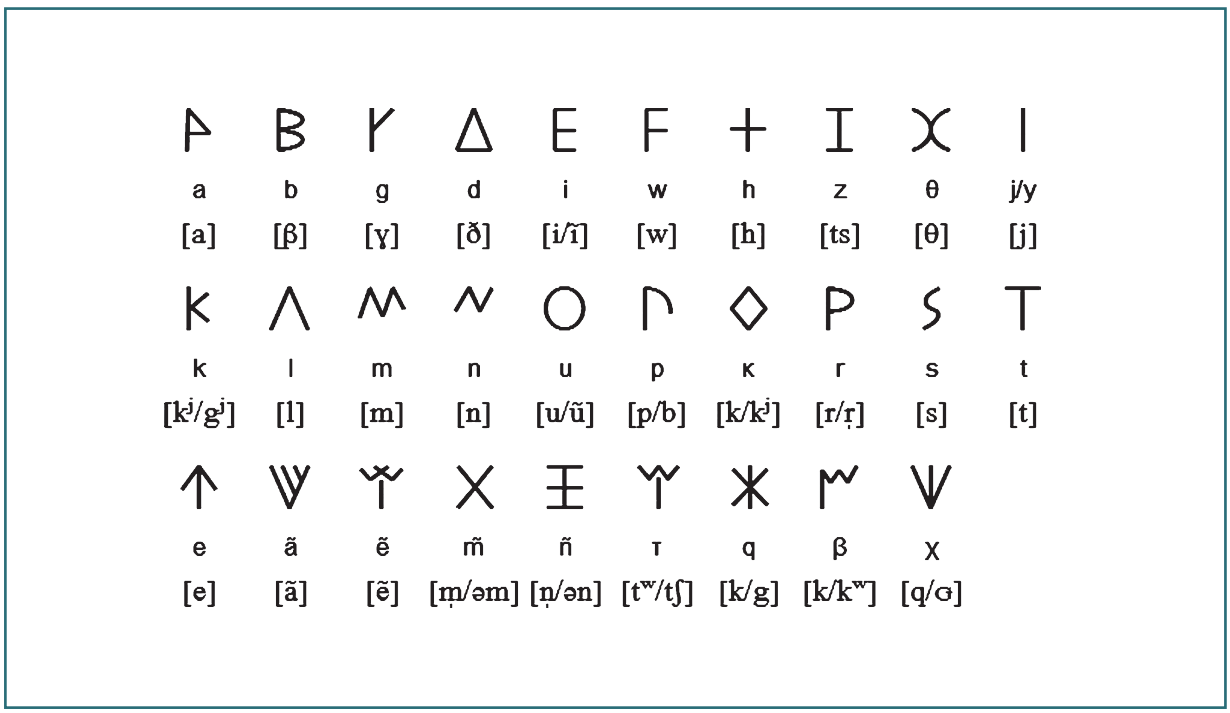
The Cuneiform Luwian and the Hittite language were written in cuneiform derived from Mesopotamia.

Hetitski klinopis nastao je adaptacijom akadskoga klinopisa iz sjeverne Sirije. Hetitski su tekstovi sačuvani na glinenim pločicama još od 2. tisućljeća pr. n. e, a znakovi mogu biti silabogrami, odnosno nose slogovnu vrijednost, te akadogrami i sumerogrami, koji su zapravo ideogrami iz akadskoga i sumerskoga. Na temelju goleme količine pločica kod Boğazköya, bivše hetitske prijestolnice Hattuše, Bedřich Hrozný analizirao je ovaj klinopis i lingvističkom analizom otkrio da je hetitski indoeuropski jezik na temelju specifičnih gramatičkih osobina.

The Hittite cuneiform was an adaptation of the Akkadian cuneiform from Northern Syria. Hittite texts were preserved in clay tablets from the second millennia BC. The signs can be syllabograms, representing syllables, and Akkadograms and Sumerograms, which are ideograms from Akkadian and Sumerian. Bedřich Hrozný based his linguistic analysis of this cuneiform on a large number of clay tablets from Boğazköy, former Hittite capital of Hattusa. He discovered, based on specific grammatical characteristics, that Hittite is an Indo-European language.

Likijski jezik pisao se likijskim alfabetom, razvijenim kao proširenjem grčkoga alfabeta. Poznat nam je iz 172 zapisa iz 5. i 4. stoljeća pr. Kr., uglavnom votivnih i pogrebnih zapisa. Grčki je alfabet rabio i karijski jezik, a sidejski jezik rabio je još nedešifrirano pismo. Iz grčkoga je alfabeta razvijeno i lidijsko pismo, a pisano je slijeva nadesno i zdesna nalijevo, dok su kasniji tekstovi isključivo pisani zdesna nalijevo.

The Lycian language was written in the Lycian alphabet, developed as an extension of the Greek alphabet. It was found in 172 documents, mostly votive and funerary inscriptions, dating from the 5th and the 4th century BC. The Carian language also used the Greek alphabet, while the Sidean language used a still undeciphered script. The Lydian script also derived from the Greek alphabet, and it was written left to right and right to left, while later texts were written exclusively right to left.Indo-



Iranska pisma
Iranian Scripts

Kristina Šekrst

Indoiranski jezici kao dio indoeuropske porodice dijele se na indijske i iranske, a među iranske ubrajamo brojne potporodice, od čega su danas najveći jezici perzijski, pašto (afganski), kurdski i beločki, a pišu se uglavnom modificiranim arapskim pismo ili katkad latinicom. Međutim, u povijesnim razvojima tih jezika ističu se pisma staroiranskih jezika – staroperzijskoga i avestičkoga.

Staroperzijski jezik javlja se u doba Ahemenida od 7. do 3. stoljeća pr. Kr., a najpoznatiji je spomenik Behistunski natpis (između 522. i 486. pr. Kr.). Taj se jezik pisao staroperzijskim klinopisom slijeva nadesno, a pismo se sastojalo od 36 fonetskih znakova i 8 logograma (znakova koji reprezentiraju cijele riječi ili fraze). Suprotno čestim zabludama, ovo pismo nije nasljednik mezopotamske tradicije. Među znanstvenicima nema konsenzusa o porijeklu ovoga pisma, a u brojnim spomenicima spominju se različiti tvorci: Darije Veliki govori kako je sam stvorio novo pismo, a vjerojatno je stvoreno negdje u 6. stoljeću. Uzor ovome pismu djelomično je sumersko-akadski klinopis, a smatra se samostalnim izumom. Znakovi su urezi pod kutem ili bez kuta, a kombinacijama ureza nastaju novi znakovi.

Iranian languages, as a part of the Indo-European language family, are divided into Indian and Iranian languages, with Persian, Pashto (Afghan), Kurdish and Balochi being amongst the most used Iranian languages today. The mentioned languages are written in modified Arabic script and sometimes in Latin script. However, in the history of the development of those languages, the scripts of Old Iranian languages played an important role, especially Old Persian and Avestan.

Old Persian language appeared in the Achaemenid era, from the 7th till the 3rd century BC. The most famous monument is the Behistun Inscription (between 522 and 486 BC). This language was written in Old Persian cuneiform from left to right, a script that contained 36 phonetic signs and 8 logograms (signs representing whole words or phrases). Contrary to popular misconceptions, this script was not derived from Mesopotamian tradition. There is no consensus amongst the scholars on the origin of this script, and numerous monuments describe different creators. Darius the Great claimed that he invented this script, which was probably created in 6th century BC. This script was loosely inspired by Sumerian-Akkadian cuneiform, but it was otherwise invented independently. The signs were composed of angled or non-angled cuts, their numerous combinations creating new signs.

a/ā	i/ī	u/ū	k/ka	ku	x/xa	g/ga	gu	c/ca
[a/aː]	[i/iː]	[u/uː]	[k/ka]	[ku]	[x/xa]	[g/ga]	[gu]	[c/ca]

ç/ça	j/ja	ji	t/ta	tu	θ/θa	d/da	di	du
[ç/ça]	[ɟ/ɟa]	[ɟi]	[t/ta]	[tu]	[θ/θa]	[d/da]	[di]	[du]

p/pa	f/fa	b/ba	n/na	nu	m/ma	mi	mu	y/ya
[p/pa]	[f/fa]	[b/ba]	[n/na]	[nu]	[m/ma]	[mi]	[mu]	[j/ja]

v/va	vi	r/ra	ru	l/la	s/sa	z/za	š/ša	h/ha
[ʋ/ʋa]	[ʋi]	[r/ra]	[ru]	[l/la]	[s/sa]	[z/za]	[ʃ/ʃa]	[h/ha]

Drugi staroiranski jezik – avestički – poznat je iz Aveste, religijskih tekstova zoroastrizma, a najstariji preživjeli primjerak potječe iz doba Sasanidskoga Perzijskoga Carstva od 3. do 7. stoljeća nove ere. Avestičko pismo razvilo se tijekom 3. i 4. stoljeća, kad je jezik već bio izumro i ostao samo kao jezik liturgije. Bazira se na pismu pehlevi koje se rabilo za srednjoindoiranske jezike od 3. do 17. stoljeća. Pismo pehlevi bilo je pojednostavljeno i utemeljeno na aramejskome pismu te se sastojalo od dvadesetak znakova.

Avestičko pismo razvilo se kao puni alfabet sa znakovima i za vokale (37 konsonananta i 16 vokala), od čega su neki preuzeti iz kurzivnoga pehlevija, a pisalo se zdesna nalijevo. Slova nisu povezana, a ligature i interpunkcije rijetke su. To se pismo upotrebljavalo i u varijanti Pazend, odnosno za komentare (Zend) i prijevode Aveste. Na srednjoperzijskome se pismo naziva *din dabireh* odnosno „religijsko pismo".

Another Old Iranian language – Avestan – is known from the Avesta, Zoroastrian sacred texts, while the oldest surviving example is dated to the period of Sassanid Empire, from the 3rd till the 7th century AD. The Avestan script was developed in the 3rd and the 4th century when the language became extinct and was only used as the language of liturgy. It was based on the Pahlavi script that was used for the Middle Iranian languages from the 3rd till the 17th century. The Pahlavi script was a simple script based on the Aramaic script, consisting of around 20 signs.

The Avestan script was developed as a full alphabet with signs for consonants and vowels (37 consonants and 16 vowels), some of which were characters from the cursive Pahlavi, and was written from right to left. The letters were not connected, and ligatures and punctuation marks were rare. This script was also used in the Pazend variant, for commentaries (Zend) and translations of the Avesta. In the Middle Persian, this script is called *din dabireh*, i.e. "the religion's script".


雨過琴書潤
風來翰墨香
丙申夏月

Kinesko pismo
Chinese Script

Iva Valentić

Kinesko pismo (汉字h*anzi*) se razlikuje od većine pisama po tome što se strukturalno nije bitno mijenjalo od svog postanka do danas, što je jedinstvena pojava među pismima koja su danas u upotrebi. I najstariji su zapisi danas velikim dijelom čitljivi, iako se ne može sa sigurnošću reći koji je bio izgovor tih znakova u vrijeme kada su urezivani.

Kinesko pismo nastalo je od crteža, piktografa. Razlika je, između nama poznatih pisama u kojima jedan znak ili nekoliko znakova predstavlja jedan fonem i kineskog pisma, ta što ono nije prošlo kroz potpunu transformaciju piktografa u apstraktni simbol za fonem, već je zadržalo svoju piktografsku bazu. Izgovor kineskog znaka ili kombinacije nekoliko znakova odgovara jednom ili više različitih morfema, a ne fonemu. Značenje znaka nije vezano za izgovor. Kinesko pismo se i danas piše – crtajući. Zbog toga kažemo da se kineski jezik bilježi znakovma a ne alfabetom.

U kineskom pismu jedan manji dio znakova čine piktografi. To su samostojeći crteži koji se ne mogu razložiti na manje smislene dijelove. Njih je oko 5 posto. Dio znakova je dobiven spajanjem dvaju ili više piktografa u novu smislenu cjelinu. Takvih je znakova oko 20 posto. Većina znakova nastala je spajanjem piktografa, koji predstavljaju smisleni dio znaka, s dijelovima koji upućuju na izgovor. Na taj način je sastavljeno više od 80 posto kineskih znakova koji su u upotrebi danas.

The Chinese script (汉字*hanzi*) is unique in the respect that it has not notably changed since its creation, unlike other scripts in use today. Even the oldest inscriptions are still legible today, although the original pronunciation is unknown.

The Chinese script was created from drawings, i.e. pictographs. Unlike the scripts where one or several signs represent one phoneme, the Chinese script has never gone through a full transformation of pictographs into abstract symbols for phonemes, but has preserved its pictographic base. The pronunciation of a Chinese character or a combination of characters doesn't correspond to a phoneme, but to one or more different morphemes. The meaning of the sign is not connected to pronunciation. The Chinese script is still written by drawing. That is why we say that the Chinese language is written using characters, not letters.

Only a small number of Chinese characters are pictographs. Pictographs are independent drawings that cannot be divided into smaller units of meaning. They make only 5% of the Chinese script. Some signs are created by combining two or more pictographs into a new symbol. They make 20% of the script. However, the majority of signs were created by combining pictographs, which suggest the meaning, and another character suggesting the pronunciation of the compound character. These characters are by far the most numerous and they make 80% of the Chinese script in use today.

Kineska kaligrafija, privatna zbirka / Chinese calligraphy, private collection

Zbog toga što su zadržali piktografsku bazu, kineskih znakova ima jako mnogo. Tokom povijesti bilo je u upotrebi 60 000, a danas ih je između 10 i 20 000. Prepoznavanje oko 6000 znakova dovoljno je za čitanje. Ako pozna 2400 najčešće upotrebljavanjih znakova, čitatelj će moći prepoznati 99 posto teksta. Dio znakova, njih 2236, pojednostavljen je pedesetih godina prošlog stoljeća.

Tokom povijesti, kinesko se pismo proširilo i u druge zemlje – Japan, Koreju, Vietnam – pa su se one vrlo dugo služile kineskim pismom prije no što su osmislile pisma koja danas koriste.

Za vrijeme tradicionalne Kine pisalo se odozgora prema dolje zdesna nalijevo, a danas se piše vodoravno, slijeva nadesno. Tokom povijesti, različiti materijali su se koristili za pisanje, a i samo pismo je prolazilo kroz stilske metamorfoze.

Najstariji do sada pronađeni zapisi stari su oko 3300 godina. Radi se o zapisima na kostima i kornjačinim oklopima iz druge polovine razdoblja dinastije Shang (1544. – 1045. godina prije naše ere). Nakon toga slijedi razdoblje dinastije Zhou (1045. – 256. pr. n. ere) iz kojeg su sačuvani zapisi na brončanim posudama i zvonima. Istovremeno se malim kistovima pisalo uzduž rascijepljenih bambusovih štapića koji su se uzicama povezivali u svitke. Taj način zapisivanja održao se sve do 4. stoljeća naše ere jer se tek oko 200. godine sve više počinje koristiti papir kao podloga za pisanje. Za kinesko pismo važan datum je 221. godina stare ere, kada je prvi kineski car, Qinshi Huangdi, ujedinio mala kraljevstva i ustanovio carstvo, te između ostalog, standardizirao mjere i pismo. Stil kineskog pisma kojim se pisalo u njegovoj carskoj birokraciji naziva se pečatnim pismom. Drugi važan događaj za kinesko pismo zbio se na početku dinastije Han (206. g. stare ere – 220. godina) kada je centralna carska birokracija odlučila zamijeniti pečatno pismo službenim pismom koje se koristilo na nižim instancama birokracije jer je bilo jednostavnije i brže za pisanje. Taj se događaj naziva 'Velikom promjenom'. Za vrijeme dinastije Tang (618. – 907. stare ere) krasopis postaje obligatna stavka u kurikulumu onoga tko se želio kandidirati za javnu službu. Za vrijeme te dinastije nastali su tekstovi napi-

Because of their pictographic base, Chinese characters are numerous. Throughout history, more than 60,000 characters have been used, while today only 10,000-20,000 are still in use. The knowledge of around 6,000 characters suffices for reading. If a user knows 2,400 most common characters, he will be able to understand 99% of the text. In the 1950s, 2,236 characters were simplified.

During its history, the Chinese script spread to other countries, such as Japan, Korea and Vietnam, where Chinese characters were in use before the invention of their own writing systems that are still in use today.

Classical Chinese was written from top to bottom and from right to left, while Modern Chinese is written horizontally, from left to right. In the course of history, various materials were used for writing, and the script itself went through several stylistic metamorphoses.

The oldest inscriptions ever found are around 3,300 years old. They were written on bones and turtle shells, and date from the second half of the Shang period (1544 – 1045 BC). The inscriptions written on bronze vessels and bells date from the Zhou period (1045 – 256 BC). During that period, small brushes were also used to write on the split bamboo sticks that were connected into scrolls. This tradition of writing was in use until the 4th century AD, because paper was only introduced around 200 AD. The important year in the development of the Chinese script was 221 BC, when the first Chinese emperor Qinshi Huangdi united small kingdoms and founded the Chinese Empire, standardizing measures and the script in the process. The style of characters used in the royal bureaucracy was called the Seal script. Another important event that had an impact on the Chinese script happened at the beginning of the Han period (206 BC–220 AD), when the government scribes decided to replace the Seal script with the official Cursive script used at the lower levels of bureaucracy since it was simpler and easier to write. This event is called the 'Great Change'. During the Tang period (618 – 907 AD), the knowledge of the Cursive script was obligatory for all who intended to apply for public services. In this period, the texts were written in the regular script which is still seen as a precursor of the Chinese Cursive script and most Chinese typefaces and computer fonts.

sani pravilnim pismom koje se i danas uzima kao baza kineskog krasopisa i većine kineskih tipografskih i računalnih fontova.

Kinesko pismo danas se piše uglavnom na računalu, a kinesko pismo pisano na tradicionalan način, kineskim kistom mekog vrha po poroznom rižinom papiru spada u sferu umjetnosti. Kineska kaligrafija je za vrijeme Tradicionalne Kine bila najcjenjeniji oblik vizualne umjetnosti, a tako je i danas.

Upotreba računala nije komplicirana za korisnike kineskog pisma. Za unos se koristi standardna tipkovnica. Kineski se tekst može unositi na različite načine. Oni koji znaju latiničnu transkripciju kineskih riječi, *pinyin*, koriste tu metodu unosa, ali to su uglavnom osobe koji uče kineski kao strani jezik. Nakon što se unese kod, računalo će prikazati sve znakove koji odgovaraju tom kodu, a korisnik samo treba odabrati broj pod kojim je naveden znak koji mu treba. U Kini radije koriste drugačiji način unosa koji se bazira na razlaganju znakova na poteze. Najpoznatiji takav sistem je onaj po nazivu 'Pet poteza'.

Kineski znak je još uvijek, bez obzira na izgubljenu vezu s prvobitnim piktografima, na sva pojednostavljenja i kombinacije u kojima nam dolazi, piktograf, dakle, crtež.

Today, the Chinese script is mostly written using a computer, while Chinese calligraphy, where characters are written on a porous rice paper using a soft brush, is considered an art form. Chinese calligraphy was the highest form of visual art during the Empire, and it still is.

Writing the Chinese script using a computer is not complicated. A standard keyboard is used for typing. Chinese text can be typed in different ways. Those who know Latin transcription of Chinese words, *Pinyin*, use that method of typing. That method is popular with people who learned Chinese as a foreign language. After the code is inserted, the computer will display all characters that match that code and the user has only to choose the needed character. Native speakers use a different method of typing that is based on the structure of characters. The most famous system of structure-based typing is *Wubi*, or 'Five strokes'.

Chinese characters are still, despite losing the connection with the original pictographs and all simplifications and combinations, a pictograph, i.e. a drawing.

Kineski pisarski pribor, Etnografski muzej / Scribal tools, China, Ethnographic Museum

Pisma južne i jugoistočne Azije
Scripts in South and Southeast Asia

Zdravka Matišić

Južna Azija je područje koje obuhvaća Afghanistan, Pakistan, Indiju, Šri Lanku, Nepal, Butan, Bangladeš, a po nekim podjelama i Burmu (Myanmar). Na tom području su danas u uporabi uz pisma koja su nastala iz staroga pisma *brāhmī* i latinica te indijska varijanta perzijsko-arapskoga pisma.

U velikoj starini (4./3. - 2. tisućljeće pr. Kr.) na području uz rijeku Ind u uporabi je bilo nedešifrirano pismo poznato pod imenom jednoga od lokaliteta indske dolinske civilizacije Harappa. Potvrđeno nam je u tekstovima koji se odnose na Buddhin život kao i u još nekima da je pismo u južnoj Aziji bilo u uporabi u 6. st. pr. Kr., a najstariji sačuvani zapisi potječu iz 3. st. pr. Kr. i to na dvama pismima, na pismu *kharošthī* i na pismu *brāhmī*. Pismo *kharošthī* upotrebljavalo se za zapisivanje prakrtskih i sanskrtskih tekstova od sredine 3. st. pr. Kr. do otprilike 3. st. po. Kr. na području današnjega Afganistana i Pakistana, ali i u središnjoj Aziji, gdje je ostalo u uporabi za zapisivanje tekstova budističkih autora do 7. stoljeća. Smatra se da je nastalo po uzoru na aramejsko pismo.

Najvažnije staro indijsko pismo je pismo *brāhmī,* iz kojega su se razvila sva suvremena južnoazijska pisma kao i većina onih u uporabi u Jugoistočnoj Aziji, kao što su npr. tajsko, kmersko itd. Najbogatijim područjem po broju pisama smatra se područje južne i jugoistočne Azije.

Afghanistan, Pakistan, India, Shri Lanka, Nepal, Bhutan, Bangladesh, and by some also Burma (Myanmar), belong to South Asia. Today, besides scripts which originate from the old *brāhmī* scrpt in their territories in use are latin and the Indian version of Perso-Arabic alphabet.

Deep in past (4^{th}/3^{rd} – 2^{nd} millenium BC) along river Ind there was in use a still undeciphered script which is named also by a very important site of Indus Valley civilization the Harappā. In texts on Buddha's life we have indication that script in India was used in the 6^{th} century BC, but the oldest discovered written texts belong to the 3^{rd} century BC. They were written in *kharoshtī* and in *brāhmī* script. *Kharoshtī* script was used for writing down Prakrit and Sanskrit texts from mid 3^{rd} century BC till cca 3^{rd} century AD in the area of Modern Afghanistan and around Pakistan. In Central Asia texts of Buddhist authors were written in *Kharoshtī* script till 7^{th} century. It is suposed that the model for *kharoshtī* script was the Aramaic one.

The most important old Indian script is the *brāhmī one.* From it spring all present day Southasian scripts and the most of Southeast Asian ones (*tai*, *khmer* etc.). South and Southeast Asia are the richest teriitories so far as the scripts are concerned.

Tekst iz Kurseonga, neindentificirano indijsko pismo napisano na palminom lišću, Etnografski muzej
/ Script form Kurseong – unindentified Indian script written on plam leaves

Indijska pisma

Uz spomenuto pismo *kharošthī* na Indijskom se potkontinentu u starini na širokom području upotrebljavalo pismo *brāhmī,* na kojemu su sačuvani proglasi kralja Ašoke iz 3. st. pr. Kr. pisani raznim inačicama srednjeindoarijskoga jezika prakrta. Stručnjaci nisu jedinstevni u mišljenju o podrijtelu pisma *brāhmī*; dok mu jedni izvor nalaze u aramejskom pismu, drugi mu podrijetlo vežu uz ono feničko. Iz starine su poznati prakrtski i sanskrtski zapisi na *brāhmīju*; u Indiji su se na njemu počeli zapisati i drugi jezici, što je do 3. st. dovelo do bujanja njegovih inačica i *brāhmī* polako nestaje iz uporabe. U zapisivanju *prakrtskih* i sanskrtskih tekstova u središnjoj Aziji *brāhmī* je ostao u uporabi do 7. stoljeća. Pisma proistekla iz *brāhmīja* prilagođena zahtjevima pojedinih jezika svrstavaju se u dvije skupine, sjevernu i južnu. Južnu karakteriziraju zaobljeni oblici, a sjevernu četvrtastiji. U svakom od tih pisama grafem za konsonant sadrži i kratko „a“, pa se ona nazivaju slogotvornima. Za zapisivanje konsonantskih skupina koriste se reducirani ili izmijenjeni oblici grafema tzv. ligature. Za svaki vokal postoje tri grafema, bilježi se različito ovisno o tome javlja li se na početku riječi ili unutar nje iza nekoga vokala (*hijat*), te da li stoji ispred ili iza kosonanta. Zbog toga je za pisanje indijskim pismima potreban velik broj tipografskih znakova (za teluški je npr. potrebno 455 znakova).

Najrasprostranjenije je pismo *devanāgarī* koje pripada sjevernoj skupini indijskih pisama; na njemu se pišu hindski, marathski, nepalski, a danas najčešće i sanskrt. Sanskrt se zapisivao i na drugim pismima i na sjeveru i na jugu, ali danas se samo još na jugu tiskaju tekstovi i na pojedinim južnoindijskim pismima. Pismo *devanāgarī* (gradsko pismo bogova) razvilo se iz pisama proisteklih iz neke od inačica sjevernoga pisma *gupta* (4. – 6. st.); upotrebljava se od 7. stoljeća, a u potpuno oformljenom obliku otprilike od kraja prvoga milenija.

Indian Scripts

Along with *kharoshtī* script in old days *brāhmī* script was in use on Indian Subcontinent. Ashoka's Prakrit edicts from 3rd cent BC were written in it. The origion of *brāhmī* script is still not undevidily accepted; some scholars think that the model for it was the Aramaic script and the other ones believe that it is the Phoenitian one. Prakrit and Sanskrit texts written in *brāhmī* script were known for quite some when the other Indiann languages started to be written in it. As a consequence of that variants of *brāhmī* script started sprouting and by 3th cent AD *brāhmī* script gradually came out of use. In Central Asia it was used for writing down Prakrit and Sanskrit texts till 7th century.

From *brāhmī* sprouted scripts, adjusted to different languages are divided into northern and southern group. Southren group is charachterized by rounded forms and northen one by the more rectangular ones. All scripts are the syllabic ones as in each of them the consonant sign contains an inherent "a". For writing down the consonant groups the reduced or changed signs, the so-called ligaturs, are used. Each wovel has three signs used depending on it's surrounding; one is to be used when wovel has initial position in a word and when it follows another vowel, the other one is used when vowel precedes a consonant and the third one when it followes one. For that reason a big number of typographical signs is needed for writing down in Indian scripts (e. g. for *telugu* script 455 typographical signs are required).

Devanāgarī is territory and the population wise the most spread script in todays India. It belongs to northern group of Indian scripts. Hindi, Marathi, Nepali, and today mostly also Snaskri,t are written in *devanāgarī* script. Sanskrit used to be written in other northern and soputhern scripts also, but today only in the South Sanskrit texts are published in southern scripts. *Devanāgarī* (town script of gods) sprouted from a variant of northen *gupta* script (4th – 6th cent) and it is used from the 7th cenury. It acquired fully developed forms by the end of first millenium.

Piše se slijeva nadesno, a glasovi su zapisani po fonetskim principima a ne sasvim slučajno kao u latinici. Ovako se pišu konsonanti, poluvokali, sibilanti i hak:

It is written from left to right and the sounds are noted down according to phonetic principles. Consonants, halfvowels, sibilants and hak are written like this:

क ka	ख kha	ग ga	घ gha	ङ ṅa
च ća	छ ćha	ज đa	झ đha	ञ ña
ट ṭa	ठ ṭha	ड ḍa	ढ ḍha	ण ṇa
त ta	थ tha	द da	ध dha	न na
प pa	फ pha	ब ba	भ bha	म ma
य ja	र ra	ल la	व va	
श śa	ष ša	स sa		
ह ha				

U službenoj je uporabi u Indiji danas priznato osam indijskih pisama: od sjevernoindijskih pisama to su *asamskobengalsko*, *devanagarsko*, *guđaratsko* i *gurmukhi*, a od južnoindijskih *karnatačkoteluško*, *malajalamsko*, *orijsko* i *tamilsko*. Iz starih inačica južnoindijskoga pisma nastalo je *sinhaleško* pismo i desetak pisama u Jugoistočnoj Aziji.

Today in India eihght scripts are oficially supported, four nothern ones (*assamese/bengālī*, *devanāgarī*, *gujarātī* and *gurmukhī*) and four southern ones (*kanarese/telugu*, *malayalam*, *oriya* and *tamil* one). From old variants of southern script sprouted the *sinhalesi* one and numerous ten scripts in Southeast Asia.

Mahābhārata

Mahābhārata, sanskrstki ep od 100 tisuća distiha (200 tisuća šesnaesteraca) nastajao od 4. st. pr. Kr. do 4 st. po. Kr. predstavlja najveće književno djelo ikada napisano. Za pravovjerne Indijce to je jedinstveno književno djelo koje je napisao Vyāsa, redaktor četiriju Veda i pisac purāṇa, a u samome epu čitamo o tome kome je sve Vyāsa prenio tekst. Dakle, sam tekst epa govori o nekoliko generacija prenositelja. Uz autorstvo, književnoj je kritici bilo teško utvrditi i samu narav epa sve dok se nije pojavila Parry-Lordova teorija tehnike usmene naracije kojom je razriješen problem količine i raznolikosti građe.

Mahābhārata

Mahābhārata, Sanskrit epic of 100 thousand two lines stanzas is the biggest literary work so far noted. It was being formed from 4th cent BC till 4th cent AD. For religious Indians it is a single literary work written by Vyāsa, the redactor of four *Vedas* and the writer of *purāṇas*. In epic we read that Vyāsa had recited the poem to several persons so the text itself is witness of severall generations of its transmitters. Besides the authorship of the epic its nature was also a puzzle for literary criticism untill Parry-Lord's theory about the technique of oral narration came out. With the help of Parry-Lord's theory the philologists could solve the problem of quantity

Prizor iz Mahābhārate / Mahābhārata scene

Mahābhārata je izvorno junački epski spjev koji je prenošen usmenim putem širokom primjenom fonda formula i formulaičnih izraza.

U skladu s naravi oblikovanja indijske tradicije tekst je preživio epsko vrijeme i dalje se nadograđivao u okvirima tehnike permanentno otvorene okvirne priče, dok nije stasao u mjerodavni tekst indijske predaje koji se s pravom imenuje nazivom *Enciklopedija brahmanica*.

Tekst sadrži niz kontradikcija od kojih neke proistječu iz naravi usmene predaje (usp. s kontradikcijama u Homerovim epovima), a druge iz tipa indijske tradicije u kojoj je, u jedinstvu brahmana i ātmana, te u pravilima po kojima je za oslobođenje iz ciklusa ponovnih rađanja važnije ispunjavanje dužnosti vlastite kaste no bilo čega drugoga, sve moguće.

Uz epsku okvirnu priču *Mahābhārata* donosi i cijeli niz tipično indijskih artikulacijskih mogućnosti vjerske, društvene i filozofske naravi. Osnova epa je priča o porijeklu Bhārata i sukobu Kaurava i Pāṇḍava, dvaju odvjetaka istoga plemena, u kojoj su inkodirani društveni odnosi u kojima su brāhmani (svećenički sta-

and heterogeneousness of the material. Originally *Mahābhārata* is a heroic poem which was transmitted orally with the help of the formulae and formulaic expressions. Being transmitted that way text expanded and survived the epic times in accordance with the nature in which Indian tradition was being formed.

The text was expanded by technique of parmemnantly open frame story untill it became the standard text of Indian tradition, rightly called *Encylopaedia brahmanica*.

The big Indian epic is full of contradictions which can be classified in broadly two types. The first type encompasses those which are typical for the orally transmitted texts and which we find in Homer's epics as well. The second type of contradictions sprout from the nature of Indian tradition which allowes on the first glance totally opposite believes to be part of one and the same system. This should not surprise while in Indian socieyt the world is on philosophical level explained by teaching about the oneness of ātman and *brahman*, in the society in which a *sine qua non* is the belief that only the fullfilling of ones own *dharma* (in "holy" text perscribed duties for the

lež) najviši društveni sloj, ali i elementi iz kojih se može iščitati da su to u neko vrijeme bili i kšatrije (ratnički stalež); isto tako su tu ostala zabilježena i vremena u kojima je na Potkontinentu, vjerojatno samo u određeniom zajednicama, poliandrija bila legitimno prisutna. U ep je uključena i cijela *Bhagavadgītā*, velika poema koju se može okarakterizirati kao Evanđelje hinduizma.

Djelo se sastoji od 18 knjiga, a stariji sačuvani rukopisi svjedoče da je prenošeno i po pojedinim knjigama ili skupinama knjiga. Najpoznatiji dijelovi teksta, kao što je npr. *Bhagavadgītā*, prenošeni su često u zasebnoj rukopisnoj tradiciji. Zbog toga se obično kao rukopisna jedinica uzima rukopis jedne cijele knjige. Za kritičko izdanje *Mahābhārate* (Poona, 1933. – 1966.) obrađeno je 1259 rukopisa napisanih na 12 različitih pisama.

members of each particular caste) guides a person to the liberation from the chain of rebirths what is the sincere wish of each and evety truthfull believer.

The core of the epic is a historic story about the origin of *Bhārgavas* and the clash between *Kauravas* and *Pāṇḍavas*, two offsprings of the same tribe. Into this framestory are inbedded many other narratives of different nature, heroic, romantic, religious,philosopihical, legal etc . Some of the narratives give us insight into the changing social conditions in Subcontinet; although *brahmins* are usually treated as the first in the rank, there are places from which we can clearly see that there were times in which this position was enjoyed by *kshatriyas*. The epic is full of cases of this and similar types of contradictions.

Text of *Mahābhārata* is divided in 18 books, and it was transmitted by books or group of books. Included in epic is also *Bhagavadgītā*, gospel of hinduism and it was more than often transmitted in separate manuscript tradition. For that reason as a manuscript unit is taken the manuiscript of an entire book. For the critical edition of *Mahābhārata* (Poona, 1933– 1966) 1259 manuscripts written in 123 different scripts were consulted.

(English translation by Z. Matišić)

Tibetsko pismo
Tibetan Alphabet

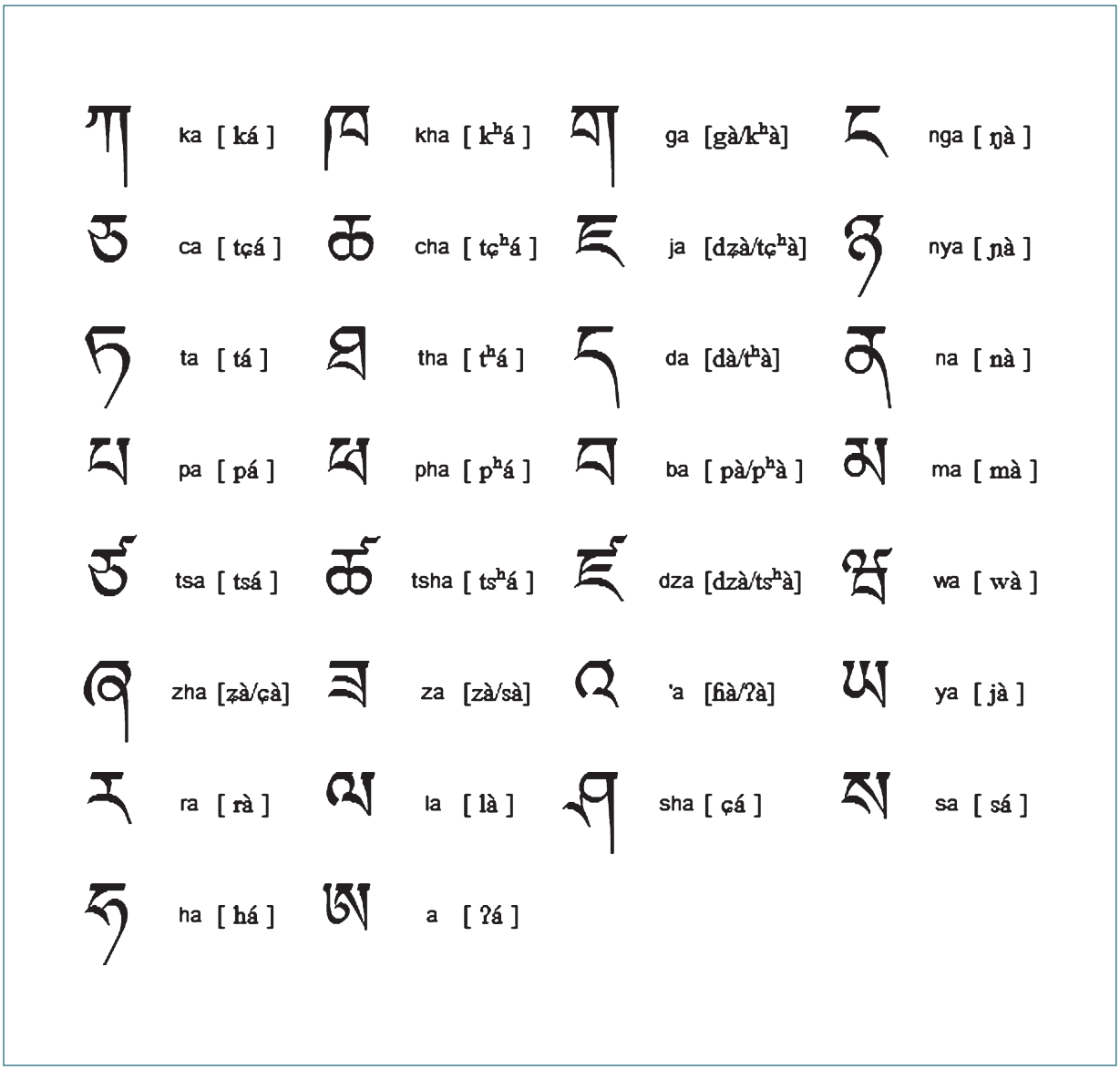
Kristina Šekrst

Tradicionalno se smatra da je Thönmi Sambhoṭa, ministar Songtsäna Gampoa, osnivača Tibetskoga Carstva, izmislio tibetsko pismo u 7. stoljeću. Druge pak religijske tradicije govore o srednjoazijskim i iranskim uzorima, što odgovara proučavanjima da je ovo pismo bazirano na brahmijskim pismima. Piše se slijeva nadesno, a znakovi označavaju kombinaciju suglasnika i samoglasnika (suglasnik + 'a'). To je pismo u uporabi u Kini, Butanu, Indiji, Nepalu i Pakistanu, a uzor je bilo i novim pismima za jezike limbu, lepča te razne jezike pod vladavinom dinastije Yuan u 13. i 14. stoljeću. Klasični tibetski jezik obično se smatra pisanim jezikom, od čega su važni brojni spisi prevedeni iz drugih jezika, posebice sanskrta.

U 7. i 8. stoljeću nastaje varijanta *dbu can* ili *ucän* („s glavom") – stil za formalne rukopise, a njime se piše i dzongkha, službeni jezik Butana. U 12. stoljeću javlja se i *dbu med* ili *ume* („bez glave"), stil pisma za kaligrafiju i rukopis, a za razliku od formalne verzije nema horizontalne crte iznad slova.

The creation of the Tibetan alphabet is traditionally attributed to Thönmi Sambhoṭa, a minister of Songtsen Gampo (the founder of the Tibetan Empire), in the 7th century. However, religious traditions mention Central Asian and Iranian origins, which corresponds to the studies confirming that this script was based on the Brahmic scripts. It is written from left to right, with signs representing a combination of consonants and vowels (consonant + 'a'). This script is used in China, Bhutan, India, Nepal and Pakistan, and it was a model for the scripts used for writing Limbu and Lepcha, and various other languages of the Yuan dynasty in the 13th and the 14th century. The Classical Tibetan language is usually considered to be a written language, with numerous important documents translated from other languages, especially Sanskrit.

The Dbu can or *ucän* ("with a head") variant was created in the 7th and the 8th century – a style used for formal manuscripts, used in Dzongkha, the official language of Bhutan. Variant *dbu med* or *ume* ("headless") was created in the 12th century, as a style used for calligraphy and shorthand, and unlike the formal version, its distinctive feature is the absence of the horizontal line above the letters.



Tibetsko je pismo vrlo konzervativno, a često izgovor gotovo i nema veze s napisanim zbog brojnih fonetskih promjena od 7. stoljeća do danas. Pismo je ostalo formalizirano i nepromijenjeno tisućljeće i pol, bez obzira na sve glasovne promjene otad.

The Tibetan alphabet is very conservative; the spoken language often has no connection to the written language due to numerous phonetic changes from the 7th century onwards. The script has remained formalised and unchanged for millennia and a half, regardless of phonetic changes.

Korejsko pismo
Korean Alphabet

Sara Librenjak

Korejski jezik govori se u Južnoj i Sjevernoj Koreji i procjenjuje se da broji oko 75 milijuna izvornih govornika. Budući da su se Koreje podijelile polovicom prošlog stoljeća, i sjeverni i južni korejski dovoljno su slični da se smatraju istim jezikom, uz neke malene fonološke razlike. Korejski se jezik ne smatra srodnim nijednom drugom jeziku, iako postoje pretpostavke o njegovoj srodnosti japanskom, pa i drugim jezicima koje obuhvaća altajska hipoteza – turkijskom, mongolskom i tunguskom. Naziv ove države na (južnom) korejskom glasi Hankuk, a jedinstveno pismo kojim pišu naziva se hangul. Istovjetan prefiks han- označava nešto korejsko, tako da je Han-kuk doslovno „korejska država", a han-gul doslovno „korejsko pismo" ili „korejski tekst". Osobitost ovog pisma jest to što je jedno od rijetkih nacionalnih pisama koja su umjetno stvorena. Prije uvođenja hangula u 15. stoljeću, korejski jezik zapisivao se kineskim ideografskim pismom (u Koreji zvanim *hanđa*, gdje han- ovaj put znači „kinesko" zahvaljujući slučajnosti homofonije). S obzirom na različitost dvaju jezika, to nije bio osobito prikladan način zapisivanja korejskog jezika. Skupina

The Korean language is spoken in South and North Korea, and it is estimated that it has around 75 million native speakers. Although two Koreas separated in the middle of the 20th century, North and South Korean languages are similar enough to be considered the same language, with minor phonetic differences. The Korean language is a linguistic isolate, although there are assumptions about its connection to Japanese and other languages from the Altaic language family, such as Turkic, Mongolic and Tungusic. The name of the state in (South) Korean is Hankuk, while the script is called Hangul. The prefix han- designates something Korean, for example Han-kuk means "Korean state" while hangul literally means "Korean alphabet" or "Korean text". The peculiarity of this script is that it is one of the few national scripts that were artificially created. Before the introduction of Hangul in the 15th century, the Korean language was written in Classical Chinese (known in Korea as Hanja, where han this time stands for "Chinese" due to accidental homophony). Having the differences between the two languages in mind, it was not a particularly efficient way of writing Korean. A group of scholars from the court of the great Korean Joseon Dynasty invented

znanstvenika s dvora velike korejske dinastije Đoson osmislila je pismo koje će omogućiti narodu veće opismenjivanje, a istovremeno savršeno odgovarati jeziku za koji je osmišljeno. Prije 15. stoljeća pismo je bilo luksuz koji su si mogli priuštiti samo pripadnici više klase (zvani *jangban*), a nakon uvođenja hangula pismenost naroda znatno raste. To je pismo nadimka „jutarnje pismo", jer se za njega kaže da je pametnom čovjeku dovoljno tek jedno jutro da ga usvoji.

Hangul je podijeljen na konsonante i vokale, no iako je u suštini fonetski alfabet, njegova posebnost je to što se znakovi ne slažu linearno nego u slogovne blokove. Primjerice, ㅎ će uvijek predstavljati glas h, ㅏ će biti a, a ㄴ n, no umjesto da se pišu linearno kao ㅎㅏㄴ, zapisat ćemo ih u blok tako da vokal bude centar oko kojeg se slažu ostali glasovi: 한. Za slogovni blok potrebna su najmanje dva znaka, pa u slučaju da počinje vokalom, na prvo (konsonantsko) mjesto dolazi „prazan" znak. Glasovi se mogu kombinirati na sve načine sve dok se držimo principa slaganja, ovisno o tome je li glavni vokal horizontalan ili vertikalan. Crveno označeni dio (i, inicijal) je konsonant kojim počinje slog, žuto označen dio (m, medijal) je vokal, a plavo označen dio je konsonant im na kraju sloga (f, final) koji je opcionalan.

Koreja je, osobito za vrijeme Đoson dinastije (14.–19. stoljeće), bila pod velikim utjecajem konfucijanizma koji je bio državna religija, i većina učenjaka pripadala je toj ideologiji. Utjecaj konfucijanizma vidi se i u filozofiji iza hangula – svaki vokal u sebi sadrži principe jina i janga. Korejski jezik posjeduje bogat vokalni sustav sa šest osnovnih i jedanaest složenih vokala. Oni se mogu sastojati od horizontalne linije koja predstavlja Zemlju i ono tamno, zemaljsko, esenciju jina; kružića (danas kratkog komplementarnog poteza) koji predstavlja esenciju janga, Sunce, ono svijetlo i nadzemaljsko; te vertikalne linije koja predstavlja čovjeka, posrednika između ovog i onog svijeta. Zanimljivo je kako ova podjela vokala na svijetle i tamne koincidira s lingvističkom podjelom na prednje i stražnje.

a script that would increase general literacy and, at the same time, perfectly fit the language for which it was designed. Before the 15th century, literacy was a luxury affordable only to members of the highest class (jangban), but after the introduction of Hangul it was available to everyone. The informal name of this alphabet is the "morning script", because it is considered that an intelligent person can learn it in one morning.

Hangul is divided into consonants and vowels, but although it is essentially a phonetic alphabet, its peculiarity is that the signs are not arranged linearly but in the syllabic blocks. For example, ㅎ always stands for the phoneme h, ㅏ represents a, and ㄴ is n, but instead of writing them linearly as ㅎㅏㄴ, they are written as a block where the vowel is the centre around which other phonemes are arranged: 한. To make a syllabic block at least two signs are needed, so when it starts with a vowel, the first (consonant) place is occupied by an "empty" sign. The phonemes can be combined in all possible ways as long as we adhere to the stacking principle, depending on whether the main vowel is horizontal or vertical. The part that is marked red (I, initial) is a consonant at the beginning of the syllable, yellow (M, medial) marks the vowel, while blue marks a part of the consonant at the end of the syllable (F, final), which is optional.

Korea was, especially during the Joseon Dynasty (from the 14th till the 19th century), under the strong influence of Confucianism which was the official state religion, with most scholars following that ideology. Confucian influence can be seen in the philosophy behind Hangul – each vowel contains principles of Yin and Yang. The Korean language has a rich vowel system with six basic and eleven compound vowels. They can have a horizontal line representing the Earth, essence of Yin; a point for the Sun, the essence of Yang; and a vertical line representing the Human, the mediator between the Heaven and the Earth. It is interesting how this division of vowels to light and dark coincides with the linguistic division to front and retracted vowels.

KONSONANTI / CONSONANTS

ㄱ	ㄴ	ㄷ	ㄹ	ㅁ	ㅂ	ㅅ
기역	니은	디귿	리을	미음	비읍	시옷
giyeok	nieun	digeut	rieul	mieum	bieup	shiot
g/k	n	d/t	r/l	m	b/p	s
[k/g]	[n]	[t/d]	[l/r]	[m]	[p/b]	[s]

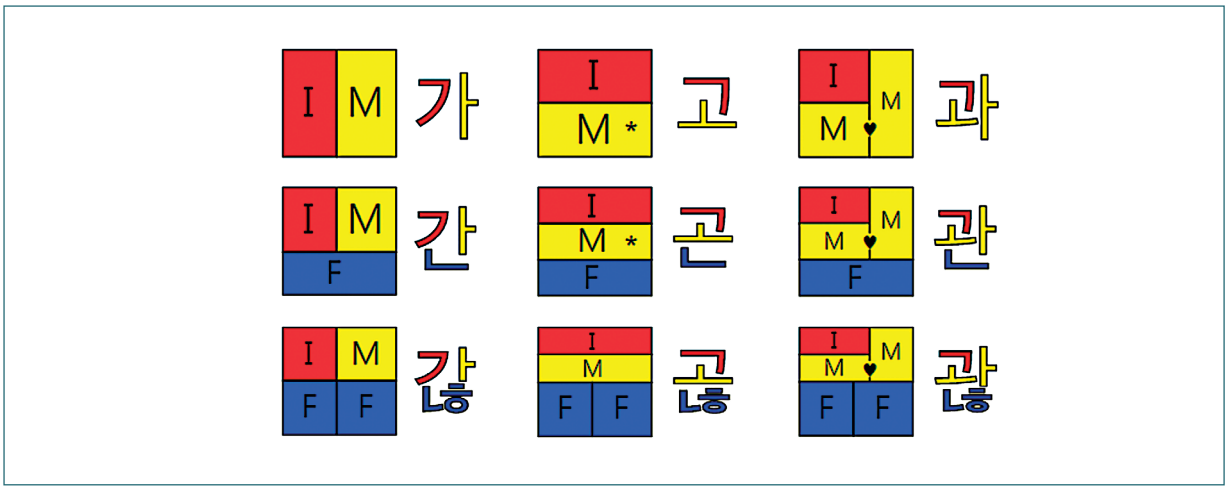
ㅇ	ㅈ	ㅊ	ㅋ	ㅌ	ㅍ	ㅎ
이응	지읒	치읓	키읔	티읕	피읖	히읗
ieung	jieut	chieut	kiuek	tieut	pieup	hieut
ng	j/ch	ch/ch’	k	t	p	h
[Ø/-ŋ]	[ʧ/ʤ]	[ʧʰ]	[kʰ]	[tʰ]	[pʰ]	[h]

VOKALI / VOWELS

ㅏ	ㅐ	ㅑ	ㅒ	ㅓ	ㅔ	ㅕ
a	ae	ya	yae	eo/ŏ	e	yeo/yŏ
[a]	[æ]	[ja]	[jæ]	[ʌ]	[e]	[jʌ]

ㅖ	ㅗ	ㅘ	ㅙ	ㅚ	ㅛ	ㅜ
ye	o	wa	wae	oe	yo	u
[je]	[o]	[wa]	[wæ]	[we]	[jo]	[u]

ㅝ	ㅞ	ㅟ	ㅠ	ㅡ	ㅢ	ㅣ
wo/wŏ	we	wi	yu	eu/ŭ	ui/ŭi	i
[wʌ]	[we]	[wi]	[ju]	[ɨ]	[ɨi]	[i]



Vokali nisu jedini dio hangula koji je građen prema lingvističkim principima. Korejski konsonanti modelirani su prema načinu tvorbe, i zapravo predstavljaju shemu položaja govornog aparata pri njegovu izgovoru, dok se varijacije okluziva (glasova poput k, t, p) izražavaju kroz dijakritičke dodatke. To možemo usporediti s razlikom c, ć i č u hrvatskom jeziku, no u hangulu je većina grafema koji predstavljaju konsonante nastala na taj način. Tako da predstavlja zvuk između *k* i *g*, ㅋ - zvuk sličan *kh*, a ㄲ pak glas sličan *k* koji se izgovara sa zategnutim glasnicama – a svi nastaju iz ㄱ. Kao da to nije dovoljno, originalni oblik je takav upravo jer predstavlja položaj jezika u ustima (iz profila) dok izgovaramo taj glas. Zbog toga korejsko pismo nazivaju dijakritičkim, dakle pismom čiji znakovi nisu proizvoljni, već oblik znaka govori nešto o njegovoj fonološkoj vrijednosti. To je jedan od najrjeđih tipova pisama u svijetu.

Zanimljiv je i redoslijed znakova, odnosno „abeceda". Numerirane popise koje bismo stavili pod a), b), c) na korejskom će ići redom ka, na, da, ra – jer to je službeni redoslijed znakova, uz dodano a radi lakšeg izgovora. Korejska tipkovnica također je uređena po vrstama glasova, tako da su na lijevoj strani konsonanti, a na desnoj vokali. Oni se kombiniraju automatski tipkanjem. Ipak, ako se upustite u avanturu učenja korejskog jezika i pisma, učenje tipkovnice je poseban zadatak jer se slova ne nalaze na istim mjestima kao kod QWERTZ tipkovnice, već će otvoriti s ㅂㄷㄱㅅ (b,d,k,s).

Vowels are not the only part of Hangul alphabet based on linguistic principles. The Korean consonants are modelled based on the place of their formation, representing the position of the vocal apparatus during their pronunciation, while variations in occlusive sounds (phonemes such as k, t, p) are expressed by diacritics. That can be compared with the difference between sounds c, ć and č in the Croatian language, but in Hangul most graphemes representing consonants developed in that way. So, the sign ㄱ stands for the sound between *k* and *g*, the sign ㅋ stands for the sound similar to *kh*, while the sign ㄲ represents the sound similar to *k* that is pronounced with constricted vocal cords – and they all originate from the sign ㄱ. As if that were not enough, the original form of the sign ㄱ is such because it represents the tongue's position in the mouth (in profile) when that sound in pronounced. That is the reason why the Korean alphabet is called a diacritical script, i.e. a script whose signs are not random and their form has a phonetic value. It is one of the world's rarest types of script.

Furthermore, the order of the signs, or the "alphabet", is also interesting. The numbered lists that would be under a), b), c) in Korean it goes *ka, na, da, ra* because that is the official order of the signs, with added *a* for easier pronunciation. *The* Korean keyboard is also organized by type of sounds, the left side consisting of consonants and the right of vowels. They are automatically combined by typing. However, if you engage in the adventure of learning the Korean language and alphabet, learning to use a keyboard is a different task since the position of letters is different from the QWERTZ keyboard. It will start with ㅂㄷㄱㅅ (b,d,k,s).

Japanska pisma
Japanese Scripts

Sara Librenjak

Japanskim jezikom govori oko 125 milijuna ljudi, što ga čini devetim najgovorenijim jezikom svijeta. Nije srodan nijednom drugom većem jeziku (iako postoje hipoteze o njegovoj pripadnosti altajskim jezicima, što bi ga učinilo srodnim korejskom jeziku). Svrstava se u japonsku jezičnu porodicu skupa s rjukjuanskim jezicima koji se govore na otocima južno od Japana. Za razliku od velikog broja jezika u svijetu, japanski se jezik piše s tri različita pisma u istom tekstu. Danas se japanski nekada piše okomito (u novelama, stripovima i pismima), ali nerijetko vodoravno slijeva nadesno, kao i hrvatski (u udžbenicima, na webu). Tri su japanska pisma: slogovne hiragana i katakana (zajedno zvane kana) te ideogramsko pismo kanđi porijeklom iz Kine. Uz to, Japanci u školama uče i latinicu, koju koriste za pisanje kratica, inicijala i riječi poput „t-shirt“. Pismo hiragana se prvo uči. Riječ je o slogovnom pismu, u kojem abeceda ide „a, i, u, e, o, ka, ki, ku, ke, ko...“, odnosno tako da uz svaki samoglasnik stoji jedan suglasnik. Hiraganom se može napisati sve u jeziku, no nakon prvog razreda osnovne škole dodaju se i druga pisma.

Japanese language is spoken by around 125 million people, which makes it the ninth most spoken language in the world. It is not related to any other bigger languages in the world (although there are hypotheses about it belonging to the Altaic language family, which would make it related to Korean). It is classified as a member of the Japonic languages family together with Ryukyuan languages which are spoken on the islands south of Japan. Unlike many other languages in the world, Japanese is written in three different scripts in the same text. Today, Japanese is sometimes written vertically (in novels, comic books and letters) and quite often horizontally from left to right like Croatian (in books and on the web). Three Japanese scripts are: Hiragana and katakana which are both syllabic systems (collectively known as kana) and kanji, originally Chinese, which consists of ideograms. The Japanese also learn Latin script at school, which is used for writing abbreviations, initials and words like “t-shirt“. Hiragana is the script they learn first. It is a syllabic script in which the alphabet goes as follows: “a, i, u, e, o, ka, ki, ku, ke, ko...“, in other words, every consonant is followed by a vowel. Hiragana can be used for all kinds of writing, but after the first grade of primary school two other scripts are learnt as well.

Japanska kaligrafija sa zapisom četiri principa čajne ceremonije – harmonija, poštovanje, čistoća i mir, koja se izlaže uz ceremoniju čaja nazvanu *otemae* ili *chado*, Veleposlanstvo Japana u RH / Japanese calligraphy with the record of four principles of the tea ceremony - harmony, respect, purity and tranquility. It is on display during the tea ceremony called *otemae* ili *chado*, Japan, The Embassy of Japan in Croatia.

Sljedeća se uči katakana, slogovno pismo simetrično hiragani. Oba pisma su se razvila iz kineskih znakova: hiragana pojednostavljivanjem cjelokupnog oblika, a katakana apstrakcijom dijela znaka. Stoga hiragana zadržava obli i kurzivan izgled, dok je katakana uglata i jednostavnijih oblika. Osnovna tablica obiju kana ima 46 različitih znakova. Uz to, bezvučni glasovi k, t i s ozvučuju se dodatkom dvije crtice desno gore od znaka, kao i glas h koji postaje b odnosno p uz dodatak kružića. Postoje i jotirane varijante svih glasova iz i reda (npr. ki postaje kya, kyu, kyo). Kana bilježi i duljinu sloga, ali ne i naglaske.

The next to be learnt is katakana, a syllabic script similar to hiragana. Both scripts derived from Chinese characters: Hiragana was developed by simplifying a character form, and katakana by abstracting a part of the character. Therefore hiragana has kept a rounded cursive form, while katakana is simpler and angular. The basic table of both kana scripts have 46 different characters. Voiceless consonants k, t and s become voiced by adding two strokes to the upper-right corner of the character, and h becomes b or p by adding a tiny circle. There are also y-vowel variations of all sounds from the i line (e.g. ki becomes kya, kyu, kyo). Kana also notes the length of the syllable, but not the accents.

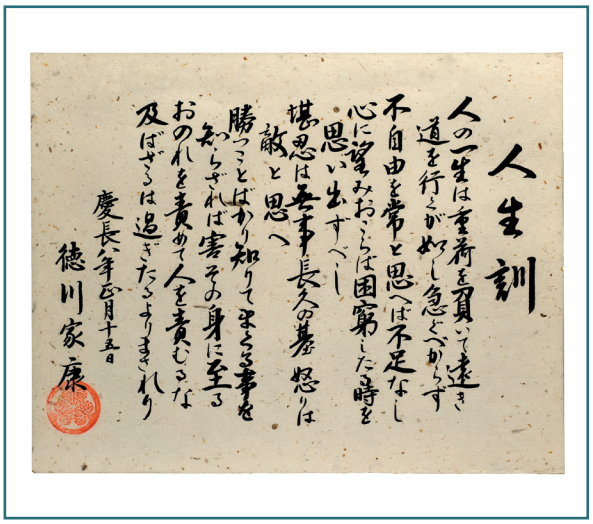
Pismo kanđi najkompleksnije je i najzanimljivije od triju japanskih pisama. Posuđivano je iz Kine, gdje se isto pismo izgovara hanzi, u više navrata od 1. stoljeća. Posuđeni je znak posudio i tadašnje kinesko čitanje, ali je uparen i s japanskom riječi za taj pojam. Stoga, za razliku od kineskog jezika, pojedini znak ima više mogućih izgovora. Primjerice, japanska originalna riječ za planinu, yama, piše se znakom 山, no kad je dio složenica, npr. planina Fuji (富士山), piše se jednako, a čita se san (Fuji-san).

Kad nismo sigurni za čitanje, za djecu, učenike ili rijetke kanđi znakove, moguće je iznad znaka napisati izgovor malim slovima hiragane, i tada se zove furigana. U japanskom obrazovnom sustavu (šest godina osnovne škole, tri godine rane srednje škole te tri godine više srednje škole) nauči se 2136 kanđi znakova. Oni se nazivaju đojo kanđi (kanđi za svakodnevnu uporabu). Svi znakovi izvan tog seta trebaju biti popraćeni furiganom iznad znaka u javnim publikacijama, jer osoba nije obavezna znati čitanje. Zanimljivo je da postoji i popis kanđija dozvoljenih za uporabu u osobnim imenima, jer nije dozvoljeno, primjerice, koristiti rijetke znakove ili one vulgarnog značenja u imenima. Taj popis od 843 dodatna znaka naziva se đinmeijo kanđi.

Kanji is the most complex and most interesting of all three Japanese scripts. It was loaned from China where the same script has been called hanzi in various periods since the 1st century. A loaned character also had Chinese reading of the time but was also coupled with the word which was used at the time for the same notion. Therefore, unlike Chinese a certain character has several possible pronunciations. For example, the original Japanese word for a mountain, yama is written as 山, but when it is a part of a compound, e.g. the mountain Fuji (富士山), it is written in the same way but read as san (Fuji-san).

When children or pupils are not sure how to read certain characters (e.g. rare kanji characters) it is possible to write the pronunciation in small hiragana characters which is called furigana. In the Japanese educational system (6 years of primary school, 3 years of lower secondary school and 3 years of upper secondary school) 2136 kanji characters are learnt. They are called jōyō kanji (kanji for everyday use). All characters outside that obligatory set of characters have to be accompanied by furigana above the character in public documents as a person doesn't have to know how to read them. It is interesting to mention that there is a list of kanji which are allowed in personal names as it is not permitted to use rare characters or those with vulgar connotations. That list has additional 843 characters and is called jinmeiyō kanji.

Zvono *densho* ili *tsurigane* s urezanim znakovima japanskog pisma iz budističkog hrama, Japan, razdoblje Edo, 18. -19. st., Muzej Mimara / *Densho* or *tsurigane* bell from a Buddhist temple, Japan, Edo period 18-19 Century, Mimara Museum



Tokugawine izreke (pretisak). Tiskana kopija kaligrafije Jinsei no kun („Upute za život") shoguna Ieyasua Tokugawe (1543.-1616.), Japan, privatna zbirka / Quotes of Tokugawa (reprint), printed copy of callygraphy named Jinsei no kun („Directions for life") by shogun Ieyasu Tokugawa (1543-1616 AD), Japan, private collection

Povijesni razvoj japanskih pisama ponovno počinje s kineskim utjecajem. Prije uvođenja kane, originalnih japanskih pisama, jezik se zapisivao posuđenim kineskim pismom koje se zapravo koristilo kao fonetska zamjena slogova.

Primjerice, jedan hanzi bi bio odabran da se čita kao KA, drugi ka MA i tako dalje. Taj sustav naziva se manjogana. S vremenom, razvile su se hiragana i katakana, kao jednostavnija slogovna pisma uz koja je pismenost znatno povećana. U početku su se smatrala ženskim pismom jer su se lagano i brzo učila i bez formalnog obrazovanja, a s vremenom su postala dio standarda. Danas se japanska rečenica može postaviti korištenjem četiriju pisama: hiragane za gramatičke dijelove i riječi bez kanjija, katakane za strane riječi i posuđenice koje nisu kineske, kanji za riječi sa semantičkim sadržajem, te povremeno latinica za kratice.

The historic development of Japanese scripts started with Chinese influence. Before introducing kana, the original Japanese scripts, the language was written in a loaned Chinese script, which was in fact used as a phonetic substitution for syllables.

For example, one hanzi was meant to be read as KA, the other as MA etc. That system is called man'yōgana. Over the time hiragana and katakana as simple syllabic scripts developed, and the literacy increased significantly. At the beginning it was considered to be a female script because it was learnt first and easily even without formal education, but eventually it became a part of a standard. Today a Japanese sentence can look like this using four scripts: hiragana for grammatical parts and the words without kanji, katakanu for foreign and loaned words which are not Chinese, kanji for the words with semantic context, and sometimes Latin script for abbreviations.

Drevna i moderna afrička pisma

Ancient and Modern African Scripts

Kristina Šekrst

Uz spomenute klinopise te pisma izvedena iz feničkoga slogovnoga pisma te uz egipatske hijeroglife, od drugih drevnih pisama izdvaja se meroitsko pismo, alfabetsko pismo za istoimeni jezik kulture Meroe u današnjemu Sudanu. Rabilo se od oko 300 pr. Kr. sve do 400 pr. Kr., a pronalazimo ga u kurzivu i hijeroglifima, na nubijskim teritorijima nakon nubijskih osvajanja, ali s vremenom ga je zamijenio grčki alfabet. Dešifrirao ga je britanski egiptolog Francis Llewellyn Griffith 1909. godine na temelju meroitskih zapisa staroegipatskih imena. Pismo se sastojalo od 23 slova, od čega su 4 vokala, a od interpunkcije imamo dvije ili tri točke koje odvajaju riječi ili fraze.

Pismo tifinagh razvilo se preko feničkoga pisma, a rabilo se za berberske jezike od 3. stoljeća pr. Kr. do 3. stoljeća nove ere. U 20. stoljeću oživljeno je kao neotifinagh i služi za zapisivanje raznih berberskih jezika. Nadalje, pismo ge'ez rabilo se za istoimeni jezik, a njime se služe i danas za neke jezike u Etiopiji i Eritreji, npr. za amharski. Nastalo je oko 6. ili 5. stoljeća pr. Kr. iz prasinajskoga pisma, odnosno južnoarapske jemenske varijante. Piše se slijeva nadesno, a iz njega se razvio amharski alfabet.

Alongside the before mentioned Cuneiform scripts, the scripts originating from the Phoenician syllabary alphabet and the Egyptian hieroglyphs, the Meroitic script should be singled out. It is an alphabetic script used for writing the language of Meroe culture in the modern-day Sudan. It was used from around 300 BC till 400 AD, and it appeared in two graphic forms: hieroglyphic and cursive. After the Nubian conquests, its use continued in Nubia, but later on it was replaced by the Greek alphabet. It was deciphered by Francis Llewellyn Griffith, a British Egyptologist, in 1909, on the basis of Meroitic inscriptions of Ancient Egyptian names. The Meroitic alphabet consisted of 23 letters, including 4 vowels, while punctuation marks included only two or three dots separating words or phrases.

The Tifinagh script was used for writing Berber languages, and in the 20th century it was revived and introduced as Neo-Tifinaghr, still used for writing various Berber languages. It was developed from the Phoenician alphabet and used from the 3rd century BC till the 3rd century AD.

Furthermore, the Ge'ez script was used to write the Ge'ez language, and is still used for some languages in Ethiopia and Eritrea, such as the Amharic language. It originated from the Proto-Sinaitic, i.e. South Arabian Yemen variant, around the 6th or the 5th century BC. It is written from left to right, and it is a precursor to the Amharic alphabet.

U zapadnoj Africi većina je pisama stvorena u moderno vrijeme, a najpoznatije je piktografsko pismo bamum za istoimeni jezik u Kamerunu, čija je uporaba na izmaku. Stvorio ga je kamerunski kralj Njoya na prijelazu iz 19. u 20. stoljeće.

The majority of the West African scripts were created in modern times, the most famous amongst them is the pictographic Bamum script, but its use is declining. It was created by King Njoya of Cameroon at the turn of the 19th century.

Pismo jezika Bamum

Od drugih pisama izdvajaju se pismo bassa za istoimeni jezik u Libiji, stvoreno početkom 20. stoljeća, te pismo mende kikakui, stvoreno u 19. stoljeću od islamskoga učenjaka Mohammeda Turaya, a u uporabi je i danas za jezik mende. Poznato je i pismo n'ko za mandingske jezike, koje je slično arapskome pismu, a razvio ga je pisac Solomana Kante sredinom 20. stoljeća.

The Bamum Script

Some other writing systems should be mentioned. The Bassa script is used for writing the Bassa language of Liberia and was created at the beginning of the 20th century. The Mende Kikakui script was invented in the 19th century by an Islamic scholar Mohammed Turay and is still used for writing the Mende language. Also, the N'Ko script is used for writing the Mandig languages and is similar to the Arabic script. It was developed by a writer Soloma-

Od slogovnih pisama tu su kpelle i loma za jezike u Liberiji i Gvineji te vai za istoimeni jezik u Liberiji, a izmislio ga je Momolu Duwalu Bukele u prvoj polovici 19. stoljeća. U uporabi je i danas.

U južnoj Africi upotrebljavaju se neka moderna recentna pisma poput mwangwego za jezike Malavija, potom slogovno pismo bheqe za južnobantuske jezike te alfabet mandombe za jezike srednje Afrike, posebice Konga. U sjevernoj Africi u 20. stoljeću razvijeni su alfabeti osmanya, borama i kaddare za transkribiranje somalskoga jezika.

na Kante in the middle of the 20th century. Furthermore, there are syllabaries Kpelle and Loma for the languages spoken in Liberia and Guinea, as well as the Vai syllabary used for writing the Vai language of Liberia, created by Momolu Duwalu Bukele in the first half of the 19th century, still in use today.

In South Africa, modern, recently created, scripts are in use, such as the Mwangwego alphabet for Malawian languages, then the Bheqe syllabary used in Southern Bantu languages, and the Mandombe alphabet for Central African languages, especially Congolese. In North Africa, the alphabets Osmanya, Borama and Kaddare were invented for transcribing the Somali language in the 20th century.

Američka i kanadska indijanska pisma

Native American and Canadian Scripts

Kristina Šekrst

Čerokijsko pismo slogovno je pismo koje je izmislio Sequoya (Ssiquoya, Sequoyah), nazvan i George Gist/George Guess. Sequoya je bio bogalj od ranih dana, a bavio se crtanjem i radio je kao kovač. Zbog prirode svojega posla često je komunicirao s bijelcima trgujući i svidjelo mu se njihovo pismo te ga je nazvao ,,govoreći listovi". Odlučio je smisliti pismo prilagođeno čerokijskome jeziku te ga je započeo stvarati oko 1809. godine. Prvo se trudio povezivati znakove s riječima, a uskoro je razvio slogovni sustav do 1821. godine, koji se sastoji od 86 znakova, a neki su bili latinički, dok drugi sliče grčkome alfabetu i sličnim pismima.

Pismo je naučio prvo svoju kćer Ayoku, jer odrasli nisu bili voljni učiti ga. Pošto je pokazivao ljudima kako mu kći čita s papira, pismo se sve više širilo te je 1825. Čerokijska nacija (najveće čerokijsko pleme) službeno prihvatila ovaj pisani sustav, a 1826. Čerokijsko nacionalno vijeće odobrilo je prijevod i tiskanje zakona Čerokijske nacije koristeći se novim pismom. Godine 1828. izašle su i prve novine na čerokijskome i engleskome – *Cherokee Phoenix*. Čerokijski je irokijski jezik s oko 10 000 do 20 000 aktivnih govornika danas, a pismo je još uvijek u uporabi. To je indijanski jezik na kojemu je tiskano najviše djela, a prije razvoja pisma bio je samo govorni jezik.

Algonkijsko pismo Velikih jezera slogovno je pismo za nekoliko algonkijskih jezika u Americi i Kanadi, a prvi je put potvrđeno oko 1880. godine. Izvorno se rabilo za jezike fox, sac i kicka-

The Cherokee syllabary is a syllabary invented by Sequoyah (Ssiquoya), also called George Gist or George Guess. In his youth, Sequoyah suffered a disabling injury, but he continued to work as a metalsmith, while pursuing his passion for drawing. As a metalsmith, he traded regularly with Europeans and was impressed by their writing, referring to it as "talking leaves". In 1809, he began working on developing a script for the Cherokee language. At first, he tried to connect signs to words, but by 1821 he developed a syllabary consisting of 86 signs, some of which were in the Latin script, while others looked more like the Greek alphabet and similar scripts.

He first taught the syllabary to his daughter Ayoka because the adults were not willing to learn it. Showing his daughter's reading skills to other people, the syllabary had become more accepted resulting in the Cherokee Nation's (largest Cherokee tribe) official acceptance of his writing system in 1825. In 1826, the Cherokee National Council commissioned the translation and the printing of the laws of the Cherokee nations using the newly invented script. *The Cherokee Phoenix*, the first newspaper with the text both in Cherokee and English, was published in 1828. The Cherokee is an Iroquoian language with 10,000 to 20,000 native speakers today. It is the most published indigenous language and its syllabary is still used today.

The Great Lakes Algonquian syllabics is a syllabic used for writing several Algonquian languages in the United States and Canada, first noted around 1880. It was originally used for the Fox, Sac and

poo, a potom se proširilo i na jezik winnebago. Pismo se bazira na kurzivnoj latinici, a čini se da je imalo francuski uzor.

Hijeroglifsko pismo jezika mi'kmaq rabilo se za ovaj algonkijski kanadski jezik. Znakovi su se sastojali od logograma, izvedenih iz piktografske tradicije. Otac Le Clerq, katolički misionar, od djece je naučio te simbole, a sam je izmislio neke nove i zapisivao molitve. Taj je sustav postao popularan u ovome narodu i u primjeni ostao sve do 19. stoljeća.

Aljaško slogovno pismo ili pismo yugtun razvijeno je oko 1900. godine za jezik yup'ik, eskimsko-aleutski jezik koji se govori na Aljasci, a danas ima oko 20 000 govornika. Pismo mu je stvorio Uyaquq, koji je bio rođen u obitelji šamana, a uskoro se preobraćuje na kršćanstvo te postaje starješina moravske crkve. Bio je fasciniran pismom te je stvorio piktograme koji su mu izvorno služili kao mnemotehnička sredstva za poučavanje biblijskih nauka. Potom je uz pomoćnike pojednostavio pismo i razvio slogovnu varijantu za dijalekt yugtun. Danas se yup'ik uglavnom piše latinicom.

Kanadska aboridžinska slogovna pisma upotrebljavala su se za brojne algonkijske, inuitske i athapaskanske jezike u Kanadi. To je vrsta abuđida, gdje znak označava kombinaciju konsonanta i vokala. Primjer je slogovno pismo za jezik kri (cree), koje je stvorio engleski misionar James Ewans 1840. godine za jezike ojibwe i maskegon (močvarni kri), inspiriran Sequoyinim stvaranjem čerokijskoga pisma, a upoznat s devanagarijem kao amaterski lingvist. Nakon toga nastale su različite varijante za druge jezike te su ta pisma u uporabi i danas. To je pismo prilagođeno i za inuitski jezik, a misionari su adaptirali simbole da bi stvorili inuitsko slogovno pismo oko 1870. Slogovno pismo jezika blackfoot stvorio je anglikanski misionar John William Tims oko 1888. godine, a inspirirano je slogovnim pismom zapadnoga krija (cree), u uporabi za dijalekte zapadno od granice Manitoba-Ontario u Kanadi. Slogovnim pismom krija inspirirano je i slogovno pismo za athapaskanski jezik carrier.

Kickapoo languages, subsequently spreading to the Winnebago language. It was based on the cursive Latin alphabet, suggesting French influence.

Mi'kmaq hieroglyphic writing was used in Mi'kmaq language of Canada. The signs consisted of logograms that were derived from the pictographic tradition. Father Le Clerg, a Roman Catholic missionary, learned these symbols from children, later developing new symbols that he used for writing prayers. This writing system became popular in the Mi'kmaq nation and it remained in use until the 19th century.

Alaska or Yugtun script was invented around 1900 for writing the Central Alaskan Yup'ik language, a member of the Eskimo-Aleut language group that is spoken today by around 20,000 people. The script was invented by Uyaquq, who was born into a family of shamans but converted to Christianity, becoming a leader of the Alaskan Moravian Church. He was fascinated by the idea of writing and developed pictograms that he originally used as a mnemonic device to teach the Bible. He then, with some assistance, simplified the script and developed a syllabary for writing the Yugtun dialect. Today, the Yup'ik language is written mostly using the Latin script.

The Canadian Aboriginal syllabics were used in numerous Algonquian, Inuit and Athabaskan languages of Canada. They are a family of abugidas, where a sign represents a combination of a consonant and a vowel. An example is the syllabary used for writing the Cree languages, invented in 1840 by an English missionary James Ewans, to be used in the Ojibwe and Maskegon (Swampy Cree) languages. He was inspired by Sequoyah's invention of the Cherokee syllabary and familiar with the Devanagari script as an amateur linguist. After that the variants used in other languages were developed and are still in use today. This script is also adapted for the Inuit language, when missionaries adapted the symbols to create the Inuit syllabary in 1870s. The Blackfoot syllabary was invented around 1888 by an Anglican missionary John William Timss, drawing inspiration from the Western Cree syllabary that was used for writing dialects west of the Manitoba-Ontario border in Canada. The Cree syllabary also inspired the creation of the syllabary for the Athabaskan Carrier language.

Južna i srednja Amerika
Central and South America

Kristina Šekrst

Majanski hijeroglifi
Mayan Hieroglyphs

Majansko pismo ili majanski hijeroglifi pismo je majanske mezoameričke civilizacije. Najraniji zapisi potječu iz 3. stoljeća pr. Kr., a u uporabi je sve do 16. stoljeća nove ere, odnosno do španjolskih osvajanja.

Pismo je logosilabičko pa pojedini znakovi mogu predstavljati morfem/riječ ili slog, a često se isti znak rabio u obje svrhe. Obično se pisalo u stupcima po dva, odozgo prema gore te slijeva nadesno. Neki su znakovi bili logogramski, a neki fonogramski. Posebne su skupine znakova takozvani amblemski znakovi vezani uz kraljevske nazive, a sastoje se od pridjeva izvedenoga iz imena mjesta te riječi *ajaw* koja označava gospodara, a funkcijom su slični staroegipatskim kartušama s imenima vladara i njihovim titulama.

Znakovi su uključivali i točke i crte za brojeve. Maje su rabili vigezimalni sustav s bazom 20, pri čemu je točka predstavljala broj 1, a crta broj 5, dok je školjka bila znak za nulu. Nakon broja 20 znakovi bi se pisali jedni ispod drugih te bi na sljedećoj liniji vrijednost bila množena s 20, na trećoj s 400 (20^2) i dalje po eksponentima broja 20.

The Mayan script, also known as the Mayan hieroglyphs, is the writing system of the Maya civilization of Mesoamerica. The earliest known inscriptions date from the 3rd century BC and the script was in continuous use until the Spanish conquest of the Maya in the 16th century.

The script was a logosyllabic system where an individual symbol could represent either a word (a morpheme) or a syllable; the same sign could often be used for both. It was usually written in blocks arranged in columns of two, top to bottom and left to right. Some signs were logograms and some were phonograms. The Emblem glyphs made a special group of signs, usually used as a kind of a royal title. They were composed by using a place name that had a function of an adjective and a word *ajaw*, meaning "the lord". They had a similar function as the Ancient Egyptian cartouche with the names and titles of rulers.

The signs also included dots and bars to represent numbers. The Mayas used the *vigesimal* or base 20 numeral *system*, where the dot represented number 1 and the bar represented number 5, while a shell was used to represent 0. After number 20, the signs would be written one above the other, starting at the bottom line that had a value of 1. Each following line was multiplied by 20.

Pismo izgledom sliči egipatskim hijeroglifima, no sustavi su nepovezani, a tako su ih nazvali europski istraživači 18. i 19. stoljeća. Klasični majanski jezik ch'olti' bio je i pisani jezik, a pisari su zapisivali različite kodekse i klasične tekstove. Pismo se proširilo i na ostale majanske jezike pod utjecajem klasičnoga jezika.

Proces dešifriranja ovih hijeroglifa bio je dugotrajan, a u 19. i 20. stoljeću uspjelo se dešifrirati znakove za brojeve te tekstove vezane uz astronomiju i kalendar. Benjamin Whorf istaknuo je kako su hijeroglifi fonetski, odnosno silabički, što je preuzeo Jurij Knorozov, koji je 1952. objavio svoje teze o ovome majanskome pismu, što je kulminiralo knjigom iz 1963. *Pismo majanskih Indijanaca.* Tvrdio je da de Landin alfabet, u rukopisu biskupa Diega de Lande Calderóna, označava slogovne, a ne alfabetske simbole. Istraživanja, bazirana na Knorozovljevim proučavanjima, doživjela su vrhunac sedamdesetih godina 20. st. kad su istraživači predvođeni Lindom Schele dešifrirali dinastički popis majanskih kraljeva. Potpuno dešifriranje traje i danas.

Although the Mayan script is reminiscent of the Egyptian hieroglyphs, which encouraged European explorers in the 18th and the 19th century to name them the Mayan hieroglyphs, the two writing systems are not connected. The script was used for writing the Classic Maya Ch'olti' language. Maya scribes used it to write various codices and other Classic texts. Under the influence of the Classic Maya language, the script spread to other Maya languages.

The decipherment of this script was long and laborious. The signs for numbers and texts related to astronomy and the Maya calendar were deciphered in the 19th and the 20th century. Benjamin Whorf suggested that Maya hieroglyphs were phonetic, or more specifically, syllabic. This was accepted by Yuri Knorozov who, in 1952, published his thesis on the Mayan script, resulting in a book from 1963 "The Writing of the Maya Indians". He claimed that the "de Landa alphabet" contained in Bishop Diego de Landa Calderón's manuscript was made of syllabic, rather than alphabetic symbols. The research based on Knorozov's studies culminated in the 1970s when the scientists led by Linda Schele deciphered the dynastic list of the Maya kings. The progress in decipherment still continues.

Astečko pismo i pisma središnjega Meksika

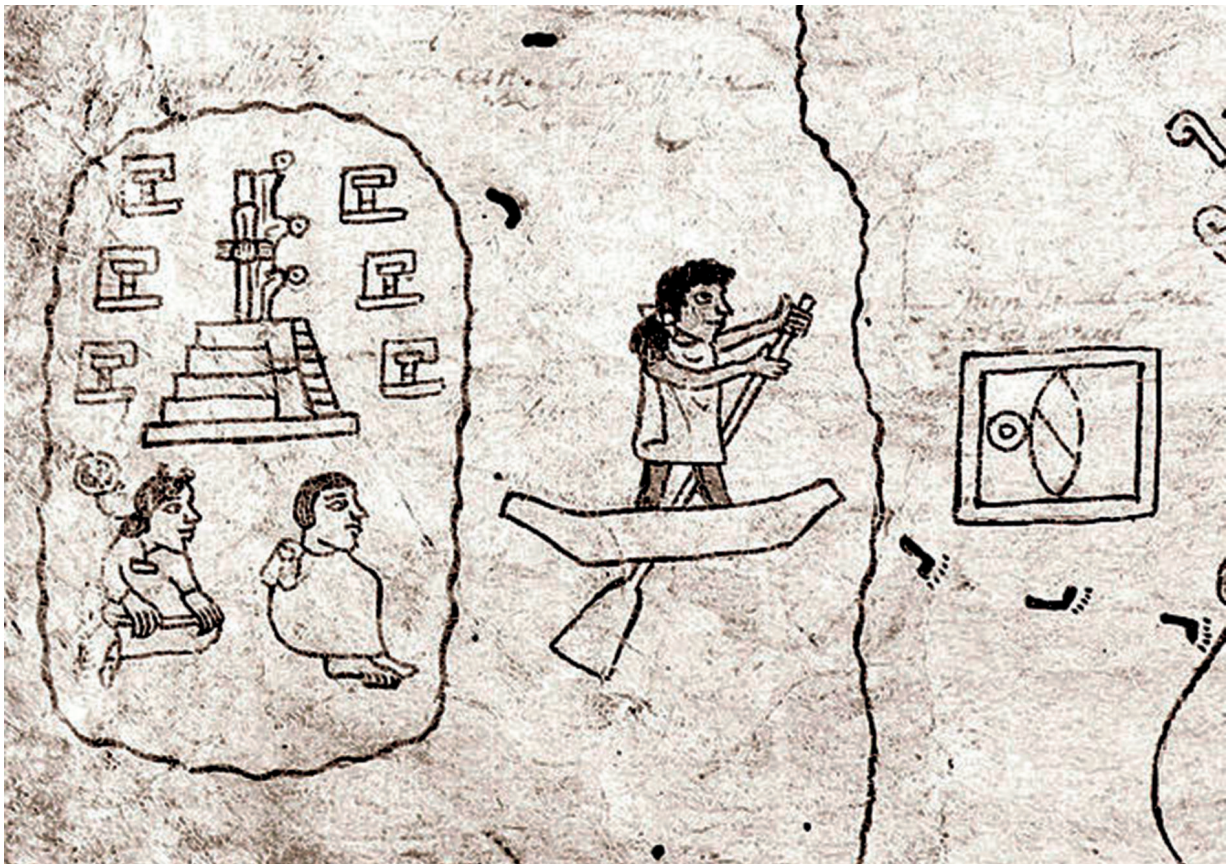
Aztec Writing System and the Scripts of Central Mexico

Astečko pismo piktografsko je i ideografsko pismo koje ima nešto i logograma i slogovnih znakova. Njime su se služili Asteci, odnosno narod Nahua. Nakon španjolskih osvajanja spaljeni su brojni zapisi, a često su to činili i sami carevi. Jezik nahuatl, znan i kao astečki, jezik je uto-astečke jezične porodice, govorio se u središnjemu Meksiku od 7. stoljeća. S vremenom je postao i književni jezik, a tijekom 16. i 17. stoljeća napisane su brojne kronike, dokumenti i kodeksi, poezija i gramatike. Danas njime govori oko milijun i pol ljudi.

Preostali su neki kodeksi pisani na jelenjoj koži ili papirusima raznih biljaka. *Codex Borbonicus* sastoji se od kalendara, opisa godine i datuma te opisa različitih rituala i ceremonija. *Codex Mendoza,* sastavljen oko 1541. godine, piktorijalan je i sadržava i španjolski komentar, a govori o povijesti astečkih vladara, darovima provincija i svakodnevnome životu Asteka. *Codex Osuna* izvorno je bio potpuno piktorijalan, a potom su uvedeni opisi na nahuatlu. *Codex Boturini* napisan je sredinom 16. stoljeća i priča o legendarnome putovanju Asteka iz Aztlána u Meksičku dolinu.

The Aztec writing is a pictographic and ideographic writing system with a significant number of logograms and syllabic signs. It was used by the Nahua people, commonly known as the Aztec. After the Spanish conquest, numerous documents were burned, often by the Aztec rulers. The Nahuatl language, also known as Aztec, belongs to the Uto-Aztecan language family, and was spoken in Central Mexico since the 7th century. Over time, it became a literary language, and many chronicles, documents and codices, poetry, and grammar books were written in it during the 16th and the 17th century. Today, it is spoken by an estimated one and a half million people.

Some Aztec codices have survived until today, written on deer skin or on papyri made of various plants. The *Codex Borbonicus* is comprised of a calendar, the description of years and dates, and different rituals and ceremonies. Composed around 1541, the *Codex Mendoza* is a pictorial codex with Spanish annotations and commentary, listing histories of the Aztec rulers, tributes paid by each province, and a general description of daily Aztec life. The *Codex Osuna* was originally solely pictorial, but descriptions written in the Nahuatl language were added. The *Boturini Codex* was written in the middle of the 16th century and tells the story of the legendary Aztec journey from Aztlán to the Valley of Mexico.



Stranica Boturinijeva kodeksa s piktorijalnim i fonetskim znakovima / Page from the Boturini Codex with pictographic and phonetic signs

Za razliku od majanskih hijeroglifa, astečki glifovi nemaju određen redoslijed čitanja te se mogu čitati u bilo kojemu smjeru. Kao i Maje, Asteci su imali vigezimalni sustav brojeva (s bazom 20), označavan točkicama: zastave su označavale 20, znak stabla označavao je 400 (20^2), a torba 8000 (20^3).

Astečko pismo nastalo je iz ostalih sustava u središnjemu Meksiku, kao što je pismo kulture Zapotec, čiji je najraniji zapis Danzante na kamenu iz 6. stoljeća pr. Kr. Iz zapoteca se vjerojatno razvilo i pismo jezika mixtec, za istoimeni jezik jezične porodice oto-mangue u Meksiku i Srednjoj Americi. Pismo jezika mixtec izvorno je bilo logogramsko odnosno znakovi su predstavljali riječi, no pronalazimo i neke fonetske znakove. Sačuvani su zapisi kao što su Codex Zouche-Nutall, s opisima raznih događaja i osvajanja u 11. i 12. stoljeću, a ovo se pismo mijenja u 16. stoljeću dolaskom Španjolaca tako da se postupno s pitkorijalnih zapisa prelazi na alfabetske.

Unlike the Mayan hieroglyphs, the Aztec glyphs do not have a set reading order and may be read in any direction. The Aztec numerical system was vigesimal, similar to the Mayan system. They used dots (representing 1), flags (used to indicate 20), a tree (signified 400), and a bag (to indicate 8000).

The Aztec writing system was adopted from the writing systems used in Central Mexico, such as the Zapotec writing (the earliest inscription is a Danzante stone dated from the 6th century BC). Zapotec was also probably a precursor to the Mixtec script, used for writing the Mixtec language, part of the Otomanguean family of languages in Mexico and Central America. The Mixtec writing was originally a logographic writing system (signs were representing words), but there were also some phonetic signs. Some inscriptions were preserved, such as the *Codex Zouche-Nutall*, describing a plethora of events and conquests between the 11th and the 12th century. After the arrival of the Spanish in the 16th century, this writing system changed, replacing pictorial writing with alphabetic.

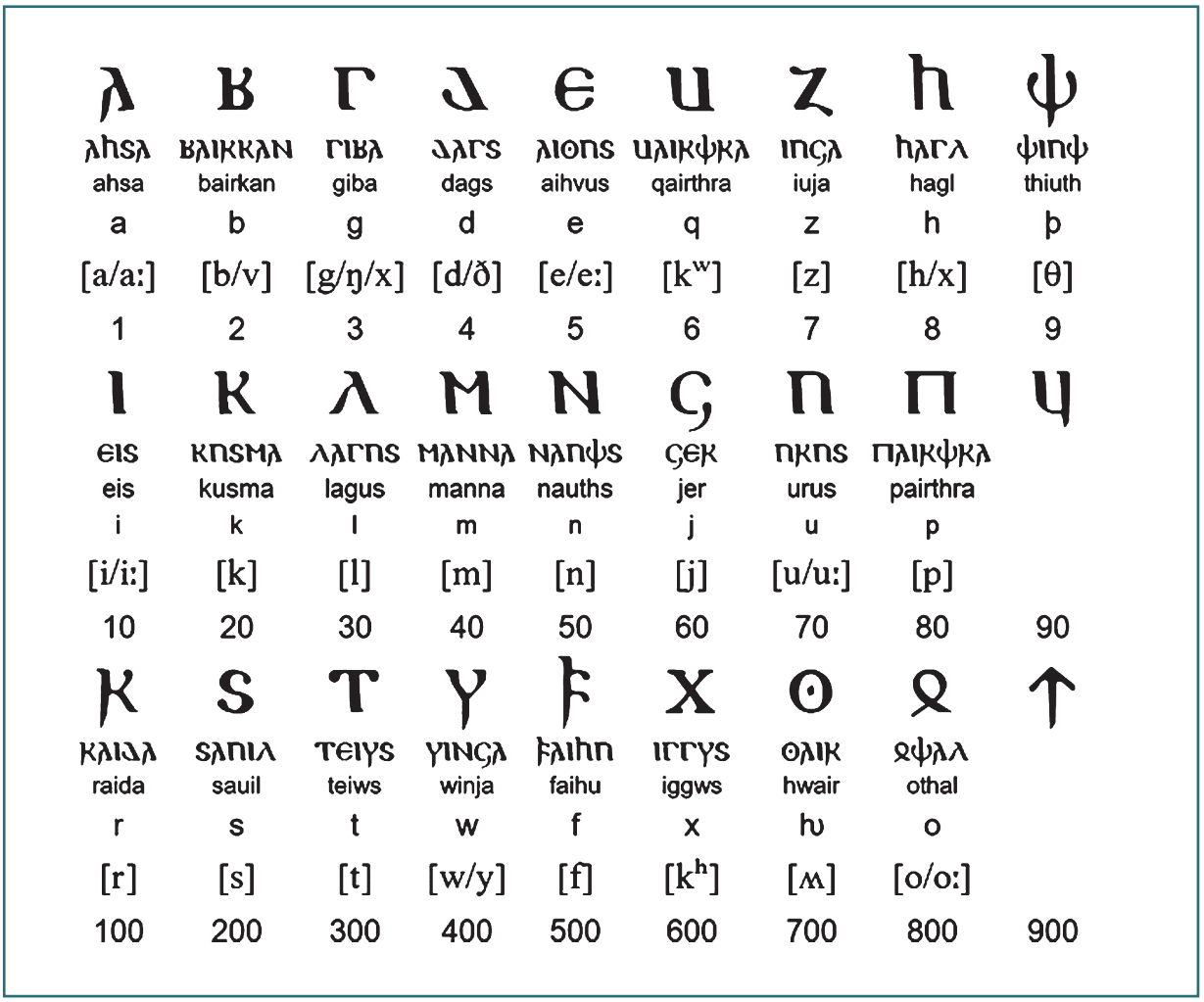
Srednjovjekovna pisma
Medieval Scripts

Gotica
Gothic Script

Kristina Šekrst

Gotsko pismo bilo je alfabet za gotski jezik. Stvorio ga je Wulfila (Ulphilas, „vučić"), Grk kapadokijskoga porijekla koji je bio biskup, a stvorio je pismo s ciljem da prevede Bibliju na gotski jezik. Gotska ili Wulfilina Biblija potječe iz 4. stoljeća, a preživjeli su fragmenti većinom iz Novoga zavjeta. Istočnogermanski spomenici i spisi iznimno su rijetki, pa je Wulfilina Biblija prvi veći zapis istočnogermanske grupe jezika i do danas je jedan od najranijih dokumenata germanskih jezika.

Gothic alphabet was used for the Gothic language. It was created by Wulfila (Ulphilas, "wolf cub"), a Greek of Cappadocian decent who was a bishop. The script was created for the purpose of translating the Bible into the Gothic language. The Gothic or Wulfila's Bible dates from the 4th century AD, and most of the surviving fragments are from the New Testament. The Wulfila's Bible remains even today as one of the earliest documents of Germanic languages. The Eastern Germanic inscriptions and documents are extremely rare so this makes it the first larger documentation of the Eastern Germanic group of languages.



Wulfila je kao uzor uzeo grčki alfabet, iz kojeg su neka slova i izravno preuzeta, uz manji utjecaj latinice i runa. Gotsko se pismo rabi od sredine 4. stoljeća sve do 7. stoljeća. Slovima su bila pridružene i brojevne vrijednosti, kao što je slučaj s grčkim alfabetom, a u toj funkciji slova su se pisala između dvije točke ili s gornjom crtom, koja se rabila i za kratice (kao što je slučaj bio i u nas u glagoljici i ćirilici), a dva znaka imaju samo brojevne, a ne i zvukovne vrijednosti (90, 900).

Wulfila used the Greek alphabet as a source and that is why some letters are direct copies, with the minor influence of the Runes and the Latin script. The Gothic script was in use from the mid- 4th century to 7th century AD. Numeric values were added to the letters, as is the case with the Greek alphabet, and were written between colons or with a line above the letter which was used for abbreviation (as was the case in the Glagolitic and Cyrillic script), and only two symbols/letters had merely numeric, but not phonetic values (90, 900).

Rune

Runes

Buna Bernarda Juretić

Prvi sustavi pisanja koje su razvili germanski narodi su runske abecede. Na njihov razvoj su najvjerojatnije utjecale staroitalske abecede i natpisi. Skandinavske varijante nazivaju se futhark ili fuþark prema prvih šest slova abecede (Fehu, Uruz, Thurisaz, Ansuz, Raidho, Kaunan), dok se anglosaksonska varijanta naziva futhorc ili fuþorc. Najstariji runski natpisi datiraju od 150. godine i to s područja današnje Danske, sjeverne Njemačke (Slesvig) i južne Švedske (Skåne).

Tri najpoznatije varijante runskog alfabeta su stariji futhark (150.–800.), anglosaksonski futhorc (400.–1100.) i mlađi futhark (800.–1100.). Stariji futhark sadržavao je 24 slova, mlađi futhark, razvijen početkom vikinškog doba (750.), samo 16 slova, a anglosaksonski futhorc najprije 29 a zatim 33 slova. Riječ za rune potječe od pragermanskog **runo*, u značenju „slovo", „tajna", „misterij". Na runskim spisima nema razlikovanja dugih i kratkih vokala, a riječi nisu razdvojene. U starijem futharku nisu postojali znakovi za labiovelare. Oni su kasnije razvijeni u anglosaksonskoj varijanti i gotskom alfabetu, kao varijante slova p.

Vjerojatno najstariji runski zapis pronađen je na brošu iz Meldorfa sa sjevera Njemačke, iz 50. godine. Runolozi su podijeljenog mišljenja je li cijeli zapis na runama ili je dijelom i na latinič-

The first systems of writing devised by the Germanic peoples were the Runic alphabets. The Old Italic alphabets and inscriptions most probably influenced their development. Scandinavian variants are called Futhark or Fuþark according to the first six letters of the alphabet (Fehu, Uruz, Thurisaz, Ansuz, Raidho, Kaunan), while the Anglo-Saxon version is called Futhorc or Fuþorc. The oldest Runic inscriptions come from the territory of present day Denmark, northern Germany (Slesvig) and southern Sweden (Skåne), and date from 150 AD.

The three best known variants of the Runic alphabet are Elder Futhark (150 -800 AD), Anglo-Saxon Futhorc (400 -1100 AD), and Younger Futhark (800 -1100 AD). The Elder Futhark consisted of 24 letters, the Young Futhark developed at the beginning of the Viking Age and contained only 16 letters, while the Anglo-Saxon Futhark had at first 29, and then 33 letters. The word for the runes originates from pre-Germanic **rune*, meaning "letter", "secret", "mystery". In Runic inscriptions there is no differentiation between long and short vowels, and the words are not separated. The Elder Futhark had no symbols for labiovelar consonants. These were devised later on in the Anglo-Saxon variant and in the Gothic alphabet as variations of the letter P.

Probably the oldest Runic inscription was found in northern Germany on the Meldorf fibula dated to 50 AD. The opinions on whether the entire inscription is

nim slovima. Nekoliko drugih poznatih natpisa koji nisu u cijelosti ispisani runama su češalj iz Vimose u Danskoj i glava koplja s imanja Øvre Stabu iz južne Norveške, koji datiraju iz otprilike 160. godine. Najpoznatijim najranijim zapisom cijelog futharka smatra se zapis uklesan u Kylver kamenu iz Gotlanda u Švedskoj, koji datira iz 5. st. Najstariji runski srednjovjekovni dokument, dio Skånskog zakona, naziva se Codex runicus i ispisan je u cijelosti runama, kojima, svakoj pojedinačno, odgovora jedno latinično slovo. Rune su tradicionalno bile urezane u drvo, kost, metal ili uklesane u kamen. Stoga u Skandinaviji postoji niz nalazišta runskog kamenja (šve. *runstenar*).

in Runic alphabet, or it partly contains Latin letters are divided among the Runic script experts. Several other known inscriptions which were not written entirely in the Runic script were found on the Vimose comb from Vimose, Denmark and Øvre Stabu spearhead from southern Norway, both dated to around 160 AD. The most famous and earliest record of the Futhark script in general is the inscription carved on the Kylver stone from Gotland, Sweden dated to 5th century AD. The oldest Runic Medieval document, part of the the Law of Scania, called Codex Runicus is written entirely in the Runic script, each letter corresponding to one leter of the Latin script. The Runes were traditionally carved in wood, bone, metal or stone. Therefore there are series of Runic stone sites in Scandinavia (Swedish. *runstenar*).

ᚠ	ᚢ	ᚦ	ᚨ	ᚱ	ᚲ	ᚷ	ᚹ	ᚺ	ᚾ	ᛁ	ᛃ	ᛇ	ᛈ	ᛉ	ᛊ	ᛏ	ᛒ	ᛖ	ᛗ	ᛚ	ᛜ	ᛞ	ᛟ
f	u	th	a	r	k	g	w	h	n	i	j	p	ï	z	s	t	b	e	m	l	ng	d	o

RUNE 600. – 700. / RUNES 600 -700 AD

ᚠ	ᚢ	ᚦ	ᚨ	ᚱ	ᚲ		ᚾ	ᛁ	ᛅ	ᛋ	ᛏ	ᛒ	ᛘ	ᛚ	ᛦ
f	u	th	a	r	k	h	n	i	a	s	t	b	M	l	R

RUNE 600./700.–1050. / RUNES 600/700-1050 AD

Pisma iz naših krajeva
Scripts from Our Region

Kristina Šekrst

Glagoljica
Glagolitic Script

Glagoljica je staro slavensko pismo nastalo sredinom 9. stoljeća, a naziv „glagoljica“ nastao je na hrvatskome tlu i izveden je od staroslavenskoga glagola *glagolati* u značenju „govoriti“. Termin *glagoljski* poznat je još od 16. stoljeća, a naziv *kurilovica* prvi se put spominje u zapisu na ruskom na Proročkim knjigama pisanim ćirilicom iz 1047. novogorodskoga popa Upyra Lihog. Naime, vjerojatno je predaja o Ćirilu kao autoru glagoljice bila dosta jaka na slavenskim prostorima, a da se tek naknadno uz njega počela vezati ćirilica kad je postala dominantna, o čemu svjedoči i naziv *presbyteri chiurilice* za popove glagoljaše u dubrovačkim dokumentima u 15. i 16. stoljeću. Što se tiče pitanja prvenstva glagoljice i ćirilice, postoje argumenti s obiju strana, no zasad se čini kako su spomenici pisani glagoljicom arhaičniji te da su brojni ćirilični spomenici nastali iz prijepisa glagoljičkih. Tri su teorije o njezinu nastanku – egzogena, endogena i kombinirana egzogeno-endogena – ovisno o tome traži li se uzor za grafeme u kakvome drugome pismu ili se traži kakav grafički ključ i primarni elementi. Od egzogenih polazišta ističe se Taylor-Jagićeva teorija, prema engleskome paleografu Isaacu Tayloru (Über den Ursprung des glagolitischen Alphabet) i hrvatskome filologu i slavistu Vatroslavu Jagiću, koji su se trudili povezati glagoljicu s grčkim kurzivnim pismom 8. i 9. stoljeća. Neka od

Glagolitic script/Glagolitsa is an old Slavic script that originates from the 9th century, and the term "glagolitic" is derived from the verb *glagolati,* meaning "to speak". The term *glagoltic* has been known since the 16th century, and the name *kurilovica* was for the first time mentioned by the minister Upyr Lihi in 1047 in the record of the Prophetic Books of the Bible. It is most probable that the legend of Cyril as the author of the Glagolitic script was strong in this region, and it was only later when it became dominant that the Cyrillic script was linked to his name. The name *presbyterichiurilice*, which was used for Glagolitic priests in 15th and 16th centuries, corroborates it. Regarding the precedence of the Glagolitic and the Cyrillic script, there are arguments on both sides. But it seems that documents written in Glagolitic are more archaic and that many Cyrillic inscriptions originated from Glagolitic transcripts. From the exogenous points of view the Taylor-Jagić theory stands out. The English palaeographer Isaac Taylor (Über den Ursprung des glagolitischen Alphabet) and Croatian Slavic scholar Vatroslav Jagić tried to relate the Glagolitic script to the Greek Italic script of the 8th and 9th century. Several other scripts were taken into consideration as models, e.g. The Coptic script (again derived from the Greek alphabet), the Armenian script, the Georgian script, the Syrian script, and so forth. The theory of Saint Jerome is well known from endogenous stand points. According to that theory the author

Hrvojev misal (pretisak). Glagoljski rukopis napisan za vojvodu Hrvoja Vukčića Hrvatinića između 1403. i 1404. god., Knjižnica HAZU / Hrvoje's missal (reprint). Glagolitic script written to Duke Hrvoje Vukčić Hrvatinić between 1403 and 1404 AD, Library of Croatian Academy of Sciences and Arts

ostalih pisama uzimana u obzir kao uzor bila su npr. koptsko pismo (opet izvedeno iz grčkoga alfabeta), potom armensko, gruzijsko, sirijsko itd. Od endogenih polazišta poznata je tradicionalna jeronimska teorija prema kojima je autor glagoljice sveti Jeronim, no te su interpretacije davno pobijene djelima slavenskih filologa, kao što je Franjo Rački. Georg Černohvostov ustvrdio je da glagoljica počinje križem (slovo *a - az*) te da je Konstantin kao autor glagoljice preuzeo kršćanske simbole – križ, elemente križa, križ i krug te krug i trokut – pri čemu krug kao simbol vječnosti predstavlja Boga, a trokut Sveto Trojstvo. Ističe se Vasil Dmitrov Jončev, koji je opisao kružnicu podijelivši je na osam dijelova te je svako glagoljičko slovo ucrtao u takvu rozetu. Kombinacije ovih teorija tvrde da su neki elementi preuzeti izvana, a da su se drugi pak razvili u samome sustavu. Konsenzus je u struci da je Konstantin Ćiril doista stvorio glagoljicu, no mišljenja o uzorima i načinima stvaranja razlikuju se.

Pretpostavlja se trokutasti tip kao prvotan oblik glagoljskoga pisma, no iz toga doba nemamo nijedan spomenik pa ostatke trokutaste morfologije pronalazimo u drugim rukopisima kao trokutaste oblike slova i specifičan linijski ustroj, primjerice u Konavoskome natpisu iz 11. stoljeća.

of the Glagolitic script is Saint Jerome, but these interpretations were refuted by the works of Slavic philologists, one of which was Franjo Rački. Georg Černohvostov established that the Glagolitic script starts with a cross (letter *a - az*), and that Constantine, as an author of the Glagolitic script, took over Christian symbols - a cross, the elements of a cross, a cross and a circle, and a circle and a triangle - the circle as a symbol of eternity representing God, and the triangle representing the Holy Trinity. Vasil Dmitrov Jončev stands out as the one who described the circle by dividing it into eight parts and inscribed each Glagolitic character into such a rosette. The combinations of these theories claim that some elements developed within the system, while others were taken over from outside the system. The consensus is that Constantine Cyril indeed was the one who invented the Glagolitic script, but the opinions on influences and ways the script was created differ.

The triangle type is supposed to be the first form of Glagolitic script, but no documents from that period have survived, so the triangle morphologies are found in other manuscripts as triangle forms of letters and specific line structure, namely in the Glagolitic stone inscription from Konavle dated to the 11th century AD.

Rounded Glagolitic script was used in numerous countries, the whole of Pannonia and Moravia, the

OBLA GLAGOLJICA / ROUNDED TYPE GLAGOLITIC

ⰰ	A	1		ⰾ	Đ	30		ⰤⰤ	F	500
ⰱ	B	2		ⰿ	K	40		Ⱓⰰ	H	600
ⰲ	V	3		ⰽ	L	50		Ⱖ	(O)	700
ⰳ	G	4		ⰾ	M	60		Ⱗ	(Š)Ć	800
ⰴ	D	5		ⰿ	N	70		Ⱘ	C	900
ⰵ	E	6		ⰻ	O	80		Ⱙ	Č	1000
ⰶ	Ž	7		ⰼ	P	90		ⰪⰪ	Š	
ⰷ	Dz	8		ⰹ	R	100		Ⱛ	(poluglas)	
ⰸ	Z	9		ⰺ	S	200		Ⱜⰰ	JA, (I)JE	
ⰹ	(I)	10		ⰻⰻ	T	300		Ⱝⰰ	Ju	
ⰺ	I	20		ⰼⰰ	U	400		Ⱞⰰ	J	

Obla glagoljica rabila se u brojnim zemljama, u cijeloj Panoniji i Moravskoj, potom Češkoj te u Bugarskoj i Makedoniji i Hrvatskoj. Na našim prostorima obli tip – čiji je glavni element krug, a oble su i spojnice među elementima – postaje uglatim, pa u 13. stoljeću uglata glagoljica prevladava. Pretpostavlja se kako se obla glagoljica proširila iz Ohridske škole po slavenskim zemljama. Njome su pisana evanđelja i glagoljaši, kao primjerice Assemanijevo, Marijinsko i Zografsko evanđelje te Kločev glagoljaš.

Uglata glagoljica umjesto kružića ima kvadratiće. Od 13. stoljeća Hrvati jedini pišu i glagoljicom, dok je ostali narodi napuštaju i pišu ili ćirilicom ili latinicom. Uglatim tipom pisani su brojni kodeksi, misali i brevijari, kao što su razni vrbnički misali, Hrvojev misal, Novljanski brevijar i slični. Uglata glagoljica bila je i uzor za tiskanje glagoljskih knjiga, kao što je hrvatski prvotisak *Misal po zakonu rimskoga dvora* iz 1483. godine.

Hrvatska inkunabula *Misal po zakonu rimskoga dvora* tiskana je 22. veljače 1483. u Kosinju u Lici, a najpoznatiji hrvatski glagoljaški spomenik jest Baščanska ploča, pisana prijelaznim tipom glagoljice s oble na uglatu oko 1100. godine. Najstariji pak kanonski staroslavenski spis na glagoljici jesu Kijevski listići, za koje se

Czech Republic, Bulgaria, Macedonia, and Croatia. In our region the round type - whose main element is a circle, and the links between elements are round as well – became angular and the dominant form in the 13th century. It is presumed that rounded Glagolitic originated in the Ohrid School, and then spread to other Slavic countries. It was used for various gospels and codices, namely the Asseman's gospel, the Marian gospel, and the Zographic gospel, as well as Glagolita Clozianus.

Angular Glagolitic uses squares instead of circles, and from the 13th century onwards Croats used one type of Glagolitic script, while others used Cyrillic and Latin script. Numerous codices, missals and breviaries, such as the Missal of Vrbnik, the Missal of Hrvoje, and the Breviary of Novalja were written in angular type. Angular Glagolitic was a model for printing Glagolitic books, like the original print of the Roman Missal dated to 1483 AD.

Croatian incunabula *Missal of the Roman Court Law* was printed on February 22nd 1483 in Kosinje in Lika, and the most famous glagolitic inscription is the Baška tablet, written around the year 1100 in a transitional type from round to angular Glagolitic script. The oldest Old Slavic canon inscriptions in Glagolitic script are the Kiev folios. It is considered that they were created in the Czech Republic and mark the beginning of the Czech-Moravian editing

smatra da su nastali u Češkoj, odnosno označuju početak češko-moravske redakcije staroslavenskoga jezika. U Hrvatskoj je glagoljica u primjeni do 19. stoljeća, a danas su iznimno aktualna paleografska, lingvistička i povijesna proučavanja faza i odlika ovoga pisma.

Bašćanska ploča

Spomenik od bijelog vapnenca s kraja 11. i početka 12. stoljeća napisan je na glagoljici (najdulji) tj. prijelazom iz oble u uglatu glagoljicu u 13 redaka. Njegove su dimenzije 199x99,5x7,5-9 cm, a teži otprilike 800 kilograma. Originalno je ploča služila kao lijeva strana oltarne pregrade koja odvaja oltarni prostor od prostora za vjernike. Desna strana pregrade nije pronađena, ali se smatra da joj pripadaju jurandvorski ulomci, pronađeni nešto kasnije na istome mjestu.

Tekst je darovnica kralja Zvonimira benediktinskom samostanu na čijem je čelu tada bio opat Držiha, čime se očituje suverenitet vladara. Darovanje zemlje spominje se u prvom dijelu teksta, dok se u drugome spominje opat Dobrovit koji je zajedno s drugih devet redovnika izgradio crkvu u vrijeme kneza Kosmata, koji je upravljao krajinom što je obuhvaćala i Krk. Svjedoci su bili župani Krbave i Like, kraljevi dužnosnici i drugi. Također u tekstu postoji prijetnja (minacija) protiv onoga tko bi osporio dar, i zahtjev upućen redovnicima da mole za darovatelja. Također, po prvi put se spominje Hrvatska na hrvatskom jeziku, a odozgo je orubljena hrvatskim pleterom kao ukrasom. Zbog oštećenja i istrošene površine spomenika, potrebna je bila detaljna paleografska analiza kako bi se „dešifrirao“ tekst.

Na modernom hrvatskom tekst bi glasio: „Ja, u ime Oca i Sina i Svetoga Duha. Ja opat Držiha pisah ovo o ledini koju dade Zvonimir, kralj hrvatski, u dane svoje svetoj Luciji. Svjedoče mi župan Desimir u Krbavi, Martin u Lici, Piribineg u Vinodolu i Jakov na Otoku. Da tko poreče, neka ga prokune i Bog i 12 apostola i 4 evanđelista i sveta Lucija. Amen. Neka onaj tko ovdje živi, moli za njih Boga. Ja opat Dobrovit zidah crkvu ovu sa svoje devetero braće u dane kneza Ko-

of the Old Slavic language. In Croatia the Glagolitic script was in use until the 19th century. Nowadays, only palaeographic, linguistic and historical studies of phases and characteristics of this script are of topical interest.

Tablet from Baška

Tablet from Baška is a monument made of white lime stone dating to the end of 11th and beginning of 12th century. It is the longest document written in the Glagolitic script, i.e. transitional type from round to angular Glagolitic in 13 lines. It is 199×99.5×7.5-9 cm in dimension, and it weighs 800 kg. Originally it was used as a left partition which separates the altar space from the space intended for the worshippers. The right partition was never found, but it is presumed that the fragment from Jurandvor found later in the same place isa part of the right partition.

The document is actually a donation from King Zvonimir to the Benedictine monastery whose head abbot was Držiha, by which the sovereignty of the ruler is confirmed. Donation of the land is apparent in the first segment of the text, while the second part mentions the abbot Dobrovit, who along with nine other abbots built the church during the reign of Prince Cosmas who ruled Krajina, and Krk was the integral part. The witnesses were the mayors of Krbava and Lika, royal officials, and others. Also, the document contains a threat against anyone who would dispute the donation and the request of the abbots to pray for the donor. The Baška tablet is the first document mentioning Croatia in the Croatian language and the top is adorned with Croatian interlacing-ribbon pattern. Due to the damage and wear of the surface of the monument, a detailed palaeographic analysis was needed in order to “decode” the text.

In modern Croatian the text would read as follows: “I, in the name of the Father and the Son and the Holy Spirit . I, abbot Držiha, wrote this concerning the land which Zvonimir, the Croatian king, gave in his days to St. Lucia. And the witnesses [were] župan Desimira in Krbava, Martin in Lika, Piribineg in Vinodol and Yakov in Otok. Whoever denies this,

Bašćanska ploča, HAZU (Glipoteka) / Tablet from Baška, Croatian Academy of Sciences and Arts (Gliptotheque)

smata koji je vladao cijelom Krajinom. I bijaše u te dane [župa sv.] Mikula u Otočcu sa [župom] svetom Lucijom zajedno."

Ploča je otkrivena 1851. godine u podu crkve sv. Lucije u Jurandvoru u blizini Baške na otoku Krku. Otkrio ju je Petar Dorčić, a u pomoć je pozvao Ivana Kukuljevića Sakcinskog, koji je na ploču upozorio znanstvenu zajednicu 1875. godine Franjo Rački ju je potpuno pročitao. Original je 1934. godine preseljen u Hrvatsku akademiju znanosti i umjetnosti u Zagrebu, gdje se i danas nalazi. Od godine 1993. i 2002. njezin je prikaz na prednjoj strani novčanice od 100 kuna.

let him be cursed by God and the twelve apostles and the four evangelists and Saint Lucia. Amen. May he who lives here pray for them to God. I, abbot Dobrovit, built this church with nine of my brethren in the days of prince Cosmas who ruled over the entire province. And in those days [the parish of St.] Nicholas in Otočac was joined with [the parish of] St. Lucia.

The tablet was discovered in 1851 in the floor of the church of Saint Lucia in Jurandvor near Baška on the island of Krk. It was discovered by PetarDorčić. He turned to Ivan Kukuljević Sakcinski for help. Sakcinski drew the attention of the Academic society to the tablet. In 1875 FranjoRački deciphered it completely. The original was moved to the Croatian Academy of Sciences and Arts in Zagreb where it remains today. The image of the Baška tablet was placed on the front of the 100 kuna note in 1993 and 2002.

Ćirilica

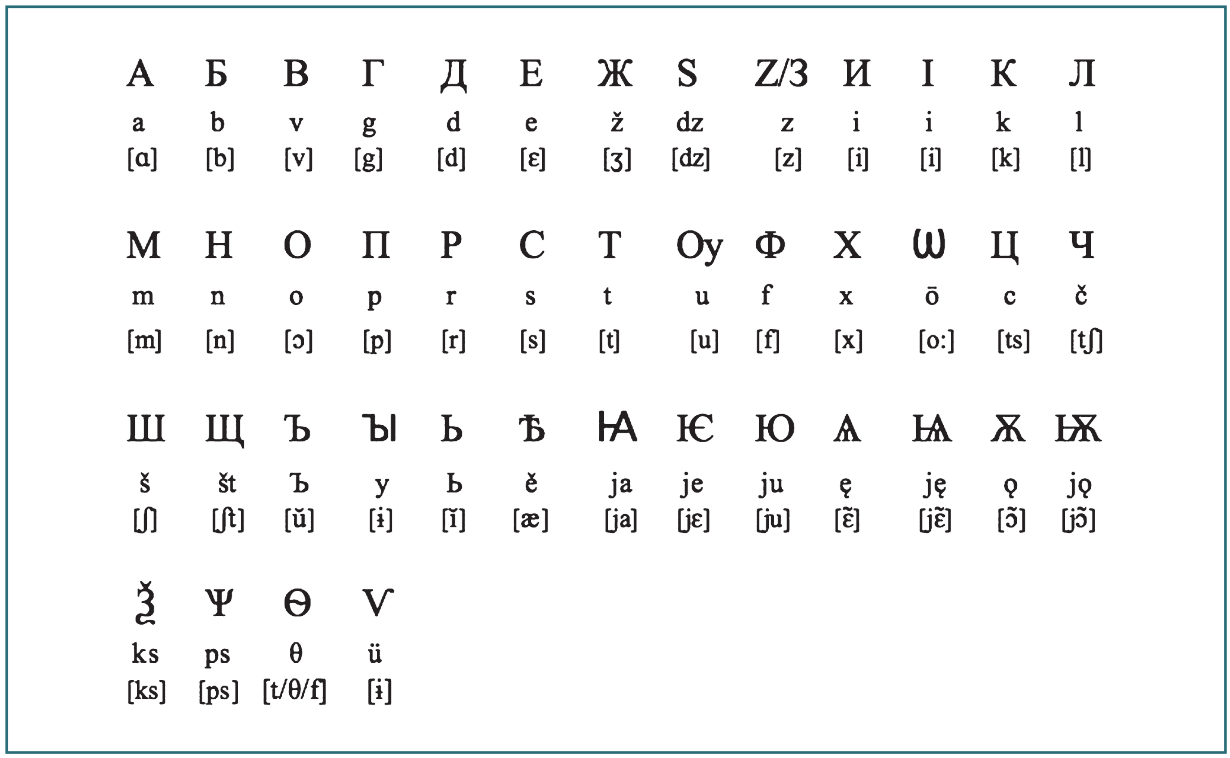
Cyrillic Script

Ćirilica se razvila na temelju grčkoga alfabeta, odnosno njegove uncijalne varijante („ustav") koju su odlikovala velika, uspravna i međusobno nepovezana slova. Obično su prijeporna mišljenja oko toga da su Kliment ili Naum autori ćirilice. Naime, u Bugarskoj krajem 9. stoljeća vlada pokrštavanje i slaveniziranje te je u Preslavu, tadašnjoj bugarskoj prijestolnici, održan veliki sabor na kojemu je slavenski jezik proglašen službenim jezikom, a ćirilica službenim pismom. Takozvana Preslavska književna škola stoga pruža najstarije ćirilične zapise. Kliment i Naum nisu se slagali s takvom kulturnom politikom te Kliment osniva Ohridsku književnu školu koja čuva ćirilometodsku tradiciju, odnosno glagoljicu kao pismo, pa je njihova veza sa stvaranjem ćirilice malo vjerojatna. Samo ime „ćirilica" ne označava Ćirila kao svojega stvaratelja nego je više ime iz počasti njegovih sljedbenika, dok se za Ćirila smatra da je stvorio pismo glagoljicu.

Pitanje prvenstva ćirilice i glagoljice često je predmet prijepora, no čini se da je glagoljica starija jer su joj rukopisi obično arhaičniji, česte su pogreške u prijepisima razumljive ako se radi o prijepisu s glagoljice, te zbog brojnih palimpsesta – pergamenata s kojih je skinut ili sastrugan tekst te napisan novi na vrhu – a analize su pokazale da je donji tekst bio napisan na glagoljici. Unutar kanona staroslavenskih spisa nalazimo i spomenike pisane ćirilicom, odnosno Savinu knjigu, Suprasaljski zbornik i Eninski apostol.

The Cyrillic script was created on the basis of the Greek alphabet, or rather its uncial variant ("constitution"), which was characterised by large upright disconnected letters. It is disputable whether the author of the script was Clement or Naum. The processes of Christianization and Slavonization were parallel in 9th century Bulgaria. In Preslav - Bulgarian capital at the time - the national assembly was held where the Slavic language was declared official, and Cyrillic the official script. The so-called Preslav Literary School provides the oldest Cyrillic inscriptions. Clement and Naum disagreed with such cultural politics. Clement founded the Ohrid Literary School which treasured the Cyril and Methodius tradition and the Glagolitic script so their connection to the development of the Cyrillic script is not very plausible. The term "Cyrillic script" does not denote Cyril as the creator of the script, but it bears his name as a tribute to him and his followers. It is believed that Cyril created the Glagolitic script.

The matter of precedence between the Cyrillic and Glagolitic script is disputable, but it seems that Glagolitic was earlier due to the fact that the Glagolitic manuscripts appear to be more archaic, and the frequent mistakes can be attributed to copying the manuscripts from Glagolitic and due to numerous palimpsests - parchments from which the text was scraped off and a new one written over it - the analysis showed that the underlying text had been written in Glagolitic. The inscriptions written in the Cyrillic script can be found within the canon of Old Church Slavonic manuscripts. This refers to the Sava's Book, the Codex Suprasliensis, and the Enina Apostle.



Poznati su i brojni ćirilični fragmenti kao što su primjerice Zografski listići, Hilandarski odlomci, Listići Undoljskoga i Iljinskoga, Psaltir Slucki, Hilferdingov listić, Kuprijanovski listići, Resenski triod i ostali.

Ćirilica je počela dominirati nad glagoljicom od 12. stoljeća. Hrvatska ćirilica bila je naša lokalna varijanta, koja se često naziva poljičicom ili bosančicom. Najznačajniji su primjeri s naših prostora Humačka ploča, Povaljski prag i listina te Povelja Kulina bana. Ćirilicom se posebice pisalo u diplomatskim i liturgijskim spisima, u pravnim i historiografskim spisima te u raznim crkvenim knjigama i djelima franjevaca. Među slavenskim narodima posebice je bila značajna u razvoju srpskoga jezika od 19. stoljeća reformom Vuka Stefanovića Karadžića, koji je uveo grafeme za specifične srpske zvukove i uklonio one staroslavenske s težnjom da se piše fonetski kao što se i čita, a poznata je i književna reforma Petra Velikoga u Rusiji, koji je krajem 18. stoljeća težio zapadnjačkome stilu slova. Danas se samo u Euraziji njome služi oko 250 milijuna ljudi, većinom Rusa.

The known Cyrillic fragments include the Zograf folios, the Hilandar fragments, Undoljski's folios, Iljinski's folios, Slucki Psalter, Hilferding's Folio, Kuprijanov's folios, Resen Triodion etc.

The Cyrillic script started to overtake the Glagolitic script from the 12th century onwards. Croatian Cyrillic script was a local variant, often called Poljičica or Bosančica (Bosnian Cyrillic). The most significant examples from this region are the Humačka tablet, the Povelja Charter, and the Charter of Ban Kulin. The Cyrillic script was predominantly used in diplomatic and liturgical manuscripts, legal and historiographical manuscripts, and various liturgical books, and works of the Franciscan monks. Among the Slavic people the Cyrillic script was of special importance in the development of the Serbian language in the 19th century in the reform of Vuk Stefanović Karadžić who introduced graphemes for specific Serbian sounds. He also removed the Old Church Slavonic graphemes, insisting on phonetic writing. Another great literary reform was the reform introduced by Peter the Great in Russia, who at the end of the 18th century favoured the western style of letters. At present the Cyrillic script is used in Eurasia alone by 250 million people, mostly Russians.

Čovjek i pisana riječ

Man and the Written Word

Knjižnice
Libraries

Porin Rezničeк Šćukanec

Knjižnice starih naroda samo su djelomično odgovarale današnjim definicijama. U njima najsličnijem obliku pojavile su se tek nekoliko tisuća godina nakon pojave prvih pisama te su sadržavale tekstove različitih sadržaja: religijske, administrativne, literarne itd. Posjedovanje knjižnice smatralo se znakom društvene moći, kao i njeno opremanje ili darivanje. Na primjer, bogatiji su građani u staroj Grčkoj donirali sredstva (epidosis) ili knjige ovisno o imovinskom stanju. Njihova imena zabilježena su na popisima s izrazima zahvalnosti, a darežljivi stranci su čak znali dobiti počasno građanstvo. Takve se akcije smatralo korisnima ne samo za užu skupinu korisnika nego za čitavu zajednicu. U starom Egiptu knjižnice su se čak smatrale dijelom kozmičkog reda maat, u kojima se čuvaju tekstovi koji ga potvrđuju ili uče o njemu.

Uloga knjižnice u društvu očituje se na nekoliko razina. Osim očuvanja kolektivnog znanja i mudrosti, po svojoj prirodi služile su i za širenje kulturnog naslijeđa iz prošlosti i sadašnjosti širokom krugu ljudi. Po Assmannu, knjižničari i knjižnice su predstavnici i posrednici „kulturne memorije“ zajednice, zaštitnici kulturnih dostignuća. Drugim riječima, njihovo se značenje posebno može očitovati u slučaju uništenja znanja i oruđa, koji se može rekonstruirati ukoliko postoje čuvari tih ideja, tj. knjige i

The libraries of Antiquity only partly fit in with the definition of today's libraries. Not earlier than a few thousand years after the advent of the first scripts the first libraries resembling the libraries as we know them appeared. They held the texts of various contents: religious, administrative, literary etc. Having a library was a sign of a high social status, equally as its equipping or making donations to it. For example, the citizens of Ancient Greece who were rather well off donated either goods (epidosis) or books, depending on how wealthy they were. Their names were recorded on the lists together with the expressions of gratitude, and generous foreigners were sometimes even awarded honorary citizenship. Such deeds were considered beneficial not only for a small group of users but also for a wider community. In ancient Egypt the libraries were even believed to be a part of the cosmic order maat in which the texts that confirm it or teach about it were kept.

The role of the libraries can be observed on several levels. Except for preserving collective knowledge and wisdom, by their very nature libraries have always supported spreading awareness of cultural heritage both past and present making it available to a wide range of people. According to Assmann, both the librarians and the libraries are the representatives and moderators of "cultural memory" of the community, and the safe-keepers of cultural achievements. In other words, their significance

knjižnice. Dok su arheološki predmeti tragovi prošlosti koji nose određene poruke, zapisi pohranjeni u starim knjižnicama mogu upotpuniti priču za kojom istraživači tragaju.

S obzirom na dosada navedeno, knjižnica se može definirati kao institucija za pohranu zapisa koji imaju određeno značenje, a služi za očuvanje i dijeljenje znanja zajednici, zaštitu, uređivanje i osiguravanje daljnjeg postojanja zapisa i znanja/vještina u njima.

Stari Egipat

U starome Egiptu najraširenij materijal za pisanje bio je papirus. Zbog njegove krhkosti malo knjižničnog materijala je ostalo sačuvano do danas, što ograničava naše znanje o egipatskim knjižnicama. Također, antički izvori često opisuju mjesta koja nikada nisu posjetili. Na primjer Hekatejev opis „knjižnice“ u Rameseumu je mogao poteći od svećenika koji su ondje radili, budući da on nije imao pristup tome dijelu hrama. Ta mjesta vjerojatno su se razlikovala od današnjeg poimanja knjižnica, čuvajući često istovremeno i arhivski materijal i religijske tekstove. Jedina sačuvana „knjižnica“ nalazi se unutar ptolemejskog hrama Horusa u gradu Edfu te se naziva „Kuća knjiga“. Riječ je zapravo o jednoj komori unutar hrama na kojoj je natpis pr mDAt n Hr apr m bAw Hr-ra („Kuća Horusovih knjiga, opremljena moćima Horusa-Ra“). „Moći Horusa-Ra“ označavaju svete knjige, što bi značilo da je komora služila kao skladište knjiga kad se ne koriste u svetkovinama. Dužnost „knjižničara“ obavljali su pisari poput Amunwashua, a ona je bila nasljedna, barem do njegova unuka, i nositelju davala titulu zš pr anx („Pisar kuće života“). Tekstovi na zidovima hrama dolaze iz takvih knjiga te pokazuju pojačanu osviještenost o egipatskoj kulturi koja je u vrijeme Ptolemeja sve ugroženija grčkom. Nadalje, unutra su se vjerojatno čuvali i admi-

becomes particularly obvious in times of the destruction of knowledge and tools which can only be reconstructed if there are the safe-keepers of those ideas, i.e. books and libraries. Since the archaeological artefacts are the mementos of the past which pass on various messages, the records stored in the libraries can complete the story the researchers are trying to uncover.

Therefore, the library can be defined as an institution where the records which bear significance are stored. Its purpose is to keep and disseminate knowledge in a community, to protect and organize the documents and ensure the protection of the documents and the knowledge/skills they contain.

Ancient Egypt

In ancient Egypt the most common writing medium was parchment. Due to its fragility very little of the library holdings has been preserved until today which limits our knowledge about the Egyptian libraries. Moreover, ancient sources often describe places they had never visited. For example, Hekateus's description of the "Library" in Ramesseum might have come from the priests who worked there as he had no access to that part of the temple. Those places probably differed from what is today considered a library, often keeping both the archives and the religious texts. The only preserved "Library" is within the Ptolemaic Horus temple at Edfu and is called "The House of Books". It is in fact a chamber within the temple with the inscription pr mDAt n Hr apr m bAw Hr-ra ("The House of Books of Horus equipped with the Souls/Powers of Horus-Ra"). "The Souls of Horus-Ra" denote holy books, what would mean that the chamber served as a depository for the books when they were not used in ceremonies. The duties of the "librarians" were performed by scribes like Amunwashu. The position of a scribe was hereditary, at least as far as to his grandson, and he was given a title zš pr anx ("The Scribe of The House of Life"). The texts that were inscribed on the walls of the temple come from such books and illustrate strong awareness of the Egyptian culture which was increasingly endangered by the Greek culture during the Ptolemaic Period. Fur-

nistrativni dokumenti (kako organizirati hram, na primjer), koji su, kao i svete knjige, bili nedostupni javnosti. U tome smislu se ne može govoriti o „pravim" knjižnicama. Tekstovi poput papirusa P. Cairo CG 58030 čuvali su se u hramu jer su korišteni redovito, za razliku od P. Chester Beatty IX, koji se čuvao u knjižnici bez konstantnog referiranja.

Postoje slučajevi manjih nalaza papirusa u grobnicama, često karakterizirani kao privatne „knjižnice" koje je vlasnik ponio sa sobom u drugi život (na primjer grobnica Srednjeg kraljevstva ispod kasnijih skladišta Rameseja).

Knjižnica koja bi više odgovarala kriterijima i svakako najpoznatiji primjer je ona u Aleksandriji, koja se nalazila u sklopu Museuma, „hrama Muza", unutar kraljevskog kompleksa (danas potopljena), od 4. st. pr. Kr. do 4. st. Po tradiciji, ideja je potekla od samoga Aleksandra Velikog, koji je smatrao da treba razumjeti sve te narode kako bi njima vladao, pa je stoga prevodio njihove knjige. Najvjerojatnije ju je osnovao Ptolemej I., a razvio Ptolemej II. Riječ je o ustanovi koja je više od same pohrane knjige, predstavljajući jedan od prvih znanstvenih centara u kojemu su živjeli različiti stručnjaci baveći se unapređenjem raznih područja: fizikom, lingvistikom, medicinom, astronomijom, geografijom, filozofijom, matematikom, geologijom, biologijom i drugima. U skladu s time institucija je podijeljena na nekoliko škola, poput današnjih sveučilišta. Cilj svih tih istraživača navodno je bio pokušaj objašnjenja svijeta te prikupljanje znanja, ali ne za javnu korist. Mnogi poznati znanstvenici toga razdoblja su ondje djelovali, poput Plotina, pokretača škole neoplatonizma, matematičara Euklida, matematičara i „oca zemljopisa" Eratostena, Herofilusa „oca anatomije", filozofkinje i matematičarke Hipatije, koju je ljuta rulja raskomadala 415. godine, i drugih. Bili su probrana skupina koja je ondje živjela, hranila se, spavala, pisala i istraživala te su se, odvojeni od ostatka svijeta po principu Aristotelove privatne knjižnice, nalazili pod zaštitom vladara, nedostupni javnosti. Iako je nastavila djelovati pod rimskom vlašću, ponekad s razornim posljedicama (48 pr. Kr. vjerojatno stradava velik dio knjižnice u požaru flote Julija Cezara), opstala je do 273.,

thermore, the administrative documents (e.g. the texts on how to organize the temple) which were, like the holy books, not accessible to the public, were kept there. In that respect we can talk about "real" libraries. The texts like the papyri P. Cairo CG 58030 were kept in the temple because they were used on a regular basis, unlike the P. Chester Beatty IX, which were kept in the library as they were not continuously referenced.

Some minor finds of the papyri which were found in tombs are often characterized as private "libraries". The owner took them with him to be used in the Afterlife (e.g. the tomb from the Middle Kingdom beneath the later Rameses depository facilities).

The library which would correspond better with the criteria is definitely the most famous library in Alexandria which was situated in the Musaeum , the "Institution of the Muses" within the royal complex (4th century BC-4th century AD) which is today flooded. According to the legend, the idea came from Alexander the Great who believed that he should understand all the peoples in order to rule over them and therefore translated their books. It was most probably founded by Ptolemy II. It was an institution which was more than merely a depository for books. It was one of the first scientific centres in which various scholars lived and worked on enhancing various fields of science: physics, linguistics, medicine, astronomy, geography, philosophy, mathematics, geology, biology etc. The institution was divided into several schools like today's universities. The aim of their research was allegedly an attempt to understand the world, to accumulate knowledge but not for general public benefit. Many famous scholars of the time worked there; i.e. Plotinus, the founder of Neoplatonism, Euclid, a mathematician, Eratosthenes, a mathematician and "the father of geography", Herophilus/Herophilos, "the father of anatomy", Hypatia, a philosopher and a mathematician, who was brutally murdered by an angry mob in 415, and many others. They were a select group who lived, ate, slept, wrote and studied there, separated from the rest of the world according to the principle of the Aristotle's private library and were under the patronage of the ruler, inaccessible to the public. Although it continued to exist under the Roman rule, sometimes with catastrophic consequences (in 48 BC a greater part of the library was probably destroyed when Julius Caesar's fleet

kad car Aurelijan ruši Museum kao kaznu zbog pobune. Konačan kraj sama knjižnica doživljava 391., kad Teodozije zabranjuje poganske kultove, a rulja predvođena patrijarhom Teofilusom uništava Serapeum i knjižnicu u njemu.

Po izvorima, knjižnica je sadržavala oko 700 tisuća svitaka (ne označava nužno jedno djelo), za koje je morala biti izgrađena dodatna zgrada ispod Serapisova hrama. U njoj su se nalazila neka od najpoznatijih djela toga doba, poput drama Sofokla, Eshila i Euripida, povijesti svijeta babilonskog redovnika Prososa, od Potopa (koji je datirao 433 tisuće godina prije svoga vremena) i druga. Cilj je bio prikupiti sva poznata djela svijeta, kako iz potrebe kompletnosti tako i moći i ugleda koje je takva institucija predstavljala. U tu svrhu zapošljavani su ljudi za nabavu i prijevod knjiga na grčki (s egipatskog, jidiša itd.), otkupljivane su privatne kolekcije, ili pribavljane sa sajmova u Ateni ili Rodosu, te je sam Ptolemej od drugih vladara tražio donacije. Navodno su čak i zapljenjivali sve knjige s brodova koji su pristali u luci te bi nakon prepisivanja vlasnici dobili samo kopije nazad. Pritom su postojala rivalstva, na primjer kralj Libije je nastojao prikupiti sva Pitagorina djela, kako bi time nadmašio aleksandrijsku knjižnicu. Kao i danas, postojali su knjižničari, odnosno kustosi tekstova (diaskeuasti) poput Aristarha sa Samotrake, koji su klasificirali, kategorizirali, kopirali i komentirali tekstove. Postavljali su ih vladari, s obzirom da su istovremeno podučavali članove kraljevske obitelji (titula „Prijatelj kralja“).

U čemu je tajna uspjeha takve institucije u to vrijeme? Istraživači poput Erskinea i Barda, promatrajući kontekst helenističkog vremena, smatraju da je knjižnica bila simbol grčke prevlasti u Egiptu, način očuvanja grčkog (!) identiteta i intelekta koji su Ptolemejevići njegovali nakon Aleksandrove smrti i preuzimanja vlasti, nastojeći preuzeti vodeću političku i kulturnu ulogu u grčkome svijetu. Istovremeno su marginalizirali egipatsku kulturu i Egipćane u mjeri u kojoj su mogli, a koja se očuvala u okolicama i djelovanjima hramova. S druge strane, prijevodi knjiga poput Tore su također omogućavali rješavanja pravnih slučajeva Židova, dakle imali su sasvim praktičku svrhu.

caught fire) it survived until 273 AD when Aurelian destroyed the Museum as retaliation for the rebellion. The library finally met its end in 391 AD when Theodosius declared Paganism illegal and the mob led by Patriarch Theophilus of Alexandria destroyed the Serapeum and the library in it.

According to some sources the library had around 700,000 scrolls (not necessarily referring to one title) therefore an additional facility had to be built underneath the Temple of Serapis (the Serapeum). It contained some of the most famous works of the time, like the dramas of Sophocles, Aeschylus and Euripides, the History of Babylonia by the Babylonian priest Berossus (who dated the Great Flood 433,000 years before his time) etc. Its aspiration was to collect all the known works of the world for the sake of completeness as well as the power and prestige such an institution stood for. Therefore, people were employed to purchase and translate the books from Egyptian, Yiddish etc. into Greek, private collections were bought or acquired at fairs in Athens or Rhodes. Even Ptolemy himself requested donations from other rulers. They supposedly even confiscated books from the ships anchored in the port and would return the copies to the owner after rewriting them. There were also rivalries, e.g. King of Libya was striving to get all Pythagoras' works in order to outshine the Library of Alexandria. The same as today, there were librarians, i.e. custodians of texts (diaskeuasti) like Aristarchus of Samothrace who classified, categorized, copied the texts and made comments on them. The custodians were appointed by the rulers since they were teaching royal family members at the same time (hence the title "King's Friend").

What was the secret of success of such an institution at that time? Researchers like Erskine and Bard, having the context of the Hellenistic period in mind, argued that the library was a symbol of Greek domination in Egypt. They believed it was a way of preserving the Greek identity and intellectuality, encouraged by the Ptolemaic Dynasty after assuming power upon Alexander's death and making efforts to take over the leading political and cultural role in the Ancient world. At the same time they marginalized the Egyptian culture as much as they could and it only survived around temples and within their activities. On the other hand, the translations of the books like Torah made finding solutions for legal issues of the Jews possible, ergo, they had only practical application.

Koliko je utjecaj institucije i knjižnice i dan-danas govori podatak o postajanju nekoliko desetaka društava prijatelja Aleksandrijske knjižnice, koji u modernome svijetu nastavljaju s njenim poslanjem, a kao inspiracija je poslužila i drugima iz staroga svijeta, poput Atene.

S vremenom su se razvile konkurentske ustanove, od kojih je najpoznatija knjižnica u Pergamu. Osnovali su Atalidi, točnije Eumen II, kao protutežu Ptolemejcima, jer su također željeli vodeću ulogu u grčkome svijetu te su prikupili oko 200 tisuća svitaka. To je uzrokovalo, između ostalog, i izradu „lažnjaka" koji bi se prijevarom nudili ili se kupovali zbog prestiža. Nadalje, suparništvo je po predaji dovelo do prekida izvoza papirusa, kako bi se spriječilo obogaćivanje drugih ustanova. Međutim, imalo je suprotan učinak, jer je knjižnica u Pergamu usavršila pergament od životinjske kože, time smanjujući ovisnost o egipatskom papirusu u tome vremenu. Također su se razlikovali u pristupu tekstovima: u Pergamu se „olako" komentiralo, ne obraćajući pozornost na moguću problematiku, dok su se u Aleksandriji istraživali minuciozno, pregledavajući gotovo svaki redak i tražeći skriveni smisao.

Točnu veličinu također nismo u mogućnosti ustanoviti, kao ni uređenje, iako je vjerojatno pratila uobičajenu formu toga doba: velika dvorana za čitanje s policama odmaknutim od zidova radi kretanja te kipom Atene u središtu čitaonice. Za razliku od Aleksandrije, Pergamska knjižnica nije preživjela rimska osvajanja. Navodno je fundus knjižnice raspršen u Aleksandriji i Rimu oko 41. pr. Kr., djelomično za privatnu kolekciju Marka Antonija, a po predaji glavnina kao vjenčani dar Kleopatri.

The existence of a few dozen of the Friends of the Bibliotheca Alexandrina associations today is a living proof of how important the influence of this institution has been. It was an inspiration to the scholars of the ancient world and still is today.

Over time the rival institutions developed, the Library of Pergamum/Pergamon being the most famous one. It was founded by the Attalid Dynasty, i.e. King Eumenes II who also wanted to have a leading role in the Greek world and collected around 200,000 scrolls. That prompted, among other things, the making of "forgeries" which were offered as originals or bought for the sake of prestige. Furthermore, according to the legend, the rivalry led to the ban on papyrus export in order to prevent other institutions from making a fortune. However, it had the opposite effect since the Library of Pergamum improved the parchment processing and became less dependent on the Egyptian papyri. The approach to the texts was also different: in Pergamum the comments were made "lightly", without paying particular attention to the possible problem area, while in Alexandria almost every line was meticulously analysed in search for a hidden meaning.

It is not possible to determine either the size or the furnishings of the library, although it most probably followed the usual layout of the time: a big reading room with the shelves moved away from the walls to enable circulation and a statue of the Goddess Athena in the centre. Unlike Alexandria, the Library of Pergamum did not survive the Roman Conquest. The library holdings were scattered all over Alexandria and Rome in 41 BC. One part ended up in Mark Antony's private collection, and according to the legend, a major part was a wedding gift to Cleopatra.

Mezopotamija

Knjižnice u Mezopotamiji bile su slične egipatskima. Administrativni i literarni tekstovi su se također čuvali unutar konteksta hramova ili palača. Gradovi Ebla i Mari imali su velike arhive s drvenim policama za skladištenje te sistemom označivanja: kratki zapis na rubu ploče (poput teksta na hrptu knjige danas) ili s glinenom etiketom na košari s pločicama. Ponekad su se izrađivali i sažetci radi lakšeg skladištenja, gdje se na desetke dokumenata pisalo na jednu pločicu. S vremenom su sve rjeđe nastajali novi tekstovi te su uglavnom prepisivani stari. Osim administrativnih sadržaja zapisivala su se i proročanstva, leksički popisi, opisi jetri nakon žrtvovanja, molitve, ugovori, kultne upute, himne, itd. Pisari su malokad pisali po narudžbi, većinom su, sretni što imaju posao, nadgledali ili sastavljali popise (npr. hrane). Na primjer, takav je arhiv pronađen u Hatuši, s otprilike 30 tisuća klinopisnih pločica, najveća kolekcija Hetitskih tekstova dosada pronađenih na jednom mjestu (slični su arhivi pronađeni u Tabiggi i Sapinuwi). Tamo je pronađen dokument o miru nakon Bitke kod Kadeša 1258./1259. između Ramzesa II. i Hatušilija III., prvi poznati mirovni ugovor. I u drugim mezopotamskim hramovima, poput Nipura, pronađene su knjižnice s djelima različite tematike: astronomije, matematike, religije, himnama, molitvama, pismima, hramskih računima itd.

Najpoznatija, Asurbanipalova u Ninivi, osnovana je u vrijeme kada je uz prmicanje umjetnosti vladar također i ratovao, gradio, uređivao državu. Po predaji, Aleksandar Veliki je vidjevši ovu knjižnicu dobio nadahnuće da izgradi svoju u Aleksandriji. Jedan je od rijetkih koji je bio i sam pismen, te je u njegovo vrijeme sastavljena konačna verzija epa o Gilgamešu. Zbirku je popunjavao s privatnim zbirkama, za koje je zadužio agente, što se uzima kao prvi slučaj u povijesti, smatrajući skupljanje ritualnih tekstova i inkantacija nužnim za vladavinu. Tekstovi su pisani na glinenim pločicama, a njihov broj procjenjuje se na 10 tisuća, iako ih je vjerojatno bilo mnogo više, ali su bili napisani na prolaznim materijalima poput papirusa, kože, voska itd. Većina tekstova je administrativnog karaktera, poput zakona, stranih dopisa, financijskih

Mesopotamia

The libraries in Mesopotamia were similar to the Egyptian libraries. The administrative and literary texts were kept within temples and palaces. The cities Ebla and Mari had large archives with wooden shelves for storing and a developed system of referencing: the incipits on the edge of a tablet (similar to the text on the spine of a book today) or clay tags on the basket that contained tablets. Sometimes they made catalogue tablets, where dozens of documents were written on one tablet to make filing easier. Over time there were fewer and fewer new texts, so the old ones were copied. Not only the administrative texts but also the prophecies, lexical lists, the descriptions of the liver after animal sacrifice, prayers, contracts, ritual instructions, hymns etc. were recorded. The scribes were hardly ever given orders to write but since they were happy to have a job they were mainly supervising or making inventory lists (e.g. of food). For example such archives were found in Hatushash containing approximately 30,000 cuneiform tablets which makes it the biggest collection of Hittite texts that has ever been found in one place (similar archives were found in Tabigga and Sapinuwa). The document on peace after the Battle at Kadesh (1258/1259) between Ramesses II and Hattushili III is the first known peace-treaty. In other Mesopotamian cities i.e. Nippur, the libraries with texts on various subjects were found: astronomy, mathematics, religion, hymns, prayers, letters, temple accounts etc.

The most famous library is the Library of Ashurbanipal in Nineveh, founded at the time when the king was, besides supporting arts, fighting wars and organizing the state. According to the legend Alexander the Great was inspired by it to build his own library in Alexandria. He was one of the very few literate people and it was in his time that the final version of the Epic of Gilgamesh was completed. He completed the library with private collections. The agents were given this task, which is considered the first time ever that collecting ritual texts and incantations was seen as crucial in reigning over the country. The texts were written on clay tablets and their number is estimated at 10,000, although there probably were many more, but were written on perishable materials such as papyri, leather or wax. The majority of the texts were administrative such as laws, foreign correspondence, and financial

izvještaja i slično, a ostali su ritualnog i znanstvenog karaktera: proročanstva, ritualne formule, himne bogovima, medicina, astronomija i književnost. Napisani su klinastim pismom na akadskom, neo-babilonskom i asirskom. Oblik pločica je pratio sadržaj, tako su na primjer pravokutne za financije a okrugle za poljoprivredu. Nažalost, uništena je 612. godine, pa se ne zna gotovo ništa o rasporedu i organizaciji ustanove.

Manje poznata ali jednako vrijedna bila je knjižnica/arhiv u Ebli. Oko 20 tisuća pločica s klinopisom pronađeno je na sumerskoj kombinaciji logograma i fonetskih znakova i čisto fonetske reprezentacije sumerskog klinopisa dotada nepoznatog semitskog jezika eblaitskog. Omogućuju uvid u kulturu, ekonomiju, politiku i svakodnevni život sredinom trećeg tisućljeća prije Krista. Karakter djela opisuje školstvo, državne prihode, nabavu namirnica, sudske slučajeve, diplomatske i trgovačke kontakte, himne, legende, magiju, znanstvene teorije i tekstovi za obučavanje pisara. Postoje naznake o organizaciji s velikim pločama koje su se nalazile na policama raspoređene po temama te institucija možda nije bila isključivo namijenjena kralju i njegovoj birokraciji.

Iskopavanja babilonskih gradova otkrila su mnoge ploče s natpisima u gotovo svakoj kući, što bi moglo upućivati na privatne zbirke, iako najvjerojatnije vrlo male i administrativnog karaktera. Ponekad su pronađene zakopane ispod podova kuća, naslagane na hrpe, bez indikacija o policama ili sličnim sustavima sistematizacije (na primjer na „brdu ploča“ u Nipuru). Slična praksa postojala je i kod Hetita, na što upućuje korištenje hetitskog klinopisa, međutim za razliku od palače gdje se koristila glina, privatni dokumenti su pisani na drvetu, koje nije sačuvano. Kopije tekstova za svetkovine su vjerojatno također pisane na drvu, dok su važniji originali na glinenim pločama, ujedno nespretni i teški za nošenje, čuvani u hramu. Najstarije privatne kolekcije dosad pronađene su u Ugaritu, gdje je pronađeno nekoliko tisuća diplomatskih tekstova na sedam različitih pisma (npr. u kući diplomata Rapanua), popisa cenzusa i literarnih djela, od kojih su najznačajniji 1400 tekstova napisanih na nepoznatom ugaritskom.

reports while the others were related to rituals or science: prophecies, ritual formulae, and hymns to gods, medicine, astronomy and literature. They were written in cuneiform in the Akkadian, Neo-Babylonian, and Assyrian language. The shape of the tablets was in accordance with the content, e.g. square tablets were for finances, and round ones for agriculture. Unfortunately, the library was destroyed in 612 BC so we know almost nothing about its layout or organisation.

Less famous, but equally valuable were the archives in Ebla. Around 20,000 cuneiform tablets were found in the Sumerian combination of logograms and phonetic signs and purely phonetic representation of the Sumerian cuneiform in, until then, unknown Semitic language the Eblaite language. They give us an insight into the culture, economy, politics and everyday life in the middle of the 3rd millennium BC. They provide information on the educational system, state income, purchases, court cases, diplomatic and trade relations, hymns, legends, magic, scientific theories and scribal training. There are some indications regarding the organisation of large tablets which were kept on the shelves and filed according to the themes, so perhaps the institution was not only intended for the king and his bureaucracy.

The excavations of the Babylonian cities revealed many inscribed tablets in almost every house, which might suggest the existence of private collections, most probably very small and of administrative character. Sometimes they were buried under the floors of the houses, piled up without indication of shelves or similar modes of systematization (e.g. “Tablet Hill” in Nippur). The Hittites developed the same practice, which can be concluded from the use of the Hittite cuneiform, but unlike the palaces where clay was used, private documents were written on wood which has not been preserved. The copies of the texts for festivities were probably also written on wood. The more important originals were kept in the temple as they were written on clay tablets and were too bulky and too heavy. The oldest private collections ever found were found in Ugarit. They contain several thousand diplomatic texts written in seven different scripts (e.g. in the house of the diplomat Rapanu), census records and literary texts, most important of which are 1,400 texts written in the unknown Ugaritic language.

U vrijeme Sasanida u Perziji osnovana je akademija Gunishapur, koja je uključivala sveučilište, najstariju bolnicu na svijetu i knjižnicu s više od 400 tisuća naslova, te je bila kulturno i intelektualno središte u 6. i 7. stoljeću. Knjige su se prikupljale i prevađale za buduća istraživanja. Primarno su pisali i proučavali zoroastrizam, ali i staroperzijska, grčka i klasična indijska djela, i anatomiju, stomatologiju, astronomiju, matematiku, arhitekturu, vojnu taktiku, poljoprivredu i navodnjavanje itd. Akademija je na vrhuncu imala oko 5000 polaznika i 500 učitelja, i „istočnih" i „zapadnih". Nakon završetka polaznici su zapošljavani u državnoj upravi, a liječnici nisu mogli prakticirati medicinu bez dozvole, koju stječu nakon polaganja posebnih ispita. Akademija je preživjela muslimanska osvajanja, ali je pojavom drugih centara, poput „Kuće mudrosti" u Bagdadu, polako izgubila svoje značenje. Nije poznato što se dogodilo s knjižnicom, ali je ona vjerojatno raspršena po novim centrima.

Grčka

Kao i Egiptu, u Grčkoj su knjižnice bile privatne zbirke. Jedna od najranijih je Aristotelova, iako nije poznato koliko niti koja je djela sadržavala, ali ju je popunjavao radovima iz filozofske škole Liceja. Po Strabonu, upravo je ta zbirka tvorila osnovu knjižnice u Aleksandriji, ali je on pisao nekoliko stoljeća nakon Aristotela. Po jednoj verziji predaje Aristotel je ostavio knjižnicu svome nasljedniku Teofrastu, a ovaj učeniku Neleu od kojeg ju je Ptolemej II. otkupio.

Nakon knjižnice u Aleksandriji razvijaju se i druge, djelomično javne, poput institucije na Kosu oko 100. godine. Nju su, uz druge građevinske pothvate (poput vodovoda), postavili istaknuti pojedinci čija su imena zabilježena na neposrednom spomeniku: na primjer Gaj Stertino Ksenofont, osobni liječnik Tiberija, Klaudija i Nerona. Otprilike u isto vrijeme se osniva i knjižnica u Ateni unutar Agore, koju je dao podići bogati filozof Tit Flavije Panten. Posvećena je Ateni, caru Trajanu i Atenjanima. Neuobičajena je za arhitektonski kontekst u kojemu se nalazila: prostrana udubina s pridruženim dvorištem koje je ograđeno trima galerijama.

At the time of the Sassanids in Persia, the Academy of Gondishapur was founded. It encompassed the university, the oldest hospital in the world, a library with more than 400,000 titles and was a cultural and intellectual centre in the 6th and the 7th century. The books were collected and translated for future studies. They primarily wrote on and studied Zoroastrianism. They also studied the Old Persian, Greek and Classical Indian texts, anatomy, dentistry, astronomy mathematics, architecture, military tactics, agriculture, irrigation etc. At its peak the academy had 5,000 students and 500 scholars teaching both eastern and western sciences. After graduation the graduates were appointed to important governmental positions, and the doctors needed a license to practice medicine which was obtained upon passing special exams. The Academy survived the Arab conquest, but with the rise of other centres like the House of Wisdom in Baghdad, it gradually lost its significance. The fate of the library is not known, the holdings were probably dispersed to other centres.

Greece

As in Egypt, Greek libraries were private collections. One of the earliest was the Library of Aristotle. Even though it is unknown which works it contained, it is known that the collection was completed with the works from the Philosophical School of the Lycée. According to Strabon that library was the basis for the Library of Alexandria but he wrote several centuries after Aristotle. According to one version Aristotle left the library to his successor Theophrastus, who left it to his disciple Nele, from whom Ptolomy II bought it.

After the library in Alexandria, other partly public, partly private institutions were founded like the one on the Island of Kos around the year 100. Along with other architectural ventures like the aqueduct, the library was founded by distinguished individuals whose names were inscribed on the monument itself: e.g. Guius Stertinius Ksenophon, personal physician of Tiberius, Claudius, and Nero. Around the same time the library in Athens, within Agora was founded by a rich philosopher Titus Flavius Panteanus. The library was dedicated to the Emperor Trajan and the people of Athens. It is unusual for the architectural context in which it was located: a

Pronađena su i pravila ponašanja i radno vrijeme: „Nijedna knjiga se ne smije iznositi iz knjižnice jer smo dali prisegu. Knjižnica je otvorena od prvog do šestog sata.“ Knjižnica reflektira ulogu Atene kao glavnog „sveučilišnog“ grada Rimskoga Carstva. Uništili su je Germani Heruli 267. Trend se nastavlja u isto vrijeme i na otoku Rodu koji je imao knjižnicu u sklopu gimnazije. Pronađen je katalog vrlo sličan današnjima, koji je tematski klasificirao i nabrajao autore s njihovim djelima, a o knjigama se brinuo knjižničar. Postojale su mnoge druge knjižnice, ali njihovi ostatci nisu locirani.

Rim

Rimske su se knjižnice dizajnom razlikovale od grčkih, koje su obično slijedile pergamski princip s malim skladištima što okružuju otvoreni prostor. Rimske su također imale otvoreni prostor, ali je on okružen policama. Grčke i latinske su bile fizički odvojene, na primjer knjižnica Bibliotheca Ulpia na Trajanovu forumu izgrađena oko 114. godine. Istovremeno je služila i u administrativne svrhe kao ured za javne isprave. Sadržavala je oko 20 000 svitaka. Bila je dio šireg kompleksa knjižnica oko Rimskog foruma, uz knjižnice kod Oktavijinih vrata (u sklopu škole) i u hramu Apolona Palatina. Ponekad su se nalazile unutar rimskih termi, koje su se s vremenom popunjavale novim sadržajem. Na primjer, Karakaline terme, izgrađene oko 200., imale su knjižnicu koja je bila arhitektonski slična knjižnicama toga doba s nišama knjiga oko podiuma.

Knjižnice su građene po čitavu Carstvu. Oko 135. Tiberije Julije Celzus Polemean, upravitelj provincije Azije, osniva knjižnicu u Efezu koja se smatra najznačajnijom u velikom trokutu s Aleksandrijom i Pergamom. Istovremeno je bila grobnica i spomenik svojem tvorcu po kojemu je dobila ime. Grob mu se nalazio u kripti pod kipom božice Atene, božice mudrosti. Oko 12 tisuća svezaka čuvalo se u ormarima unutar niša. Okruživali su ih dvostruki zidovi zbog temperature i vlažnosti. Stupovi u prizemlju prikazivali su Sofiju (mudrost), Epistemu (znavast hollow with adjoining courtyard which was enclosed by three galleries. The manners of conduct and working hours were found: “No book should be taken out of the library because we have sworn an oath. The library is to be open from the first hour until the sixth.” The library reflects the role of Athens as the “University” city of the Roman Empire. It was destroyed by the Germanic tribe Heruli in 267. The trend continued on the island of Rhodes, which had its library as a part of the gymnasium. A catalogue very similar to the contemporary ones was found. It was classified thematically and listed authors and their works and the librarian took care of the books. There were many other libraries, but their remains have never been located.

Rome

Roman libraries differed in design from Greek libraries which usually followed the Pergamum design. They would usually have little storage facilities enclosing an open space. Roman libraries also had open spaces but they were usually enclosed by bookshelves The Greek and Latin shelves were physically separated as is the case with the Bibliotheca Ulpia built around 114 in the Forum of Trajan. It was used for administrative purposes and was also the Public Record Office. It contained approximately 20,000 scrolls. The library was part of a wider library complex around the Roman Forum along with the Porticus Octaviae Library (a part of a school) and the one in the Temple of Apollo Palatinus. Sometimes they were built within the spa complexes and were equipped with new contents over time. For example, the Baths of Caracalla, built around 200 AD, had a library which was similar to the libraries of the time with niches around the podia.

The libraries were established all over the Empire. Around 135 Tiberius Julius Celsus Polemaeanus, the governor of Asia, founded a library in Ephesus which was, together with the Library of Alexandria and the Library of Pergamum, one of the three greatest libraries of the time. It was at the same time a sepulchral monument and a tomb for its founder, after which it was named. His tomb was in a crypt beneath the statue of Athena, Goddess of wisdom. Around 12,000 scrolls were kept in the bookcases within niches. They were surrounded by double walls to protect them from extreme temperatures

nje), Enoiju (inteligencija) i Arete (vrlinu), a danas se nalaze u Beču.

Nadalje, u Timgadu u današnjem Alžiru, gradu osnovanom oko 100. godine naseljavanjem oko 200 veterana i njihovih obitelji, knjižnicu je krajem 3. stoljeća dao podići bogati mecena Julije Kvint Flavije Rogatian također slijedeći model gradnje toga doba: glavna soba koju okružuju niše s knjigama, podium kako bi se mogle doseći povišene drvene police te rotunda za predavanja. Smatra se da je sadržavala oko 3000 svitaka, a trošak je njene izgradnje 400 tisuća sestercija. Postojanje knjižnice ukazuje na interes prema kulturi i intelektualnom u tome gradu te daje uvid u funkcioniranje i stanje rimskih gradova u sjevernoj Africi.

Javne knjižnice u Rimu najvjerojatnije su zatvorene krajem petog stoljeća, iako ih je dotad opstalo samo nekoliko. Spominje ih se velik broj u katalozima rimskih zgrada sredinom četvrtog stoljeća. Amijan Marcelin opisuje da su dotad „kuće" posvećene istraživanju i znanju pune trome lijenosti, pjevanja i sviranja na flautama i lirama te se umjesto filozofa i učitelja pozivaju pjevači i glumci. Najvjerojatnije je taj nastup bijesa i ogorčenja ipak bio usmjeren na privatne knjižnice, a ne na javne ustanove. Čak niti kršćanski vladari ne zatvaraju sve knjižnice zbog „poganskih" djela, jer bi već spomenuta knjižnica na Trajanovu forumu bila među prvima zatvorena, dok izvori govore o njenom funkcioniranju oko 455. Tako na primjer Konstantin II 330. otvara knjižnicu u Konstantinopolu, zahtijeva prepisivanje s papirusa na pergament zbog dugotrajnosti te nakon propasti knjižnice u Aleksandriji „spašava neke knjige" i pohranjuje ih u Konstantinopolu. Bogatstvo se procjenjuje na 100 tisuća svezaka koji uključuju i papirusne svitke i pergamentne kodekse. S vremenom su ipak sve propale, u požarima, pljačkama ili jednostavnim zanemarivanjem.

Privatne kolekcije su također postojale, a jedna od najvećih je pripadala svekru Julija Cezara – Luciju Kalpurniju Pizonu Cezoninu, upravitelju provincije Makedonije. Pronađena je u 18. stoljeću u Vili papirusa u Herkulaneumu. Sadržavala je oko 1800 karboniziranih svitaka koji su zatrpani u erupciji Vezuva 79., spakirani u kutijama i spremni za transport ispod 20 do 25 m

and humidity. The columns on the first level housed the statues of Sophia (wisdom), Episteme (knowledge), Ennoia (intelligence) and Arete (virtue).

At the end of the 3rd century in Timgad, a city in modern-day Algeria, a rich benefactor Julius Quintianus Flavius Rogatianus, founded a library according to the adopted model of the time. The city was founded around 100 and inhabited by some 200 veterans and their families. The library consisted of a large room flanked by the niches with books, a podium so that the higher shelves could be reached, and a circular lecture room. It is believed that it contained around 3,000 scrolls, and was built at a cost of 400,000 sesterces. The very existence of the library illustrates the interest in culture and intellectual matters in that city and gives an insight into the state of affairs in the Roman cities in North Africa.

The public libraries in Rome were probably closed towards the end of the 5th century, although only few had survived until then. A substantial number of libraries are mentioned in a catalogue record of the Roman buildings from the mid-4th century. Ammianus Marcellinus wrote that the "houses" which were dedicated to research and knowledge, became the houses of laziness, singing and playing flute where singers and actors were invited instead of philosophers and teachers. His outrage and anger were probably directed towards the private libraries and not the public institutions. Even Christian rulers did not close the libraries because of the "Pagan" works, as the already mentioned library in the Forum of Trajan would have been among the first to be closed while the sources speak about its functioning until around 455. Constantine II, for example, established a library in Constantinople and demanded copying of the papyri on parchment. After the destruction of the Great Library of Alexandria he "saved" some of the books and stored them in Constantinople. Its treasure is estimated at 100,000 scrolls which include papyrus scrolls and parchment codices. In the course of time all the libraries vanished. They were either burnt or plundered or simply neglected.

Private collections also existed and one of the biggest belonged to Lucius Calpurnius Piso Caesoninus, the father-in-law of Julius Caesar and a legatus in the province of Macedonia. It was found in the Villa of the Papyri in Herculaneum in the 18th century. It contained about 1,800 carbonized scrolls, covered

pepela. Sami svitci su gotovo izgubljeni s bubući da su kopači tražili „pravo blago“ te ih odbacili kao nevažne, gdje ih je primijetio i sačuvao direktor iskopavanja Karl Weber. Smatra se da je knjižnicu mogao opremiti epikurejski filozof i pjesnik Filodem, Pizonov prijatelj, s obzirom na količinu pronađenih djela i pretežitost grčkih papirusa, ali nije potvrđeno. Radi se o jedinoj pronađenoj sačuvanoj knjižnici iz antike. Komentari unutar djela govore o stvarnoj uporabnoj ulozi knjižnice, a oznake o organizaciji takvih ustanova. Izgledom je djelomično slijedila model javnih knjižnica, s ormarima i policama s oznakama na metalnim pločicama okrenutim prema korisniku, podijeljenim na sekcije po desetak svitaka, spojena s čitaonicom koja se nastavlja na peristil.

Vlastite knjižnice su imali i kršćani, iako ne u dotadašnjem smislu. Euzebijeva knjižnica u Cezareji je sadržavala dokumente sa sinoda, kopije Svetoga pisma i drugih knjiga za liturgijske potrebe. Međutim, u početku to nije bilo pohranjeno na jednome mjestu nego u različitim crkvama, među klericima ili privatnim kolekcijama, pa se može smatrati „kongregacijskom knjižnicom“. „Prava“ knjižnica započinje dolaskom biblijskog znanstvenika Origena (otprilike 185. – 253.) koji je ponovno započeo prikupljati knjige. Imao je sedam „tajnika“ i isto toliko prepisivača koji su zapisivali njegova razmišljanja i predavanja. Knjižnicu je popunjavao sa svojih putovanja, kao i donacijama bogatijih kršćana. Svrha nabave je osim istraživanja bila i za edukacijske potrebe, budući da je od svojih studenata tražio proučavanje djela grčkih i drugih nekršćanskih filozofa. Glavnina je vjerojatno preživjela Dioklecijanove progone i uništenja crkava i Biblija. Nakon Origenove smrti knjižnica je ostavljena Crkvi, a krajem 3. stoljeća preuzima je Euzebije, koji je nastavlja popunjavati i prepisivati djela s papirus na pergament. Takve aktivnosti su se nastavile do dolaska muslimana, kada su fundus knjižnice vjerojatno odnijeli i raspršili klerici pri odlasku iz grada. Na svome vrhuncu početkom 7. stoljeća sadržavala je vjerojatno 30 tisuća svitaka.

with 20-25 m of ashes in the Vesuvius eruption in 79. They were packed in boxes and ready for transport. The scrolls were nearly lost as the excavators were looking for the “real treasure” and discarded them as insignificant, only to be noticed and preserved by the director of the excavations Karl Weber. It is believed that the library might have been equipped by the Epicurean philosopher and a poet Philodemus, a friend of Piso’s, but since numerous works were found which were mostly Greek papyri, it has not been confirmed. Its layout and shape followed the model of the public libraries with shelves and metal labels facing the user, divided into sections of about ten scrolls. It was adjacent to the reading-room which extended to the peristyle. It is one of the best preserved libraries of Antiquity. The commentaries contained in the scrolls speak about real serviceability of the library, and the labels about the organisation of such institutions.

Christians, too, had their own private libraries, but not in the same sense of the word. The library of Eusebius in Caesarea contained the documents from the synod, copies of the Holy Scripture and other liturgical books. However, at the beginning not everything was stored in one place but in different churches under the care of the clergy or in the private collections therefore it can be considered as a “Congregational Library.” A “Real” library was established upon the arrival of a biblical scholar Origen (around 185-253) who resumed collecting books. He had seven “secretaries” and the same number of copyists who were recording his contemplations and lectures. He completed the library with the acquisitions from his travels and by donations from wealthy Christians. The purpose of his acquisitions, apart from research, was also educational as he demanded from his students that they study the works of the Greek and other non-Christian philosophers. The major part of the library survived Diocletian’s persecution and the destruction of churches and the copies of the Bible. After Origen’s death the library was bequeathed to the Church and at the end of the 3rd century it was taken over by Eusebius who continued making contributions to the library and copying the works from papyri on to parchment. Such activities continued until the arrival of the Muslims. The library holdings were probably taken by them and the clergy leaving the city. At its peak at the beginning of the 7th century it probably contained 30,000 scrolls.

Islamske zemlje

U islamskom društvu, uloga edukacije izvorno je pripadala džamijama, ali su s vremenom također počele djelovati i medrese (škole). I u jednom i u drugom kontekstu su se mogle pronaći knjižnice koje su muslimane zainteresirale nakon osvajanja dotadašnjih kulturnih središta s knjižnicama. Među njima nije postojala gotovo nikakva razlika u klasifikacijskom sustavu, uređenju prostorija i osoblja. U džamijama se često čitalo iz Kurana nakon molitava, a istraživači su često objašnjavali pojedine dijelove kako bi pripomogli u svakodnevnim situacijama. Za razliku od prije spomenutih knjižnica, džamije su nudile otvoren pristup svakome zainteresiranom u skladu s karakterom vjere. Opremali su ih različiti istraživači iz raznih područja interesa, bilo objektivnih ili eksperimentalnih/subjektivnih tematika, poput medicine, alkemije ili astronomije. Takvo znanje širilo se zahvaljujući zapošljavanju prepisivača. Karakter djela nije bio isključivo religiozan, ali su ona često reflektirala ideju o nedjeljivosti države i religije, a svaka je knjižnica imala nekoliko primjeraka Kurana. Prevođenje su među prvima poticali Omejidski kalifi, a kalif Ibn Yizid vjerojatno je osnovao prvu javnu arapsku knjižnicu u Damasku, iako su tek za vrijeme Abasida takve prakse uzele maha. Taj period trajao je do 1258. godine, kad Mongoli zauzimaju grad i bacaju knjige u rijeku, iako je navodno 400 tisuća manuskripta spašeno prije opsade.

Kao i drugdje, postojale su privatne knjižnice, koje su uglavnom pripadale istraživačima zainteresiranim za proučavanje Islama. Međutim, s vremenom su sve privatne kolekcije sakupljene u džamijama, darovima ili otkupima gdje su bile dostupne istraživačima, pa se mogla voditi briga o njima.

„Kuća mudrosti“ u Bagdadu djelovala je od 9. do 13. stoljeća u doba Abasida, a potakli su je sami kalifi, osobno za znanost i kulturu zainteresirani Harun al-Rashid i njegov sin al-Ma'mun. Ustanova je opremljena i zvjezdarnicom s ciljem provjere Ptolemejevih postavki, uz knjižnicu gdje su se prevodila na arapski djela s grčkog, kineskog, perzijskog ili sanskrta. Tako su novim riječima obogatili arapski, koji se tek u to

Islamic Countries

In the Islamic society, the role of education originally belonged to the Mosques, but with time the Madrasa (Schools) became active. In either context one could find libraries which brought interest to the Muslims after the conquests of cultural centres that had libraries. Among them there was virtually no differentiation in the classification system, organising the rooms or staff. Qur'an was often read in Mosques after prayers, and the researchers frequently explained particular parts in order to help in everyday situations. Unlike the above mentioned libraries, the Mosques offered open access to anyone interested, according to the character of their faith. The libraries were supplied by researchers of various fields of interest, whether subjective or objective in nature, like medicine, alchemy or astronomy which evolved in the Period of Creativity. Such knowledge was spread due to the employment of transcribers. The character of the works was not exclusively religious, but they often reflected the idea of unison between the religion and the state, and each library had several copies of the Qur'an. The translation was at first prompted by the Umayyad Caliphate, and Khalifa ibn Yizid was probably the first to found a public Arabic library in Damascus. Such practices were at their peak during the Abbasid reign. That period lasted until 1258 when the Mongols conquered the city and threw books into the river, although supposedly 400 000 manuscripts had been saved before the siege.

As elsewhere, there were private libraries that belonged to researchers interested in studying Islam. However, with time all of the private collections were gathered in mosques, either by means of donations or acquisitions, where proper care was provided.

The "House of Wisdom" in Baghdad operated from the 9th to the 13th century, during the Abbasid era, prompted by the caliphs themselves, Harun al-Rashid and his son al-Ma'mun who were personally interested in science and culture. Along with the library where Greek, Chinese, Persian or Sanskrit works were translated into Arabic, the establishment was equipped with an Observatory, in order to scrutinize Ptolemy's postulates. In that way the Arabic language was enriched with words which at the time only began to be used as scientific and tech-

vrijeme počinje koristiti za znanstvene i tehničke termine. Često su zapisali svoje komentare i sami pisali te time popunjavali knjižnicu, a u katalog su se unosila njihova imena za zasluge. U to je vrijeme naprimjer djelovao matematičar al-Khwarizmi poznat po razvijanju algebre, te braća Banu Musa koji su napravili „instrument koji se sam svira“ – prvi programibilni stroj. Također su povjerenici knjižničari, stručnjaci u svome području, slani u strane zemlje skupljati i kupovati knjige, što se smatralo uglednim položajem (uvijek su postojala najmanje dva knjižničara).

Druge su istaknute knjižnice i akademija Sabiir Ibn Ardashira (također „Kuća mudrosti“), osnovana od privatne zbirke za potrebe obrazovanog društva s preko 10 tisuća svezaka, koja je preživjela pljačke Seldžuka sredinom 11. stoljeća, ali ne i požar 1059.; škola Nizamiyah, Perzijanca Nizam al-Mulka, vezira Seldžuka koja nastavila djelovati i nakon mongolske opsade, a jednom od najbogatijih i najvećih ju je učinio kalif al-Nair; i konačno medresa Mustansiriya s vrlo bogatom knjižnicom koji je osnovao pretposljedni kalif Abasida al-Mustansir kako bi zasjenio Nizamiyah, navodno potrošivši dvija vagona zlata za izgradnju nastojeći privući svojoj grandioznošću studente i istraživače (i besplatnim pisaljkama, papirom i svjetiljkama). Takve ustanove su služile kao okupljališta intelektualaca i mjesta s kojih se širi znanje.

nical terms. They often noted their commentaries, thus adding to the library, and the catalogue listed their names for credits. Mathematicians who were active at the time include al-Khwarizmi, known for the development of algebra, and the brothers Banu Musa, who made the “instrument that plays itself” - the first programmable machine. Also, the commissioners of the libraries, experts in their fields, were sent to foreign countries to collect and buy books. Their occupation was to be a prestigious one (there were always at least two librarians).

Other distinguished institutions include: the Sabiir Ibn Ardashir’s library and academy (also the “House of Wisdom”), founded from private collections for the needs of an educated society with over 10,000 volumes, which survived the pillage of Seljuks in the mid-11th century, but not the fire in 1059; the Nizamiye School of the Persian Nizam al-Mulk, vizier of the Seljuk which continued to operate even after the Mongol siege, and was made one of the richest by Caliph al-Nair; and finally Mustansiriya Madrasa with a very rich library, which was founded by Abbasid Caliph penultimate al-Mustansir in order to overshadow Nizamiye, reportedly spending two tanks of gold for the construction to try to get his students’ and researchers’ attention with his grandiosity (and free pens and paper lamps). Such institutions served as gathering places for the intellectuals and places to disseminate knowledge.

Srednji i novi vijek

U srednjem vijeku u Europi knjižnice su bile povezane uglavnom sa samostanima, crkvama, vjerskim načinom života, iako su nastale na temelju mnogo starijih (npr. rimskih). Na primjer samostani kao što je Bobbio, San Silvestro di Nonantola, Farfa, Monte Cassino (Italija), Fulda, Reichenau, St. Gall, St. Emmeram (Njemačka) i Tours, Corbie, St. Riquier, St. Benigne, Cluny (Francuska) i drugi, su imali vlastite knjižnice. Ciceronov opis knjižnica njegova doba i danas se odražava u Vatikanskoj knjižnici (ormari, drvene preše, sobe za učenje pokraj velikih centralnih dvorana, odvojene grčka i latinska dje-

Middle Ages and Modern Times

In the Middle Ages the libraries in Europe were mainly attached to the monasteries, churches and the religious way of life even though they were designed according to much older ones (e.g. the Roman libraries). For example, the monasteries like Bobbio, San Silvestro di Nonantola, Farfa, Monte Cassino (Italy), Fulda, Reichenau, St. Gall, St. Emmeram (Germany) and Tours, Corbie, St. Riquier, St. Benigne, Cluny (France) etc. had their own libraries. Cicero’s description of the libraries of his time is reflected in the Vatican library even today (book cabinets, wooden presses, studies adjacent to the big central halls, separated Greek form Latin works

la itd.). Važnost se očituje i u izreci: *Claustrum sine armario est quasi castrum sine armamentario* - Samostan bez police (knjiga) je kao utvrda bez oružarnice. Samostani su bili sve privlačniji ljudima koji su u ratnim vremenima i životnim prilikama spas vidjeli u onostranome. S druge strane upravo su zbog različitih vjerskih pokreta i sekti knjižnice često stradavale. Predaja govori kako niti same knjižnice nisu bile najsigurnije mjesto na primjeru pape Ivana XXI, kojemu je strop knjižnice kojoj je bio zaštitnik pao na glavu.

Redovnici su prepisivali knjige u skriptoriju, čime su zapravo spasili mnoga starija djela i utrli put renesansni jer su imali povlasticu vidjeti i djela „poganskih" autora. Prepisivali su kako bi lakše zapamtili i kasnije recitirali tekstove, tj. spajali su rad i molitvu u jedno. Sličan primjer nalazimo i u Kini, gdje je navodni ideal bio vezanje glave redovnika za grede nad glavom, tako da ga uže povuče za kosu ukoliko zaspu. Knjige su prepisivane u takozvanom pultsistemu: poznati prikaz velike dvorane s puno stolova u nizu gdje redovnici u tišinu prepisuju djela. Knjižnice su zapravo bili ormari i police u kojima su se djela čuvala, a najveći dio korpusa činilo je Sveto pismo na raznim jezicima, poput grčkog ili koptskog. One su najčešće bile oskudne, u usporedbi s ranijima, sadržavajući najviše nekoliko stotina primjeraka. Kasnije su narasle: na primjer knjižnica bratstva Kristove crkve u Cantenburryju imala je stotinjak primjeraka u 9. i 10. stoljeću, a 2000 svezaka u 14. stoljeću. One nisu služile isključivo redovničkoj, nego i široj zajednici. Neki redovi su imali zavjet šutnje te su knjigama širili svoje ideje. Međutim, i u srednjem vijeku su se knjižnice ponekad formirale zbog društvenog ugleda, a ne radi širenja i čuvanja znanja. Rimska augustinska biblioteka Angelica, nazvana po svojem tvorcu Angelu Rocci, bila je jedna od prvih, rijetkih javnih knjižnica u Europi.

Tiskarski stroj naglo je povećao broj knjiga. Neki su to smatrali dobrodošlom promjenom, jer dotada su ručno prepisivane. S druge strane, pravi bibliofili su bili protiv tiskanih djela te su u daljnjem prepisivanju vidjeli borbu protiv besposličarenja redovnika. Iako su knjige i dalje bile skupe, često su dobivali na poklon pri-

etc.). Their importance is epitomised in the adage: *Claustrum sine armario est quasi castrum sine armamentario* – A cloister without a library is like a castle without an armoury. The monasteries were even more attractive to people in time of war as they saw salvation on the other side. However, the libraries were often ravaged by various sects and religious movements. The story of Pope John III tells us that the libraries were not the safest places after all. The ceiling of the library he was the patron of collapsed and killed him.

The monks were copying books in the scriptoria and in this way saved many older works thus paving the way for the Renaissance as they had access to the works of pagan authors. They copied the texts in order to memorize them more easily and later recite them, i.e. they merged the work and prayer into one. A similar example is found in China where monks would tie their hair to the beam above their heads so that the rope would pull them if they fell asleep. The books were copied in the multiple-desk rooms: a popular image of a big hall filled with desks and monks copying books in silence. The libraries were, in fact, bookcases and shelves where the books were kept, and the biggest part of the holdings were copies of the Holy Script in various languages like Greek or Coptic. They were usually very modest compared to the earlier ones, having no more than several hundred books. They grew over time: e.g. the Christ Church library in Canterbury had around one hundred books in the 9th and the 10th century and around 2,000 in the 14th century. They were not used only by the monks but also by a wider community. Some orders had a vow of silence so they disseminated their ideas by means of books. However, in the Middle Ages the libraries were sometimes founded to achieve social status and not for the sake of disseminating and preserving knowledge. The Augustine Biblioteca Angelica in Rome, which was named after Angelo Rocca who established it, was one of the first public libraries in Europe.

The printing press contributed to the sudden rise in the number of the books. Some saw it as a welcome change since until then the books were copied by hand. On the other hand, the true bibliophiles were against printed books as in further copying books they saw a way of preventing idleness among monks. Although the books were still expensive

mjerke od same tiskare, a dijelile su se na Staru i Novu knjižnicu, tj. tiskane nasuprot manuskripta. Zbog toga se javila potreba i za novim klasifikacijskim i upravljačkim sistemima zbirki, procedurama za brigu i upotrebu. Period 15. i 16. stoljeća naziva se upravo stoga erom knjižnica. One nisu nužno imale alfabetski sistem, pa su često bile konfuzne i neadekvatne kad se omogućio pristup. Na primjer, u jednom kodeksu se moglo nalaziti nekoliko djela, ali se u inventaru navodilo samo prvo. Kad knjižnica naraste na 200 do 300 primjeraka, knjižničar nije bio u mogućnosti pamtiti njihov smještaj. Prior Louber iz kartuzijanske knjižnice u Bazelu sastavio je upute knjižničarima, budući da je za svog „mandata" prikupio više od 1200 svezaka. Cisterciti, augustinci ili pripadnici premonstratenskog reda su brinuli o povećanju zbirki, bilježili cirkulacije djela i popravljali oštećenja. Misija redova obvezivala je redovnike na posudbu drugim samostanima, ali i privatnicima, što je često rezultiralo krađom. To se nije odnosilo na sve knjige, pa su se one koji nisu za posudbu vezale lancima.

Knjižnica Bodleiana u Oxfordu jedna je od prvih koja je koristila „zidni sistem" polica za smještaj novih knjiga, koje su se protezale do stropova, a prilazilo im se pomoću galerija ili ljestava. I vladari su težili sakupljanju knjiga, a svoje knjižnice su obogaćivali na različite načine. Na primjer, Luj XII. preselio je knjižnicu milanskog vojvode Sforza u svoj grad Blois, a kasnije je spojena s kraljevskom u Fontainebleauu. Dok je poznati kardinal Richelieu smatrao da knjižnica treba biti dostupna širem krugu, njegov nasljednik Mazarin također je posjedovanje knjižnice smatrao pokazivanjem društvenog položaja. Knjižnice sve više stječu današnji izgled i karakter.

Kasnije, nakon francuske revolucije sve se te knjižnice objedinjuju u državne, velike knjižnice čiji je zadatak da promoviraju i potkrepljuju pobuđenu nacionalnu svijest. Revolucionarna zbivanja bolje su preživjele crkvene nego privatne knjižnice, a konfiscirane su pod opravdanjem „obogaćivanja" cijelog naroda, a ne samo pojedinaca, dok su oduzimane strancima, emigrantima i klericima. Slična praksa se može vidjeti i u Britaniji koja 1850. godine donosi

the libraries often received free copies from printing presses, and were divided into Old Libraries and New Libraries; i.e. containing manuscripts or printed books. Therefore, the need for the new classification, new library holdings management systems, and the procedures for safe-keeping and maintenance emerged. The 15th and 16th centuries are therefore called the Library Era. They did not necessarily have the alphabetical system, were often chaotic and had inadequate access. For example, there could be several books in one codex but only the first one was on the inventory list. When the number of books in a library exceeds 200-300 copies, a librarian is no longer able to remember their position. The Prior Louber from the Carthusian library in Basel wrote the librarian's manual since he collected more than 1,200 volumes during his "term of office". The Cistercians and Augustans or the priests of the Premonstraten'sian order took care of collections enlargements, kept track of the books' circulation and repaired damaged books. The mission of the orders obliged the monks to lend the books to other monasteries but also to private persons which often resulted in theft. This did not refer to all the books, so those which couldn't be lent out were chained.

The Bodleian Library in Oxford was one of the first libraries to use the "wall system" of shelves for new books. The shelves went all the way up to the ceiling and were accessed through galleries or by using ladders. The rulers also strived to collect books, and were enriching them in various ways. For example, Louis XII moved the library of Ludovico Sforza, Duke of Milan to the city of Blois. The library was later on merged with the royal library in Fontainebleau. While the Cardinal Richelieu considered that the libraries should be at disposal to wider public, his successor Mazarin believed the libraries were the symbols of social status. Over time the libraries took the shape and character of the present day's libraries.

After the French Revolution all libraries were merged into big state libraries. Their mission was to promote and support the revived national consciousness. The church libraries survived the Revolutionary turmoil much better than the private libraries as they were confiscated from foreign citizens, immigrants and clergy under the excuse of "enriching" the whole nation rather than the in-

Akt parlamenta kojim osniva javne knjižnice u nadleštvu države. Na tim temeljima nastale su mnoge današnje nacionalne knjižnice poput British Library, Deutsche Nationalbibliothek, Bibliothèque nationale de France.

dividuals. Similar practice could be seen in Great Britain. In accordance with the Public Libraries Act from 1850 public libraries were established and came under state jurisdiction. Many modern national libraries such as the British Library, Deutsche Nationalbibliothek and Bibliothèque nationale de France were built on these foundations.

Indija

U Indiji su vladari i pripadnici viših slojeva također posjedovanje knjižnice smatrali prestižem. Orijentalne knjige su naročito cijenili sultani iz Delhija koji su bili zaštitnici pjesnicima i znanstvenicima te su gomilali djela (danas imaju oko 100 000 arapskih djela). U čuvenom budističkom hramu Mahavihara iz kraljevstva Magadha nalazio se centar istraživanja i znanosti. Privlačio je učenike i znanstvenike iz Tibeta, Kine, Koreje, centralne Azije, Perzije, Indonezije i drugih mjesta. Većinu knjiga napisali su hodočasnici i redovnici od sedmog stoljeća nadalje, uglavnom sljedbenici Mahajana budizma. Istraživali su i Vede, logiku, gramatiku, filologiju, medicinu, pravo, astronomiju, urbanizam i drugo. Čitavo mjesto opremljeno je parkovima, hramovima, predavaonicama, dvoranama za meditaciju, spavaonicama za preko 10 000 studenata i 2000 učitelja. Također je imalo impresivnu knjižnicu nazvanu Dharmaganja, koja se protezala kroz tri višekatnice: Ratnasagara (Ocean dragulja), Ratnodadhi (More dragulja) i Ratnaranjaka (Ukrašena draguljima). Ratnodadhi je imala devet katova i čuvala je najsvetije rukopise poput Prajnaparamita Sutre i Guhyasamajae. Ne može se ustanoviti točan broj djela, ali se smatra da ih je bilo nekoliko stotina tisuća. Budistički tekstovi su se vjerojatno klasificirali po sistemu Tripitaka (tri košare) podjele kanona: Vinaya, Sutra i Abhidhamma. Za razliku od europskih i bliskoistočnih čini se da je uloga knjižničara bila nepoznata do dolaska Britanaca u 19. stoljeću. Oko 1200. hram su vjerojatno opljačkali Mameluci, iako je još neko vrijeme djelovao, ali se s vremenom ugasio.

India

On the other side of the world, similar processes occurred. The rulers and the ruling elite in India also considered owning a library as a symbol of prestige. Oriental books were valued by sultans of Delhi, who were the patrons to poets and scientists, and book collectors (today there are around 100,000 works of Arabic literature in their collection). The centre for research and sciences was located in the famous Buddhist monastery Mahavihara, in the Kingdom of Magadha. The monastery attracted scholars and scientists from Tibet, China, Korea, central Asia, Persia, Indonesia etc. Most books were written by pilgrims and monks (usually Mahajana Buddhists), from the 7th century. They studied the Vedas, logic, grammar, philology, medicine, law, astronomy, urban planning etc. The settlement had numerous parks, temples, lecture halls, meditation rooms, and sleeping quarters for more than 10,000 students and 2,000 teachers. There was also an impressive library, Dharmaganja, which occupied three multi-storey buildings: Ratnasagara (Ocean of Jewels), Ratnodadhi (Sea of Jewels) and Ratnaranjaka (Jewel-adorned). Ratnodadhi was nine storeys high and it housed the most sacred manuscripts, such as the Prajnaparamita Sutre and Guhyasamajae. The exact number of volumes in the library cannot be determined, but it is estimated to have had hundreds of thousands. The Buddhist texts were probably divided into three categories, based on the Tripitaka canon (three baskets): Vinaya, Sutra and Abhidhamma. Unlike Europe or the Near East, the role of a librarian in Indiaseems to have been unknown until the arrival of the British in the 19th century. Around year 1200 AD, the monastery was sacked, probably by the Mamluks. The monastery continued for a while after the attack, but it was soon dissolved.

Kina

Točan početak pisanja u Kini je nepoznat, ali se čini da su od samih početaka knjige i dokumenti spremani. Knjižnice nisu bile javne ustanove, nego su služile isključivo za pohranu knjiga, dostupnih samo uskom krugu ljudi poput školske aristokracije i visokih dužnosnika. Iz toga razloga nije postojala pozicija knjižničara u današnjem smislu.

U dinastiji Song oko 960.-1279. osnovan je muzej/knjižnica u kojemu su pohranjene stele s napisanim raznim djelima iz kineske povijesti. Djela su se počela klesati na kamen nakon spaljivanja koje je provodio car Qin Shi Huang (260.–210. pr. Kr.), kako bi se očuvala, a to su provodili pripadnici obrazovanih viših slojeva. Ti intelektualci i dužnosnici su se nazivali Shi (povjesničari) i Wu (proroci). S kamenih stela su radili otiske na papir trljanjem, tehnikom koju su poznavali i Etruščani i Egipćani. Djela su bila raznovrsnog karaktera, poput prikaza i naziva svemira i planeta ili Sedam Konfucijevih klasika, otisnuto za dinastije Han (206. pr. Kr.–220.). Zahvaljujući i stelama i otiscima, mnoga djela koja više nisu čitljiva sačuvana su kasnijim kopiranjem s originalnih kamena. Shi i Wu su pisali rodoslovlja vladara, vodili državne knjige i bilježili važne događaje ili prirodne pojave. Bila su potrebna skladišta za pohranu tih zapisa, kao i sistem njihove organizacije i čuvanja, a knjižničari su osobe koje šire kulturu diljem zemlje. Lao Tzu na primjer bio je jedan od takvih dužnosnika, a po predaji, i sam mu je Konfucije dolazio na konzultacije.

Razvoj knjižnica, pisanje i prepisivanje knjiga nisu ometali ni ratovi niti prirodne katastrofe. U takvim bi se ekstremnim slučajevima razvijale privatne knjižnice društvenog sloja Shi, maloposjednika ili učenih ljudi sa željom širenja znanja i vještina pisanja, koji su zatim vrlo često i izdavali i sakupljali knjige. Na primjer, Mao Jin (1599.-1659.) je uz izdavačku djelatnost prikupio oko 80000 svezaka. Kao i u drugim dijelovima svijeta, posjedovanje knjižnice smatralo se društveno uglednim. Car Han Wuti (140.-187. pr. Kr.) iz dinastije Han uveo je politiku skupljana i čuvanja knjiga te osnivanja državnih knjižnica. One su bile klasificirane u

China

In China books and documents were collected since the beginnings of civilisation. Early libraries in China were not public institutions, but the depositories for books, open only to a small number of people, such as gentry scholars and high government officials. For that reason, there was no need for librarians as they exist today.

During the Song period, around 960/1279 AD, a museum/library was "founded" for collecting and storing stelae containing various Chinese works of literature. The tradition of carving literary works in stone in order to preserve them was encouraged by educated elites. The said tradition started after a wide-scale burning of books and documents under Emperor Qin Shi Huang (260-210 BC), and was conducted by intellectuals and officials called the Shi (historians) and the Wu (diviners). They made copies of stelae by stone rubbing, a technique known to the Egyptians and the Etruscans. The written works covered different topics, from depictions and names of celestial objects to the Five Classics of Confucius, copied during the Han period (206 BC-220 AD). The original inscriptions in stone, as well as their prints, were later copied, preserving the texts until the present. The Shi and the Wu also managed the genealogies of the imperial kinsmen, issued official documents, and recorded important events or natural phenomena. The depositories were needed for storing their written works, which required a system to be invented in order to organize and sort them, giving rise to librarians as an occupation for disseminating culture. Lao Tzu was a librarian and, according to a legend, even Confucius sought his advice.

The development of libraries and writing and copying of books were not deterred either by wars or natural disasters. In extreme situations, private libraries would be founded by the Shi, landowners or educated individuals with a desire to disseminate knowledge and writing, and who would then collect and publish the books. For example, Mao Jin (1599-1659) collected around 80,000 volumes. As in other parts of the world, owning a library was seen as prestigious. Emperor Wu of Han (187-140 BC) supported the collection and preservation of books and started founding state libraries. They were classified as follows: the Liu Yi (The Six Arts),

šest kategorija: Liu Yi (šest klasika Konfucija), Zhu Zi (razni filozofi), Shi Fu (poezija i rimovana proza), Bing Shu (umijeće ratovanja), Shu Shu (znanost i okultno), Fang Ji (medicina). Tijekom dinastije Qing (1644.–1911.) sastavljena su monumentalna djela poput Gujin Tu Shuji Chen (Velika enciklopedija drevnog i modernog znanja) i Si Ku Quan Shu (Kompletna knjižnica četiri blaga), u kojima su zastupljeni razni pisci.

Svi navedeni primjeri ilustriraju razvojni put koji su knjižnice prošle. Kao i u prošlosti, današnje ustanove se nalaze pred izazovom novih tehnologija i primjena, kojima se svakako moraju prilagoditi ako žele opstati. Naravno, kako bi se postiglo optimalno rješenje nužna je suradnja s drugim disciplinama koje imaju iskustva u svladavanju sličnih prepreka, pritom imajući na umu okruženje, korisnike i kontekst kao i pouke iz prošlosti.

the Zhu Zi (early philosophers), the Shi Fu (poetry and rhymed prose), the Bing Shu (the art of war), the Shu Shu (science and the occult), and the Fang Ji (medicine). During the Qing period (1644–1911), monumental works were composed, such as the Gujin Tushu Jicheng (Complete Collection of Illustrations and Writings from the Earliest to Current Times) and the Siku Quanshu (Complete Library of the Four Treasuries), both written by many authors.

Each of the above examples illustrates the development of libraries from their beginnings to the present. Today, libraries are facing new challenges in the form of the new technology and applications, to which they have to adapt if they are to survive. In order to achieve the best possible solution, the cooperation with other disciplines which have dealt with similar obstacles, is needed, keeping in mind particular needs, users and the context, as well as the lessons learnt from the past.

Svete knjige i magija pisane riječi

Holy Books and the Magic of the Written Word

Igor Uranić

Religiozni tekstovi poznati kao „sveta pisma“ ili „svete knjige“ pokušaj su širenja domene religije u sferu pisma. Vjeruje se da iza sadržaja tih zapisa stoje bogovi ili bog, odnosno proroci i sveci koji su ih napisali potaknuti božanskim nadahnućem. Ta se vjerovanja posebno odnosne na religije koje se oslanjaju na jednu ili više svetih knjiga u smislu neupitnog autoriteta. U prvom redu to su kršćanstvo i islam, oslonjeni na Bibliju i Kur'an, dok u judaizmu postoji nekoliko svetih knjiga, Tora, Nevi'im i Ketuvim. Nastanak pojedinih svetih knjiga obično je povezan sa složenim religiozno–mitskim dokazima kako nauk sadržan u pojedinim svetim tekstovima potječe izravno od Boga. S druge strane, u svijetu znanosti, saznanja o nastanku svetih tekstova temom su složenih multidisciplinarnih istraživanja koja uzimaju u obzir analize mogućeg vremena nastanka i autorstva pojedinih tekstova. U svemu povezanome s tom temom, uzmemo li govoriti samo o Bibliji i njezinim tekstovima, već nalazimo niz problema, ne samo u identifikaciji autora i dataciji tekstova, već i postojanju ranijih verzija, recenzija i cenzura danas poznatih tekstova iz toga fundusa. Glavnina suvremenih znanstvenih analiza posvećena je kanonskim, tekstovima uvrštenim u Bibliju.

Religious texts known as “holy letters” or “holly books” were an attempt to broaden the domain of religion into the sphere of scripts. The scriptures were attributed to gods or God, that is to the prophets or the saints who wrote them enlightened by divine inspiration. Such beliefs are particularly related to the religions which are based on one or more holy books as unquestionable authorities. These are, in the first place, Christianity and Islam relying on the Bible and the Qur'an, while in Judaism there are several holy books, i.e. Torah, Nevi'im and Ketuvim. The origins of the holy books are usually related to the complex mythical testimonies claiming that the teachings contained in some holy scriptures come straight from God himself. On the other hand, in the world of science, the understanding of the origins of the Holy Scriptures is the subject of the multifarious and multidisciplinary studies which are focusing on the analyses of the possible time of their creation and authorship. In everything related to this topic, even if we only choose to talk about the Bible and its texts, we are faced with a number of problems, not only related to their dating but also to the existence of the earlier versions, reviews, and censures. The majority of the contemporary scientific analyses focus on the canonical texts of the Bible.

U hinduizmu i budizmu pitanje svetih tekstova nešto je složenije, jer se te religije ne oslanjaju na jednu određenu svetu knjigu. Na primjer, hinduisti imaju niz tekstova sakralnoga karaktera poput Veda i Purana, dok budisti imaju Tripitaku, koju međutim dalje razvijaju druga pisana djela (sutre) mnogih inačica te religije, među kojima su glavni pravci hinayana, mahayana i vajrayana, kojima pripadaju zasebni opusi tekstova. U sveta pisma kultura staroga vijeka mogla bi se ubrojiti neka djela poput mitova o postanku iz Egipta i Mezopotamije, dok u antičkim kulturama Grčke i Rima takav književno-sakralni kontekst ne prepoznajemo.

Kur'an je sveobuhvatna sveta knjiga koja sadrži i društvene i pravne norme, svojevrsni ustav ili zbirka svih temeljnih vrijednosti muslimana. Biblija je, s druge strane, shvaćena kao apsolutni autoritet u tumačenju kršćanske vjere. U ideji svake svete knjige nalazimo potrebu za vidljivim i fizički dostupnim autoritetom koji svjedoči o „Božjoj volji" i svojevrsnome etičkom kodeksu za vjernike. Iz toga slijedi da je uporaba pisma iznimno važna u djelovanju svjetskih religija i njihovom standardiziranju. Naime, prije kanonizacije Biblije postojalo je niz verzija njezinih tekstova, kao i mnogi sada trajno odbačeni, apokrifi koji su nekad bili integralnim dijelom kršćanskoga religioznog opusa. Takvim se poimanjem svetim pismima i knjigama pridaje nadnaravan karakter, odnosno porijeklo, te pismo postaje sredstvom izražavanja ne samo ljudi nego i Boga.

Dakle, i jezik i pismo medij su mitskoga promišljanja o utjecaju tih saznanja na naš svijet, a osobito čovjeka. U tome sadržajnom slijedu koji započinje stvaralačkom riječju i božanskim porijeklom pisma logična je pojava svetih knjiga. Njihovim definiranjem i kanoniziranjem pojedina religija svoj nauk i vjerovanje čini konačnim. No od toga aspekta institucionalizacije religije uz pomoć svetih tekstova, životniji je običaj korištenja i poimanja pisama kao medija magijske i duhovne moći. Postojanje takve uloge pisma možemo najizravnije nazvati magijom pisane riječi, a porijeklo joj je u starome vijeku.

Vjerovanje da se izgovaranjem „svetih riječi" mogu postići čudesni učinci na onoga koji ih koristi, ali i vanjski svijet, raširenо je od naj-

In Hinduism and Buddhism the issue of Holy Scriptures is somewhat more complex since these religions do not rely on one holy book only. For example, Hinduism has a series of holy scriptures like Vedas and Puranas, while Buddhism has only Tripitaka which is further developed into other scriptures (sutra) of many variants of this religion, among which the most important are Hinayana, Mahayana and Vajrayana with their respective collections of texts. Some of the texts like the Egyptian and Mesopotamian myths about the creation of the World and the Universe can also be considered as scriptures, while in Ancient Greece and Rome such literary and sacral context is not recognized.

Qur'an is the central holy book outlining social and legal norms, a form of a Constitution or a collection of all fundamental values of the Muslims. The Bible is, on the other hand, perceived as the absolute authority on the interpretation of Christian faith. In the concept of each holy book the need for a visible and physically accessible authority who gives testimony of "God's Will" and a kind of the ethical codex for believers is present. Hence, the use of scripts is extremely important in religious practices all over the world and in the process of their standardization. Namely, prior to the canonization of the Bible there were numerous versions of Biblical texts, many of which have been permanently discarded and Apocrypha which once had been the integral part of the Christian religious texts. Holy scriptures and books were attributed supernatural qualities and origins, consequently the script became an instrument of expressing ideas not only used by ordinary people but God as well.

Therefore, both the language and the script are the media of mythical contemplation of the influence of these concepts on our world and especially man. In this contextual seriation which begins with the Creator's word and the divine origin of the script, the advent of scriptures is only logical. By their defining and canonization the religions make their teachings and beliefs absolute. The custom of using and understanding scripts as the media of magical and spiritual powers is more significant than the aspect of the institutionalisation of religion by means of the texts. The existence of such a role of scripts can be straightforwardly called the magic of the written word, and it dates from Antiquity.

ranijih faza razvoja pisma. Vjerojatno se ta praksa primjenjivala i u pretpovijesti, naime u obliku usmene predaje prije postojanja pisma. Stvaranje svijeta izgovaranjem riječi u Bibliji i egipatskoj *Memfiskoj teologiji* shvaćeno je kao ultimativni čin magije. No stvaranjem svijeta ne nestaje metoda rezonancije riječi s prirodom u koju stari narodi vjeruju, već se udaljeni odjeci kreativne božanske riječi prenose i na ljudske moći čaranja i magije. Pisma postaju mediji za prijenos i te tradicije koju možemo pratiti u više kultura i kroz prilično dug vremenski period. Religiozno-magijski značaj pisma pokazuje se bitnim elementom u interesu vladarskih slojeva za pisanu riječ i širenju pismenosti. U Egiptu arhajskoga razdoblja, ime koje je bilo napisano značilo je magijsku snagu samo po sebi, pa rani vladari graviraju svoja imena na raznim materijalima na mnogo mjesta. Tradicija moći napisanoga imena razvila se do pisanja kraljevskih imena u serehe (kvadratne okvire u koje se pišu imena vladara arhajskoga doba i ranih dinastija) i kasnije kartuše (ovalne okvire koji su dobili ime po francuskom nazivu kutija za streljivo, jer su isprva bile papirnate). Budući da se vjerovalo kako imena, pogotovo uspješnih vladara, privlače na sebe značajne zaštitničke moći, i ostali ljudi uobičajeno su nosili nakit i amulete s kraljevskim imenima. Često se u njihovu zaštitničku moć vjerovalo i stoljećima nakon smrti vladara.

Kad je riječ o dostupnosti svetoga u pismu, isto vrijedi i za samu vještinu čitanja i pisanja. Ona u Egiptu od Staroga kraljevstva intelektualnu elitu koja se ističe znanjem o tajnama skrivenim nepismenoj većini. U okvirima toga znanja bilo je i znanje o svetim zapisima mitskoga i obrednoga karaktera – prvog ezoteričnog opusa u povijesti. Tekstovi toga tipa su na primjer Tekstovi piramida, odnosno Knjige izlaska na dan (poznatije kao Knjige mrtvih), te različite knjige oslikane na zidovima grobnica poznate pod imenom Amduat. Kako bi unutar elite pisara stvorili hijerarhijsko razlikovanje, ti se tekstovi pišu šifriranim jezikom. Na primjer, u nekim su knjigama hijeroglifski ili hijeratski znakovi napisani obrnutim redoslijedom od uobičajenoga. U drugim slučajevima pojedine riječi su napisane na neobičan način, ili se pojavljuju determinativi koji se inače nisu koristili. Šifriranje

The belief that uttering the "holy words" can have magical effects on those using them as well as on the outer world has been widespread ever since the first phases of the development of script. That must have been the adopted practice even in the pre-history; i.e. in the form of Oral Lore. The creation of the world by uttering the words in the Bible and the Egyptian Memphite Theology is perceived as the ultimate act of magic. But with the creation of the world the method of resonance between words and nature, which old peoples believed in, did not disappear; the remote echoes of the creative divine words were translated to the human powers of performing magic and magical deeds. Scripts became the media for carrying the traditions that could be observed in various cultures over a rather long period of time. The ruling elite found religious and magical significance of scripts to be of great importance in their interest for the written word and spreading literacy. In the Archaic Period of Egypt, the name which was written had magical power in itself, so the early rulers engraved their names in various materials and numerous places. The tradition of the power of a written name evolved into writing royal names into serekhs (rectangular frames in which the names of the Pharaohs in the Archaic Period and the time of early dynasties were written) and later into cartouches (oval frames named after a muzzle-loading firearm's powder cartridges since they were initially made of paper). Since it was believed that the names, especially of successful rulers, attracted significant protective powers, ordinary people also used to wear jewellery and amulets with royal names inscribed on them. Their protective power was believed to last for centuries after the death of the royalty.

As far as the access to the holy matters in script is concerned, the same goes for reading and writing skills which distinguished the royal intellectual elite of the Early Dynastic Period as they had the insight into the secrets unknown to the illiterate majority. That insight encompassed the knowledge of the holy texts of mythical and ritual nature - the first esoteric opus in history. The texts of that kind were the Pyramid Texts, i.e. Book of Emerging Forth into the Light (better known as the Book of the Dead) and various texts inscribed on the walls of the tombs under the name of Amduat. In order to create a kind of a hierarchy among the scribal elite, those texts were written in an encoded language. For example,

je doseglo vrhunac u ptolemejskom razdoblju (332.-30. pr. Kr.). U to su doba na zidove hramova napisani mnogi sakralni tekstovi, na primjer neki rituali, odnosno kozmogeneze, o kojima nemamo podatke iz ranijih razdoblja. Do te su mjere šifrirani da bismo mogli zaključiti da je svaki pojedini hram razvio vlastiti, gotovo autohtoni način pisanja.

Prema egipatskim vjerovanjima, napisana i pročitana riječ je kreativna. Iz toga proizlaze umijeća oživljavanja božanskih kipova, odnosno prizivanja bogova ili teurgije (gr. Θεουργία= božansko djelovanje, prema neoplatonistima: oblik magijske prakse čije porijeklo se pripisuje Egipćanima), i darovanje žrtava invokacijskom formulom prt-Hrw („izlaženje glasa"). O ovom drugome svjedoči bezbroj zapisa na pogrebnim stelama na kojima je zapisana formula Htp-diniswt („kraljevska žrtva") koju treba izgovoriti kako bi se hrana i drugi darovi koji se imenuju transformirali u svoj duhovni oblik i postali dostupni duši pokojnika. O riječima magijskim izričajima (eg. hekau) govore mnogi tekstovi, a među poznatijima je anegdota iz djela Priče iz doba Hufua, u kojoj čarobnjak Dedi izgovara riječi moći kako bi oživio gusku kojoj je prethodno odsjekao glavu. S druge strane, o značenju tradicije magijskih tekstova govori priča s jednog demotskog papirusa o mladom kraljeviću Setni Haemuasetu, koji u nekoj grobnici nalazi papirus s riječima moći. Na početku priče stariji svećenik Ptaha na dvoru poziva Haemuaseta da nauči vještinu korištenja magije zapisanu na jednom papirusu skrivenome u nekoj grobnici. Haemuaset je bio povijesna osoba – sin Ramzesa II., Ptahov svećenik koji je slovio za velikog mudraca, no priče koje su mu posvećene su iz mnogo kasnijih razdoblja. Izričajima iz toga teksta, kaže svećenik mladome princu, moguće je upravljati snagom, neba, zemlje, i vode. I natjerati ribe da isplivaju na površinu kao bi ih se vidjelo. A postoji i posebna formula uz pomoć koje je moguće nakon smrti ponovno uzeti ljudski oblik. On mu kaže da je knjigu napisao sam bog Tot, i da je treba pronaći u nekropoli Nefer-ka-Ptaha u Memfisu. Haemuaset i njegov brat nalaze grobnicu i, otvorivši je pomoću magije, razgovaraju s umrlima koji u njoj počivaju. Duh žene Ahure priča im o svojem životu te ih uvjerava da knjiga donosi nesreću, preklinju-

in some books the hieroglyphic or hieratic signs were written in the reversed order. In other cases some words were written in an unusual way, or the determinatives appeared which were otherwise not used. Encoding reached its peak in the Ptolemaic Period (332-30 BC). At that time many religious texts were written on the walls of the temples, e.g. rituals evoking Cosmogenesis, while we know nothing about the earlier period rites. They were encoded to such an extent that we might conclude that each temple developed their own almost autochthonous way of writing.

According to the Egyptian beliefs, the written and uttered word is creative. Hence, the art of resurrecting divine statues, i.e. the practice of invoking divinities or theurghy (Greek Θεουργία = divine-working, according to the Neoplatonists: a form of the magical practices whose origins are attributed to Egyptians), using the offering formula prt-Hrw ("a voice offering"). There are many texts found on funerary stelae with the inscription Htp-di-niswt ("a gift (offering) which the king gives") which has to be uttered so that the food and other named offerings could transform into their spiritual shape and become available to the soul of the deceased. Many texts speak about magical utterances (hekau). Among the most famous is the anecdote from The Stories from Khufu's Time in which the magician Dedi utters magical words in order to bring a dead goose back to life. On the other hand, a story written on a Demotic papyrus about young Prince Setna Haemuaset who found the papyri with magical words in one tomb illustrates the significance of the tradition of magical texts. At the beginning of the story the High Priest of Ptah invites Haemuaset to learn magical skills inscribed on a papyrus hidden in a tomb. Haemuaset was a historical person - the son of Ramesses II and Ptah's priest who was reputed to be a wise man, but the stories about him are of much later date. This text tells a story of the Priest who tells the young Prince that it is possible to seize the power of heaven, earth water, and make fish come to the surface to be seen. There is also a special formula which makes it possible to regain human shape after death. He tells him that the book was written by god Toth, and that he should find it in the necropolis of Nefer-ka-Ptah in Memphis. Haemuaset and his brother find the tomb and having it opened with the help of the magic, they talk to the dead who are laid to rest in it. The soul of the woman

ći ih da je ne uzmu. Njezin muž Nefer-ka-Ptah posjedovao je knjigu i koristio njezine čarolije, zbog čega je obitelj pratila zla kob te su Ahura i njezin sin skončali utopivši se u rijeci. Kasnije je ista sudbina snašla i Nefer-ka-Ptaha. Nakon kockanja s duhom Nefer–ka-Ptaha, Haemuaset postaje vlasnik knjige, no nakon nekoliko čuda i prevrata, ipak je mora vratiti u grobnicu, jer mu tako naređuje kralj.

U Egiptu su uobičajene kletve bačene na one koji pokušaju ući u tuđe grobnice i opljačkati ih. Početkom 20. stoljeća nastala je legenda o Tutankhamonovu prokletstvu, kad je nekoliko ljudi povezanih s otkrićem te faraonske grobnice umrlo relativno naglom smrću. U grobnici Itija iz prvog prijelaznog razdoblja (2180.-2055. pr. Kr.) nađen je jedan tekst koji prijeti mogućem provalniku da sam neće imati zagrobnoga života:

Neka bude zaboravljeno ime onoga tko se suprotstavi duhovima ahu (duhovi horizonta) i tko ne prepoznaje gospodara groblja. Neka bude zaboravljen među živima i među djecom svojom neka mu ne bude imena. Neka mu ne bude žrtvovana voda ni darovi za praznika uaga (slavlja povezana s pojavom zviježđa Oriona i uskrsnućem duše boga mrtvih), niti za ijednoga drugog blagdana u čast mrtvima. Neka bude suđen. Neka ga mrzi gradski bog i oni koji su mu bliski. Neka sva njegova dobra i kuću njegovu proguta plamen.

(Kóthay-Gulyás, 2007. 144.)

Ahura tells them about her life and tries to convince them that the book brings a curse and begs them not to take it. Her husband Nefer-ka-Ptah had had the book and used its magic only to bring ill fortune to his family as both Ahura and her son drowned in the river. Consequently Nefer-ka-Ptah meets the same fate. After gambling with the soul of Nefer-ka-Ptah, Haemuaset becomes the owner of the book, but after several miracles and turns of fortune he has to take it back to the tomb upon royal order.

In Egypt a curse was commonly cast upon those who attempted to break into the tombs and loot them. At the beginning of the 20th century a legend of the Tutankhamun's curse was born after several people related to the discovery of the tomb died. The text found in the tomb of 'Iti, dated from the First Intermediate period (2180-2055 BC threatens the intruder that he shall have no afterlife:

May the name of him who opposes the spirits ahu (the Spirits of the Horizon) and who does not recognize the lord of the necropolis be forgotten. May he be forgotten among the living and let there be no name of his amongst his children. May he be denied the offerings of water and gifts at the time of wag festivals (the festivals connected to the appearance of the Orion constellation and the resurrection of the souls of the dead) or any other festivities in honour of the dead. May he be judged. May he and those close to him be hated by the city god. May all his goods and his house perish in flames.

(Kóthay-Gulyás, 2007, 144)

Egipatska žrtvena formula Hetep-di-nisut, pogrebna stela Mentuhotepa (2055.-1650. pr. Kr.), AMZ / Egyptian offering formula Hetep-di-niswt - the funerary stela of Mentuhotep (2055-1650 BC), AMZ

Egipat je općenito bio civilizacija pisane riječi, svako napisano ime bilo je od značaja, a svaka izgovorena riječ u obredima od presudne važnosti za komunikaciju s bogovima odnosno zagrobni život. U Asurbanipalovoj knjižnici, otkrivenoj na nalazištu Kouyunjik gdje se nalazio grad Niniva u sjevernoj Mezopotamiji, sačuvano je oko 25 000 glinenih pločica sa zapisima. I u tom nalazu pronađeni su mnogi tekstovi magijsko-ritualnog karaktera. Među njima ploče koje se nazivaju „ritualnim tablama" jer sadrže konkretne upute kako praktično koristiti inkantacije i izričaje u magijsko-religioznim postupcima. Neki od tekstova (Tabla III) obraćaju se izravno bogu magije Marduku. Inače, pronađeni tekstovi potječu iz doba Sumerana i Akađana, a namjene su im vrlo različite. Na primjer prizivanje božanstava, liječenje, pročišćenje i traženje proročanstva. Tabla III iz te zbirke donosi tipičan tekst obrane od kletvi i uroka:

Priziv, učinak svake kletve na ovoga čovjeka, sina njegova boga, bit će poništen,
Kletva njegovoga oca i njegove majke,
Kletva oca njegova oca, i majke njegove majke,
Kletva brata ili sestre,
Kletva sedam generacija kuće njegove,
Kletva starih i mladih ...

(Reiner 1958. str. 19)

Egypt was on the whole a civilisation of the written word; each written name was of importance, each uttered word in rituals was crucial in the communication with gods in order to ensure afterlife. In the Library of Ashurbanipal, found near Kouyunjik at the site of the city of Ninivah in North Mesopotamia, around 25, 000 clay tablets with inscriptions have been preserved. Many of them refer to the practice of magic rituals. The tablets called "ritual tablets" are among them as they comprise precise instructions on how to use incantations and other utterances in magic rituals. Some of the texts (Tablet III) are addressed directly to Marduk, the god of magic. The found texts come from the Sumerians and Akkadians, and they had varied purposes. For example, addressing deities, medical treatments, cleansing and seeking prophecies. The Tablet III comprises a typical text to remove curses and spells:

Abatement, the effect of each curse cast upon this man, the son of his God, shall be abrogated,
The curse upon his father and his mother,
The curse upon his father's father and his mother's mother,
The curse upon his brother or sister,
The curse upon seven generations of his house,
The curse upon the old and the young ...

(Reiner, 1958, p. 19)

U Mezopotamiji se pronalazak pisma pripisivao božici Nisabi. Slično Egiptu, i u kulturama toga područja također se uočava izdvajanje elitne skupine pismenih ljudi, osobito svećenstva, koji se pojavljuju u ulogama tumača religije nebeskih pojava, znakova i drugih magijsko-religioznih predodžbi. U tome se opet očituje snažan utjecaj pisma na razvoj društva, ali i mnoštvo usporedbi u korištenju magijsko-sakralnih zapisa u različitim civilizacijama staroga vijeka.

U Rimskome Carstvu magija i čaranje bili su zabranjeni zakonom. Pa ipak, mnogi se okreću egzotičnim „vještinama", uglavnom uvezenim s istoka. Svijet antike u doba helenizma doživljava zasićenost vlastitom tradicijom pa, uz širenje njegove kulture prema istoku, svijet Grka i Rimljana biva preplavljen istočnim kultovima i raznim oblicima praznovjerja i vještina poput proricanja, alkemije i magije. Kao mnogo puta

In Mesopotamia the creation of script was attributed the goddess Nisaba. Similar to Egypt, in the cultures of that region the alienation of the literate elite, especially the priests who played the roles of interpreters of religion, of the divine appearances, signs and other magic rituals. This reflects a strong influence scripts had on the development of a society, but also many comparisons in using scripts containing magic rituals in various civilisations of antiquity.

In the Roman Empire magic and magical rituals were forbidden by law. Yet, many priests turned to esoteric "skills", mainly imported from the East. The world of antiquity in the Hellenistic period was satiated with its own tradition; hence, simultaneously with spreading their culture towards the East, the world of the Greeks and Romans was inundated by eastern cults and various superstitions, fortune-telling, alchemy and magic. As often in the history of

u povijesti civilizacije, i ovdje se očituje pobuna protiv tradicionalne religije. Tamo gdje bogovi zakažu, vještice i čarobnjaci možda mogu popraviti stvar, pa se građani Rima okreću magiji. Spomenimo i popularne rimske kletvene pločice (tzv. *tabellae defixionum*). Riječ je o tankim olovnim pločicama s urezanim tekstom kojim se od nadnaravnih sila traži pomoć ili osveta. Najčešće su se zapisi s pločica ticali osvete i nanošenja zla nekome, no često se posvećuju i ostvarenju željene ljubavne veze, unaprjeđenju posla, neutralizaciji političkih protivnika, odnosno sprječavanju neželjene trudnoće i tako dalje. Na kletvenim pločicama česte su kombinacije slike i teksta kojim se zazivaju podzemna božanstva, a u sklopu rituala se pločica, najčešće smotana ili savijena te probijena čavlom, polagala u grobove ili bacala u bunare i rijeke, a katkad prinosila u svetišta. Dakle, tekst napisan na kletvenu pločicu trebao je izazvati učinak posredstvom htoničkih božanstava i raznih duhovnih sila.

civilisation, it was a rebellion against traditional religion. Where the gods fail, witches and wizards can perhaps make amendments, so the ordinary people turn to magic. In such a context the Roman curse tablets (*tabellae defixionum*) should also be mentioned. The texts on these tablets were scratched on very thin sheets of lead. Most often the inscriptions on the tablets were related to seeking revenge or harming someone, but they were often meant to seek help in love matters (love spells), business matters, to neutralize political opponents or prevent unwanted pregnancy etc. The curse tablets were often the combinations of images and texts with the purpose of invoking deities. As a part of the ritual practices the tablets were often rolled or folded and pierced with nails, laid in graves or thrown into the wells or rivers and sometimes offered in sanctuaries as a sacrifice. Therefore, the text inscribed on a curse tablet was supposed to exert the effect by means of htonic deities and various spiritual forces.

Pisari i pisarski pribor

Scribes and Scribal Tools and Accessories

Porin Ščukanec Rezniček

Stari Egipat

Pisari u starome Egiptu od ranog su se djetinjstva obučavali u takozvanoj Kući života, gdje su se nalazile knjižnice/arhivi i učitelji pisanja. Pisarsko zvanje (pisar = eg. *zeš*) bilo je vrlo prestižno, a zapisi su se smatrali „riječima božjima". Pisar Heti zapisao je taj pogled: „Ne vidim kipara na zadatku ili da šalju zlatara, ali vidim kovača u teškom radu, na otvoru peći njegovi prsti su kao krokodilska koža, a smrad gori od ribljih jaja." Njihovo značenje se vidi i u velikom broju skulptura pisara popularnih od Staroga kraljevstva nadalje: čučeća figura sa svitkom papirusa u krilu i pisaljkom u rukama. Mnogi tekstovi spominju povlašteni položaj pisara, poput neplaćanja poreza, iako vrlo vjerojatno daju idealiziranu sliku. Sešat, božica pisanja i kćer ili žena Tota, izumitelja pisma, bilježila je život ljudi na listove svetog drva avokada i bila je službeni faraonski biograf. Iako dosad nisu pronađene sigurne potvrde, jer se školovanje održavalo na otvorenom, pretpostavlja se da su takve Kuće bile npr. u Ramezeju, Deir el-Medini, hramu Mut u Karnaku itd.

Ancient Egypt

The Ancient Egypt scribes were educated from early childhood in the so called House of Life which was run by priests and contained a library and archives. The scribal profession (scribe = Eg. *sesh*) was very prestigious, and the inscriptions were considered to be the "Words of God". The scribe Heti made a reference on it: "I do not see a sculptor on a mission or a goldsmith being sent on the task, but I see the blacksmith at his toil, at the mouth of his furnace his fingers like crocodile skin, and the stench worse than fish eggs." Their importance can be seen in a great number of sculptures of scribes which were popular from the Old Kingdom onwards: The seated scribe with a papyrus scroll in his lap and a stylus in his hand. Many texts describe the privileged position of the scribes (i.e. they did not have to pay taxes), but they probably give a somewhat idealized Pic.. Seshat, the goddess of writing and Thoth's daughter, the inventor of writing, kept records of everyday life on the leaves of the sacred avocado tree and was the official Pharaoh's scribe. Although it has not been confirmed with certainty, since the scribal schools had open-air classes, it is supposed that such Houses were in e.g. Ramesseum, Deir el-Medina, Mut temple in Karnak etc.

Potreba za školovanjem pojavila se s kompleksnom administracijom države te su se pisari unaprijed pripremali za dužnosti u državnom aparatu: izračun i bilježenje poreza, kalkulacije za gradnju, religijske tekstove itd. Međutim, nema dokaza da su škole imale isti sistem obrazovanja, tj. da su bile pod kontrolom i upravom države. Pronađeni su tekstovi na ostrakonima, keramičkim komadima koji su služili kao jeftina metoda za vježbanje pisanja, a koji su vjerojatno pisani na otvorenom unutar hramova ili palača. Kad su se dovoljno izvježbali, mogli su se okušati na skupljem i vrijednom papirusu. „Osnovna škola" trajala je četiri godine i nakon toga se stjecala titula pisara (počeli su s četiri ili pet godina), što nam govore sačuvani tekstovi, razni školski zadaci. Učenici su sjedili u grupi oko učitelja i recitacijom učili riječi ili u tišini prepisivali tekst koji je učitelj zadao. Prvotno su vježbali same znakove, a kasnije se specijaliziraju za određene poslove pod mentorom poput pisara Hori koji je bio „sluga vladara Hermopolisa" (Toth). Međutim, prvo su učili jednostavniji hijeratski, a tek kasnije kompleksnije hijeroglife te prelazak s prepisivanja na diktate. Stoga ne čude česte pogreške koje se mogu pronaći u tim tekstovima, a vjerojatno su imali i ispite znanja kako sugeriraju neki papirusi iz 19. dinastije. S druge strane, potrebno je imati na umu da je svaki pisar razvio svoj stil pisanja, jedinstven i osoban. Uz to, učili su i matematiku kako bi mogli izračunati osnovne površine nekih geometrijskih tijela, geografiju potrebnu za popis ljudi i poreza te druge korisne predmete za rad u birokraciji hrama ili palače. Također su prepisivali važne tekstove te sami dodavali sadržaj ili čitali i sastavljali pisma nepismenim/djelomično pismenim ljudima.

The need for training emerged with the complex state administration and therefore the scribes were prepared in advance for their duties in the state apparatus: the calculations and the records of the taxes, construction calculations, religious texts etc. However, there is no evidence that these schools had the same system of education, i.e. that they were under state control or management. The texts found on ostracons (fragments of e.g. pottery containing inscriptions) which served as a cheap material for writing exercises which were probably performed in the open air or within the temples and palaces. After they had gained sufficient writing skills they could write on the more expensive and valued papyri. Some preserved texts and various school exercises confirm that the "Primary School" lasted four years upon which they earned the title of a scribe (they would start education at the age of 4 or 5). The pupils were sitting around their teacher in silence and copying the text given by the teacher. At first they practised writing only signs and later they specialised for various jobs under their mentor like the scribe Hori who was a "a servant of the lord of Hermopolis" (Thoth). However, they first learned writing simpler hieratic and later more complicated hieroglyphs thus advancing from merely copying to dictations. Therefore, frequent errors that can be found in such texts come as no surprise. They probably had to sit knowledge exams as some papyri from the 19th Dynasty suggest. On the other hand, we have to bear in mind that each scribe developed his own writing style, unique and personal. They also learned maths to be able to calculate surface area of geometrical shapes, geography needed in keeping census records and tax records and other useful subjects useful for performing duties in the temple or palace bureaucracy. They also copied important texts adding contents, read or composed letters for the illiterate or semi-literate people.

Egipatski pisarski pribor, AMZ / Egyptian scribal tools (AMZ)

Očevi pisari mogli su obučavati svoje sinove u kući, kako bi naslijedili obiteljski posao. U Starome kraljevstvu raste broj takozvanih poučnih tekstova (s konotacijom kazne pomoću štapa), tj. poduke očeva sinovima i učenicima, kao svojevrsna ostavština budućim generacijama. Termin za specijalizaciju profesije značio je doslovno biti „pod nečijom rukom".

Pisalo se na kamenu, drvetu i papirusu, koji se dobivao prešanjem poprečno posloženih stabljika biljke papirusa. Na papirusu su pisali kistovima od trske, dvadesetak centimetara dugačke, umočenim u tintu. Tinta se izrađivala od raznobojnih minerala koji samljeveni i pomiješani s tekućinom daju crnu ili crvenu boju. Pisarki pribor sastojao se od drvene pernice, štapića i bočica s crnom i crvenom bojom.

The fathers-scribes could educate their sons in house in order to continue the family trade. In the Old Kingdom the number of the so-called teaching texts (with the connotation of the stick punishment) used by fathers teaching sons and pupils as some kind of a legacy to future generations grew. The term for specialisation in a profession meant literally "under someone's hand".

The texts were written on stone, wood and papyri which were made by pressing papyrus stem strips. The layers were laid on top of each other; one layer horizontally another vertically. The reed brushes which were around 20 cm long and dipped in ink were used for writing on papyrus. Ink (black or red) was made by grinding coloured minerals and mixing the powder with liquid. The scribal tools consisted of a wooden pallete (pen holder), pens and bottles with red and black ink.

Mezopotamija

Pisari u Mezopotamiji vježbali su pisati klinastim pismom, ali i zapisivati različite jezike te su također bili dio elitnog društva. I žene su se mogle školovati, a najstariji slučaj imamo iz akadskog razdoblja (oko 2350. – 2150. pr. Kr.). Imajući na umu da se smatralo kako je božica Nisaba izumila pismo, ne čudi što su bile otvorene za tu praksu. Obrazovanje su mogle steći u hramovima u kojima su služile ili kod kuće, a navodno su kraljevske žene iz Treće dinastije Ura (2114. – 2004. pr. Kr.) pisale pjesme kraljevima. Školovanje u e-dubba (Kuća pločica) trajalo je nekoliko godina, da bi se po završetku stekao naslov dubsar – pisar pločica, a ponekad i specijalizacija za određene službe (poput astrologa). Tada su se pisari mogli zaposliti u palači, hramu, kod trgovca za bilježenje robe, poreza, pisanje pisama za nepismene, kao osobni pisar vladara za zapisivanje njegovih pothvata itd.

Klinasto pismo su učili na sličan način kao i u Egiptu, prepisivanjem tekstova mnogo puta, pritom učeći i brojeve i znakove za znanost, trgovinu, književnost itd. Pomoću pisaljke od trske utiskivali su znakove u glinene pločice. Školski tekstovi, okrugle glinene pločice, s jedne strane imale su napisanu riječ a s druge strane prostor za prepisivanje.

Mesopotamia

The scribes in Mespotamia practised writing cuneiform but in various languages, and were also a part of the social elite. Women, too, could be educated, and the oldest case known is from the Akkadian Period (2350-2150 BC). Considering the fact that they believed that the goddess Nisaba invented writing, it doesn't come as a surprise that they were open to such a practice. Women could be educated in the temples in which they served or at home. It is believed that the royal wives from the 3rd Dynasty of Ur (2114-2004 BC) wrote poems to the kings. The scribes were educated in the e-dubbas (a 'house of tablets") for several years and when they graduated they gained the title dubsar - a tablet writer, and sometimes specialised for certain functions (i.e. astrologers). Then they could be employed in the palaces, temples or by merchants to keep the record of the goods and taxes. They also wrote letters for the illiterate and could also serve as personal scribes for the royalty.

They learned the cuneiform in a similar way as the scribes in Egypt learned to write, by transcribing the texts many times, learning the numbers and the signs for science, trade and literature etc. in the process. They pressed the signs into the clay tablets with reed styli. The teaching texts, the round clay tablets had a written word on one side while the space on the other side was for transcribing.

Administrativni tekst su pisari ponekad omatali u dodatan sloj gline kako bi se zaštitio, a skraćeni opis pisao se na tu omotnicu.

Ovisno o informacijama koje su bilježili, pisali su na više ili manje trajnim materijalima. Na primjer, cilindrični pečati kojima se „potpisuju" dokumenti pritiskom u još vlažnu glinu izrađivani su od metala ili kamena s urezanim scenama bogova ili životinja. Ponekad su imali i ime i titulu pisara. A ponekad su pisari bili i robovi, koji su dani kao miraz.

The administrative texts were sometimes wrapped into the additional layer of clay in order to protect it, and a short description was written on that envelope.

Depending on the kind of information they recorded, more or less durable materials were used. For example, the cylinder seals were made of metal or stone with the carved scenes depicting gods or animals and were used to "sign" the documents by pressing them into wet clay. Sometimes they carried the name and the title of the scribe. Sometimes the scribes were the slaves given as a wedding gift.

Rim

Scriba – pisar bila je jedna od najprestižnijih pozicija u starome Rimu. Mogao je biti javni ili privatni, kao osobni tajnik (librarius), a postojali su i posebni prepisivači. Javni su pisari radili u državnoj riznici i arhivu te su bili dobro plaćeni za prepisivanje dokumenata, sastavljanje dekreta, bilježenje prisega na javnim mjestima, čitanje molitvi, popisivanje državnih prihoda. Morali su dobro poznavati rimski zakon. Time su često znali steći visok položaj kroz sistem usluga bogatim rimskim građanima, koji bi ih ili predložili za poziciju, ili bi pisari od njih kupili funkciju. Osim u Rimu, gdje je pisar proveo godinu dana, morao je raditi i dvije godine u provinciji.

U Rimu su također i žene i muškarci mogli biti pisari te su kroz književnost i poeziju razmjenjivali ideje unutar krugova obrazovanih ljudi. Na primjer, poznate su Precia i Lesbia iz Ciceronova vremena, svojevrsne vođe tih intelektualnih krugova, koje su i pomagale nekim autorima da uspiju u životu. Također, i robovi su mogli biti pisari te steći slobodu.

Kao što pokazuju pronađeni papirusi iz Herkulaneja, koristili su tintu na metalnoj bazi već u prvom stoljeću, umjesto čađe.

Rome

Scriba - a scribe was one of the most prestigious positions in Ancient Rome. He could be public or private, like a personal secretary (librarii) but there were copyists, too. Public scribes worked in the state treasury or archives and were well paid for copying documents, writing decrees, recording sworn oaths in public places, reading prayers, collecting and recording state revenues. They also had to have knowledge of Roman law. This usually enabled them to attain high positions through the system of trading favours to wealthy Roman citizens who either proposed them for a position or bought the function from them. Apart from serving one year in Rome a scribe was obliged to serve two years in the provinces.

In Rome, both men and women could be scribes so they exchanged ideas through literature and poetry within the learned circles. For example, in Cicero's time two notable women Precia and Lesbia were known to be leaders of these intellectual circles and helped some authors to succeed. Also, the slaves could become scribes and gain freedom.

Roman scribes were already using metallic ink in the 1st century, according to an analysis of papyri from Herculaneum.

Rimski pisarski pribor, AMZ / Roman scribal tools (AMZ)

Srednji vijek

Do pravog procvata pisarstva dolazi u srednjem vijeku, osobito u samostanima. Po Regulama sv. Benedikta redovnici i opatice morali su vladati umijećem pisanja, čitanja i prepisivanja religijskih tekstova u samostanskim pisarnicama zvanim skriptorij, od 5. st. nadalje. Bile su to slabo osvijetljene sobe često štetne za zdravlje, kao što svjedoči primjer jednog opata: „Ono može zamutiti oči, učiniti leđa bolnima i spojiti prsa i trbuh skupa. To je strašna muka za čitavo tijelo.“ O njihovu radu saznajemo iz marginalija, bilježaka koje su pisari ostavljali uz tekst dok su ga prepisivali, najčešće žalbi o teškome poslu („prokleta bila, olovko!“). Tekst koji će prepisivati nisu mogli birati nego im je dodijeljen. Ženama vjerojatno ipak nije bio omogućen napredak u obrazovanju kao muškarcima, međutim, kroz posao prepisivanja se ipak mogao čuti njihov glas i vidjeti njihov rad. Bilježaka u marginama nalazi se u gotovo svim zemljama Europe toga doba: Njemačkoj, Francuskoj, Italiji, Švicarskoj, Austriji, Bavarskoj itd. To su često radile vrlo diskretno, poput časne Gude koja je 1180. zapisala u knjigu: „Guda, grešna žena, napisala je i ukrasila ovu knjigu.“

S vremenom se posao pisanja i prepisivanja proširio kao sekularno zanimanje izvan religijskih konteksta. U praksi je to zapravo značio jedan stol pokraj prozora u kući u kojoj se živi. Pisari su često naučili i zaposlili svoje žene, koje bi preuzele obiteljski posao u slučaju prerane suprugove smrti. To je uključivalo i vođenje knjiga, zbrajanje robe u trgovini, izdavanje računa, posudbe i sl. Takva praska se održala do pojave tiskarskog stroja, kad skriptoriji postaju nepotrebni. Vjerojatnije su se mlađi bavili prepisivanjem zbog dobra vida i izdržljivosti za takav mehanički i monoton posao.

Najčešća pisaljka je bilo pero, poput guščjeg. Pero se prvo pokapalo u vrući pijesak kako bi očvrsnulo, a samo perje se skidalo (nije bilo nojevo kao što se često prikazuje u filmovima). Vrh je zarezan nožem, njime se nakon trošenja oštrio te je služio i kao gumica za brisanje teksta. Najčešće se pisalo na pergamentu od kože ovce, koze ili teladi, koji se dobivao namakanjem kože u lužnatoj otopini za otapanje ma-

Middle Ages

A real scribal flowering occurred in the Middle Ages. From the 5th century onwards, according to The Rule of St. Benedict, the priests and the nuns had to be able to read and write and copy religious texts. They worked in the scriptoria, special rooms for writing. These rooms usually had poor light thus affecting their eye-sight, as can be seen from one priest's complaint: "It dims your eyes, makes your back ache, and knits your chest and belly together. It is a terrible ordeal for the whole body." We can learn a lot from the marginalia, the entries made in the margins by the scribes while copying the text, most often the complaints about their hard work ("A curse on thee, O pen!") They did not choose the text they were copying. It was assigned to them. Women probably did not have the same opportunities to extend their education as men after all. However, through such assignments their voice could be heard and their work seen. They could be found in almost all European countries of the time: Germany, France, Italy, Switzerland, Austria, Bavaria etc. For example, they often worked very discreetly, like the nun Guda who wrote the book "Guda, a sinful woman, copied and painted this book" in1180.

Over time the job of writing and copying texts became a secular profession outside religious contexts. In practice it actually meant one desk next to the window in the house where they lived. The scribes often taught and employed their wives so that they could take over the family trade in case of their untimely death. That also included bookkeeping, keeping record of the goods in the store, loans etc. Such a practice survived until the invention of the printing press when the scriptoria became obsolete. It is probable that younger people were copying books as they had better eye-sight and stamina for such a mechanical and monotonous work.

The most common writing device was a pen, i.e. a quill pen from a goose feather. The quill was first buried in the hot sand to harden it, and the flights of the feather were removed (they did not use ostrich quills as often depicted in films). The tip of a pen was a slit with a knife which was used for sharpening as well as for scraping off any mistakes the scribe might make. Parchment usually made from sheepskin, goatskin or calfskin was most commonly used for writing on. It was processed by soaking the

snoća, potom pričvršćivanjem za drveni okvir na kojemu se strugalo nožem da se izgladi te su se konačni komadi vezali ovisno o traženoj vrsti dokumenta (svitci, kodeksi itd). Papir se više počeo koristiti od 13. st., a merovinški kraljevi Franačkog Carstva i pape upotrebljavali su i papirus sve do 10. st. Papir je bio jeftiniji, jer je za pergamentni kodeks bilo potrebno puno kože, pa su se oni često brisali i koristili za nove tekstove (*palimpsest*). Tinta se dobivala od željezne galice, žireva i vina/octa (smeđa), ili od čađe i smole s vodom (crna), a za iluminaciju pisari su koristili listiće zlata na gipsanom predlošku i miješali vlastite boje od na primjer olova (crveno). Dio opreme za prepisivanje knjige bio je i kamen za izgla đivanje pergamenta. Proces se odvijao na nagnutom stolu vjerojatno uz danje svjetlo (teško bi se uz svijeću moglo prepisivati kvalitetno), uz pomoć staklenih posuda s vodom kao povećalom.

Kina

Najstariji zapisi su djelo pisara/svećenika koji su postavljali religijska pitanja i bilježili ih kako bi dobili odgovore na životna pitanja za vladara. Pisali su na životinjskim kostima ili kornjačinu oklopu. Navodno je pismo izumio pisar koji je kopirao tragove ptica u vrijeme Žutoga cara Huangdi (2698.-2598. pr. Kr.). Međutim, s vremenom su se njihove vještine počele koristiti u druge svrhe, za bilježenje važnih povijesni događaja ili birokraciju u vrijeme dinastije Zhou (1046. – 256. pr. Kr.). Slično kao i u ostalim civilizacijama, rastuća kompleksnost države tražila je sve veći birokratski aparat, pa se time povećao i broj pisara i njihova važnost. Izum papira kao materijala za pisanje pomogao je sistematizaciji administracije, a u konačnici su pisari i ustustavili i pojednostavili kinesko pismo. Koristili su tintu i kist, što se vidi po pronađenim arheološkim ostatcima poput oružja ispisanog imenima vlasnika ili brončanih posuda. Pismo na njima se neznatno razlikovalo zbog različite podloge za pisanje. Na primjer, pismo Lishu je više tečan stil i lakše se piše pomoću kistova i

skin in alkaline solution to dissolve fat and then it was placed on a stretching frame and scraped to be made smooth. Processed pieces were then tied depending on the wanted type of a document (rolls, codices etc.)

From the 13th century paper was more commonly used for writing on, but the Frankish kings of the Merovingian Dynasty and the popes were using papyrus until the 10th century, Paper was cheaper and since a lot of skin was needed for a single codex, parchments were often scraped and reused for the new texts (*palimpsest*). The ink was usually made either from ferrous sulphate, gallnuts and vine/vinegar (brown) or from charcoal or lamp-black and gum mixed with water (black). Golden leaves on a gesso were used for illuminating manuscripts. They also mixed their own paints (e.g. red from lead). A part of the equipment needed for copying books was stone which was used for smoothing parchment. The copying was done on a slanted desk probably during day-light hours (it would be difficult to produce high-quality copies in the candle light). Glass vessels filled with water were used as magnifiers.

China

The oldest inscriptions were made by the scribes/priests who were asking questions of the supernatural on behalf of their kings and recording the answers. They were writing on animal bones and tortoise shells. The invention of script is attributed to a scribe who copied bird traces during the reign of the Yellow Emperor Huangdi (2698-2598 BC). However, over time their skills started to be used for other purposes, e.g. for recording important historical events or for bureaucracy during the Zhou Dynasty (1046-256 BC). Similar to other civilisations, the increasing complexity of the state required a bigger bureaucratic apparatus, therefore the number of the scribes and their importance grew. The invention of paper as a material to write on helped in the systematisation of the administration, and consequently the scribes standardised and simplified the Chinese script. They used ink and brush which can be confirmed by the archaeological finds i.e. weapons with the names of their owners written on them or bronze vessels. The script on them did not differ much due to different writing surfaces. For example, the Lishu script is more fluent there-

pisaljki. Od ostalog pribora koristili su drvene stiluse za pisanje na lakiranom drvetu, ili metalna dlijeta za urezivanje.

Judaizam

Kod Židova su pisari prvenstveno služili za bilježenje religijskih tekstova, ali su u vrijeme Davida počeli zapisivati i službene zapise, tj. imati administrativnu ulogu. Oni su bili ti koji su prenosili vjerovanja o prošlome životu naroda, popisivali porez, služili u trgovini ili na sudovima, prepisivali tekstove ili radili kopije Tore, te su time postali nezamjenjivi u društvu. Poistovjećivali su se s idealima mudrosti i stoga su komentirali Toru i židovske zakone.

Od pisaćeg materijala smjeli su koristiti samo čistu kožu životinja (pergament), bilo kao površinu za pisanje, bilo za uvez. Crnu tintu izrađivali su posebnom recepturom (druge boje nisu košer i stoga su neprihvatljive za Toru): kuhanjem ulja, katrana, voska te kombiniranjem sa smolom drveta, sokom oraha i medom. Dok su pisali, morali su izgovarati svaku riječ te su navodno morali oprati pisaljku i cijelo tijelo prije pisanja imena boga Jahve. Te tekstove su drugi pisari rigorozno pregledavali i ako je na više od tri stranice bilo pogrešaka, morali su čitavo djelo ponovno pisati. Pisari su također pohranjivali ta djela u isključivo svetim mjestima, poput sinagoga, a ponekad su ih pokapali u genizeh jer se djela s Božjim imenom nisu smjela uništavati (groblja za privremeno skladištenje istrošenih knjiga). I dan danas postoje takvi pisari koji se nazivaju sofer.

Arapski svijet

U arapskom svijetu na dužnost pisara se gledalo kao na svetu dužnost. Ispred svojeg imena pisari su znali navoditi razne atribute skromnosti: sluga, ubog, bijedan, grešan i sl., nakon čega su slijedile molitve i molbe za oproštenje. Često su nastojali potpuno oponašati stil rukopisa koji su prepisivali, jer je prenosio blago-

fore writing with brushes and styli was easier. They used wooden styli for writing on lacquered wood and metal chisels for engraving.

Judaism

Jewish scribes were primarily writing religious texts, but in King David's time they started making official records, thus assuming the administrative role. It was them who recorded the myths about the past, kept records of taxes, served at courts and in shops, copied texts and made copies of the Torah, etc. and therefore became indispensable in the society. They were recognized as paragons of wisdom and therefore were making commentaries on the Torah and the Jewish laws.

They could only use clean animal skins (parchment), both to write on, and to bind manuscripts. Black ink was made following a special recipe (other colours are not kosher and are therefore unacceptable for the Torah) by cooking oil, tar and wax and mixing it with resin, walnuts and honey. While writing they had to utter every word and allegedly had to wash the pen and themselves before writing the name of the god Jahve. These texts were rigorously scrutinized by other scribes, and if there were errors on more than three pages the whole manuscript had to be rewritten. The scribes stored their works exclusively in holy places, like synagogues and sometimes they buried them in genizah since the manuscripts containing God's name could not be destroyed (graveyards for storing books when they fall out of use). The scribes called sofers still ply their trade today.

Arab World

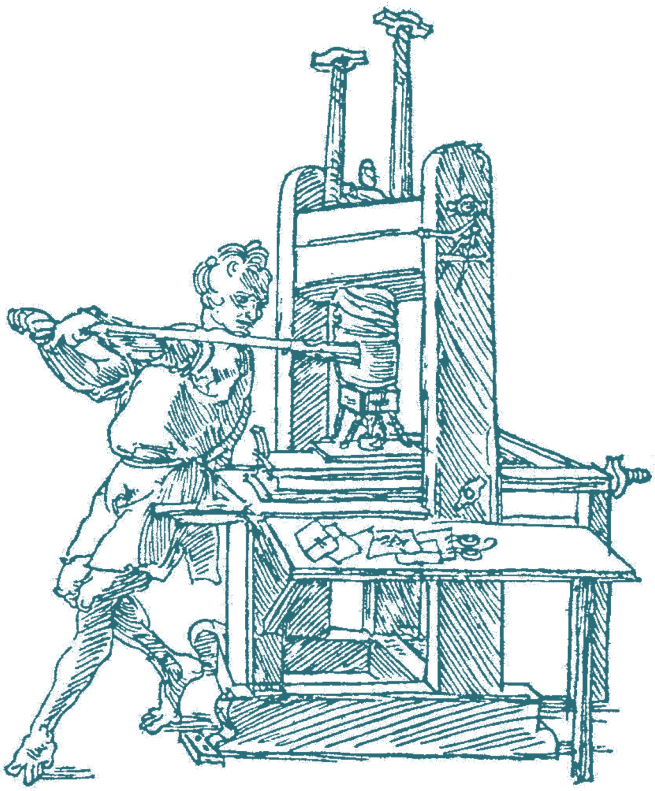
In the Arab world the role of a scribe was seen as a sacred duty so they would write various identifiers denoting modesty before their names: servant, poor, miserable, sinful etc. after which prayers and begging forgiveness followed. They often tried to make the exact replica of the manuscript they copied since they contained the blessings given by

slov svetih ljudi koji su te tekstove originalno sastavljali. S druge strane, čini se da su dobro živjeli samo oni pisari s bogatim zaštitnicima, dok su drugi imali „tijela vitka kao njihova ravnala“ (*Kitab khass al-khass*). Navodno su i proroka Muhameda pratili pisari koji su zapisivali njegove riječi (*wahy*) i dogovore/ugovore koje je sklapao s drugim vjerama.

Od pribora su koristili našiljenu pisaljku od trske (*kalamos*) koja je na kraju razrezana, što je utjecalo na stil kaligrafije. Rezali su ih na posebnu bloku od drva, bjelokosti ili životinjske kosti i čuvali ih u pernicama. Tintu za papir ili pergament su, naročito putujući pisari, držali u krutom stanju, dobivenu od čađe ili tanina (iz kore drva) pomiješanih s ljepilom, poput arapske gume, žuči ili meda. U slučaju pogreške u postupku izrade postojala je opasnost da jako kisela tinta izgrize papir. Tinta se ponekad namirisala kamforom ili mošusom, tvarima koje se danas rabe u parfumerijskoj industriji, a ponekad se dodavala aloja, sol, ocat i drugo kako bi se otjerale mušice. Za razliku od svojih zapadnjačkih kolega, arapski pisari pisali su na podu prekriženih nogu, držeći papir na jednoj nozi. Kad pisaljku nisu upotrebljavali, odlagali su je iza desnog uha. Jedan od najpoznatijih među njima, Ibn al-Jawzi, navodno je napisao i prepisao više od čak 2000 djela, dok je Yaqut al-Musta'simi mjesečno prepisao dva Kurana - ukupno 1001 u svome životu!

holy people who had originally composed them. On the other hand, it seems that only those scribes who were under the patronage of the wealthy were prosperous, while others had "the bodies as slim as rulers" (*Kitab khass al-khass*). It is believed that Prophet Muhammad was also accompanied by the scribes who were recording his words (*wahy*) and the agreements and contracts he signed with other religions.

They used reed styli (*kalamos*) for writing. The tip was slit which had an impact on the calligraphy style. They were made of ivory or animal bones and were kept in pen cases. The scribes (especially travelling scribes) kept ink in solid shape. It was made of lamp-black or tannin (from tree bark) mixed with glue like gum arabic, bile or honey for paper or parchment. If it was not properly made, there was a risk that very acid ink might damage the paper. Ink was sometimes scented with camphor or musk, the substances still used in today's perfume industry, and sometimes aloe, salt, vinegar etc. were added to repel insects. Unlike their European colleagues, the Arab scribes were writing sitting on the floor with their legs crossed holding the paper on one leg. When they were not using the pen, they would put it behind the right ear. One of the most famous scribes Ibn al-Jawzi is believed to have copied more than 2,000 manuscripts, while Yaqut al-Musta'simi made two copies of Qur'an per month so he made a total of 1,001 copies in his lifetime.



Moderno doba
Modern Age

Tiskarski stroj, privatna zbirka / Printing Press, private collection

Tiskarski stroj
Printing Press

Igor Uranić

Nakon antike, i u srednjem vijeku zadržalo se pisanje rukom, zbog čega su zapisi još uvijek relativno slabo dostupni. Stare, posebno antičke knjižnice time su važnije u širenju i pohrani informacija. Kinezi su već u 6. stoljeću koristili drvene rezbarene ploče za umnožavanje teksta, dok su u Koreji sredinom 13. stoljeća za tisak upotrebljavali pokretna metalna slova. U Europi, međutim, sve do sredine 15. stoljeća knjige su se umnožavale isključivo prepisivanjem.

Nakon stabilizacije prilika u društvu srednjovjekovne Europe potreba za pisanjem i čitanjem raste. Velik korak u tome smjeru bio je izum tiskarskoga stroja Johannesa Gutenberga (1397.-1468.), njemačkog tiskara, izumitelja tipografije u Europi. Pravo ime bilo mi je Johannes Gensfleisch zum Gutenberg. Gutenberg je rođen u obitelji trgovca porijeklom iz Mainza. Patriciji u Mainzu dobivali su često nazive prema kućama koje su posjedovali. Oko 1427. po prvi put je zabilježena upotreba imena *zum Gutenberg*, po nazivu obiteljske kuće u Mainzu: *zur Laden, zum Gutenberg*. Malo je autentičnih zapisa o njegovu životu, a jedan od autora koji se njime bavio, povjesničar tehnologije John Lienhard, navodi da je Gutenberg odrastao upoznajući zlatarski zanat. Tu tvrdnju podupire i povjesničar Heinrich Wallau, koji navodi kako su u 14. i 15. stoljeću njegovi potomci prisvajali nasljedni položaj majstora nadbiskupske ko-

After the Classical period, in the Middle Ages people also wrote by hand which is why we have a relatively small number of available records. That makes older libraries, especially the ones from the Classical period, even more important for spreading and storing of information. In the 6th century, the Chinese already started using carved wooden panels for copying texts, while in Korea movable type was used in the middle of the 13th century. In Europe, books were copied exclusively by hand until the middle of the 15th century.

After the situation in medieval Europe was stabilized, the need for writing and reading started growing. Great progress was made when Johannes Gutenberg (1397-1468), a German printer and inventor of typography in Europe, introduced the printing press. His real name was Johannes Gensfleisch zum Gutenberg. Gutenberg was born to a merchant family from Mainz. Nobility in Mainz were often given names based on homes they owned. The first recorded use of the name *zu Gutenberg*, after the name of the family house in Mainz, can be dated from around 1427. There are few authentic records about his life, and one is by John Lienhard, a historian of technology, who claimed that Gutenberg grew up studying to become a goldsmith. This is supported by a historian Heinrich Wallau who stated that in the 14th and the 15th century, Gutenberg's descendants claimed the hereditary position of the "master of the archiepiscopal mint" so they must have ac-

vačnice. Prema tome, sigurno su stekli zavidno znanje i umijeće u obradi metala. Nabavljali su metal za kovanje, mijenjali različite vrste kovanica i imali važnu ulogu na sudovima u slučajevima krivotvorenja.

Tiskarski stroj Johannes Gutenberg je projektirao je na temelju strojeva s vijkom, originalno izrađenih za prešu grožđa i maslina. Međutim, na temelju njegovih usavršavanja, dodataka i potpuno izvornih inovacija omogućeno je mnogo brže i jednostavnije tiskanje knjiga, koje je u potpunosti vrlo brzo zamijenilo njihovo prepisivanje rukom. Stroj je pritiskom površine s tintom na papir ili drugi materijal prenosio željeni tekst. Za tekst su poslužila pojedinačno izlivena slova koja se slažu u redove na jednoj stranici, a koja su bila Gutenbergov izum. Čitav proces tiskanja ubrzao je uvođenjem pokretne ploče za brzu izmjenu teksta. Prva knjiga koju je tiskao bila je Biblija. Zahvaljujući ubrzanome postupku „izrade", knjige su se uskoro proširile po čitavoj Europi. Sve veća dostupnost knjiga potakla je širenje pismenosti u raznim slojevima društva, ali i širenje raznih ideja iz svih društvenih područja. Razmjena ideja u konačnici je značila napredak znanosti, budući da su objavom radova znanstvenici omogućili pristup svojim otkrićima.

quired considerable knowledge and technical skills in metal working. They supplied the mint with the metal to be coined exchanged various types of coins, and had an important role in forgery cases.

Gutenberg based the printing press on the existing screw presses, originally made for pressing grapes and olives. However, he perfected existing technologies and made the ground-breaking innovations, thus making printing books much faster and easier, replacing copying books by hand forever. The machine applied pressure to an inked surface transferring the text to paper or any other material. The press used small metal letters stacked in rows on one page, invented by Gutenberg. He accelerated the entire printing process by introducing movable panels to quickly change the text. The first book printed was the Bible. Since books could now be produced much faster, they soon spread across Europe. The increasing availability of books lead to higher literacy across various social groups, but also to spreading different ideas from all areas of society. The exchange of ideas ultimately caused the progress of science, because scientists started publishing their works and they became widely available.

Pisaći strojevi

Typewriters

Igor Uranić

Nakon tiskarskog stroja koji je mnogostruko povećao dostupnost knjige široj populaciji, još veći korak u liberalizaciji samog pisanja bio je izum pisaćeg stroja. Pisaći stroj dizajniran za otiskivanje slova na papiru pisanje je olakšao, ubrzao i učinio dostupnijim. Tekst je nastao brzo, a za razliku od rukom pisanog bio je svima čitak. Pritom razvijaju se i standardni fontovi. Pojavom pisaćih strojeva u drugoj polovici 19. stoljeća dolazi do naglog razvoja društva. Još 1714. godine Henry Mill je patentirao oblik strojnog otiskivanja slova na papiru. Nakon toga, 1829. Willian Burt patentirao je stroj nazvan „typowriter", koji se smatra prvim potpunim strojem za pisanje. Godine 1843. Charles Thurber ugradio je u pisaći stroj cilindrični vijak koji je horizontalno pomicao papir i stvarao razmak između pojedinih slova i redaka. Desetljeće nakon toga, 1856. godine, Beach je usavršio ovu ideju izradivši stroj koji je tiskao slova na omeđenom dijelu papira. Problem oblika teksta (margina) riješio je Samuel W. Francis patentirajući kružno postavljene poluge sa slovima, pomični držač za papir i zvonce kao upozorenje da je red pri kraju, te vrpcu s tintom. Tad se razvio i dizajn pisaćih strojeva. Crne tipke s bijelim slovima bile su najpoželjnije.

After the printing press, which increased the availability of books to the general population, an even bigger step in the liberalization of writing was the invention of the typewriter. The typewriter, designed for transferring letters on paper, made writing easier, faster and more accessible. The text was written quickly, and unlike texts written by hand, it was legible to everyone. Standard fonts were developed at the same time. With the invention of typewriters, in the second half of the 19th century, a rapid development of society came. In 1714, Henry Mill patented a machine very similar to a typewriter. In 1829, William Burt patented a machine called "typographer", considered the first complete machine for writing. In 1843, Charles Thurber put the paper on a roller which moved it horizontally creating space between individual characters and lines. A decade later, in 1856, Beach perfected this idea by making a machine that printed characters on a slip of paper. The problem of the page layout (margins) was solved by Samuel W. Francis. He patented a circular set of type bars with letters, the moveable paper carrier and a margin bell, as well as the ink ribbon. The design of typewriters developed at the same time and black keys with white letters was the preferred option.

Konačno 1868. godine Sholes, Soule i Glidden patentiraju stroj koji je izravni preteča modernog pisaćeg stroja. Sklapanjem ugovora s Remingtonom taj se stroj počeo serijski proizvoditi. Sadržalo je sva postignuća ranijih pokušaja: papir se paralelno provlačio između dva gumena valjka i pomicao red po red, postojala je zasebna tipka za preskok u novi red i mehanizam koji je određivao razmak između slova. Dodatno usavršeni Remingtonovi pisaći strojevi od 1878. imali su mala i velika slova.

U 20. se stoljeću pisaći strojevi dalje usavršavaju i postaju manji i lako prijenosni, a za vrijeme Prvog svjetskog rata javljaju se i tihi, gotovo bešumni modeli. Konačno je 1925. godine proizveden električni pisaći stoj čije tipke su reagirale na vrlo blag pritisak. Ta je nova tehnologija ubrzala tipkanje. Električni pisaći strojevi s izmjenjivom glavom pojavili su se u drugoj polovici 20. st. (patentirala ih je tvrtka IBM). Imali su mogućnost ispravljanja grešaka, a obuhvaćali su i slova stranih abeceda (poput naših dijakritičkih znakova) i gotove riječi. Od početka 20. stoljeća pisanje knjiga, pisama i novina te uredsko pisanje u potpunosti postaje tipkanje na strojevima koji se koriste trakom s bojom i reljefnim metalnim slovima.

Od kraja 20. stoljeća za pisanje služe računala, a sva ostala sredstva izlaze iz upotrebe. Nastupa potpuno nova era tehnologije i medija pisanja.

Finally, in 1868, Sholes, Soule and Glidden patented a machine that is a direct precursor of the modern typewriter, and by making an agreement with Remington, it was commercially produced. It contained all the achievements of the previous machines: the paper was inserted between two rubber rollers and moved row by row, there was a separate key for moving to the next line and the mechanism that determined the space between letters. From 1878, Remington typewriters also had upper and lower case letters.

In the 20th century, typewriters continued to improve and become smaller and more portable, and, during the World War I, practically noiseless typewriters appeared. Finally, in 1925, an electric typewriter was produced with keys that responded to a very light pressure. This new technology accelerated typing. Electric typewriters with removable heads appeared in the second half of the 20th century (patented by IBM). They had the ability to correct errors, and included characters from different alphabets (like diacritical marks for Croatian) and complete words. Since the beginning of the 20th century, writing books, letters and newspapers, as well as official documents, was done by typing on machines that used an inked ribbon and metal characters. However, since the end of the 20th century, computers have been used for all forms of writing, and a completely new era of writing technologies thus began.

Pisaći stroj *Mignon*, Tehnički muzej Nikola Tesla / *Mignon* typewriter, Technical Museum Nikola Tesla

Penkala
Penkala - Propelling Pencil

Igor Uranić

Najpopularniju i najkorišteniju pisalicu na početku 20. stoljeća izumio je Eduard Slavoljub Penkala, rođen 1871. u slovačkom gradiću Liptovsky sv. Mikulaš. Mnogi tog izumitelja i biznismena doživljavaju kao Zagrepčana, jer je 1900. godine sa ženom Emilijom doselio u Zagreb. Penkala se tako i osjećao, a bio je omiljen među građanima Zagreba. Već 1902. je, na Trgu kralja Tomislava, na broju 15, Penkala osnovao prvu radionicu u kojoj je izrađivao razne prototipe pisaljki. Godine 1906. u patentnom uredu u Budimpešti prijavio je izum automatske mehaničke olovke, koja je označila velik korak u pisarskom priboru. Grafitnu olovku koju je izumio nije trebalo šiljiti, a njezin grafitni uložak izlazio bi sam iz tijela olovke pritiskom na papir pri pisanju. Olovka je bila jednostavne izrade i pogodna za pisanje, pa je njezina popularnost naglo rasla. Uskoro je automatska olovka, ubrzo prozvana po svojem izumitelju, postala obvezatni pribor za svakoga tko je pisao.

Penkala je 1906. upoznao braću Moster, s kojima je ušao u posao te su u Praškoj ulici broj 8 (tadašnjoj ulici Marije Valerije) otvorili prvu tvornicu, u kojoj je radilo dvadesetak ljudi. Maskota čovjeka s olovkom iza uha postala je poznata diljem svijeta, a Penkalina olovka postala je pravi hit u mnogim zemljama, donijevši tvrtki *Moster & Co*. sjajnu zaradu.

The most popular and most used writing device was invented at the beginning of the 20th century by Eduard Slavoljub Penkala, born in a little Slovakian town of Liptovsky St Michaeal in 1871. Even though he only moved to Zagreb in 1900 with his wife Emilia, this inventor and businessman was considered to be a true Zagreb native. Penkala felt that way, being popular among the townsmen of Zagreb. As early as 1902 Penkala founded his workshop at 15, Tomislav square where he made early proto-types of pens. In 1906 he submitted his invention of an automatic mechanical pen, which marked a step forward with the writing implements, in a Patent Office in Budapest. The lead pen that he invented did not need to be sharpened, and its lead insert would come out of the body of the pen by applying pressure to the paper whilst writing. The pen was easy to make and suitable for writing, thus making its popularity grow rapidly. It was not long before the automatic pen, soon named after its inventor, became an obligatory writing device for anyone who would write.

In 1906 Penkala met the Moster brothers and went into business with them. They opened a factory employing about 20 people at 8 Praška street (then called Maria Valeria Street). The mascot of a man with a pen behind his ear became world famous, and Penkala's pen a hit in many countries, bringing *Moster & Co* great profit.

Nakon Penkaline prerane smrti 1922., različite tvrtke koje je osnovao i dalje su dobro poslovale. Jedna od njih, Penkala Werke, godine 1927. je izradila novi oblik pisaljke, takozvano Pelikan-nalivpero. Taj model pisaljke počeo se proizvoditi u Hanoveru. Nalivpera tog tipa s patronama ili injektiranjem tinte koristila su se kroz veći dio 20. stoljeća. Uza sve druge poslove i izume Slavoljuba Penkale, takozvana „penkala“, odnosno automatska olovka, ostala je njegov najvažniji izum.

After Penkala's premature death in 1922, various companies that he had founded continued to do good business. One of them was Penkala Werke which in 1924 created a new form of pen, the so-called Pelikan Fountain Pen. That model started to be manufactured in Hanover. Fountain pens of this type, with cartridges or injecting ink, were used throughout most of the 20th century.

Apart from other occupations and inventions of Slavoljub Penkala, the so-called "Penkala", i.e. propelling pencil remains his most significant invention.

Povijest tipografije na zapadu

The History of Typography in the West

Maja Turčić

Kada biraju pismo, tipografi uzimaju u obzir povijest pisma i njegovu trenutnu konotaciju kao i formalnu kvalitetu pisma. Cilj je pronaći adekvatno usklađivanje između stila slova i specifične socijalne situacije i tijela sadržaja koji definiraju projekt (Ellen Lupton: *Thinking with type*).

Tipografija je zanat kojim značenje teksta može biti pojašnjeno, poštovano i podijeljeno, ili namjerno prikriveno (Robert Bringhurst: *The Elements of Typographic Style*).

Najranije oblikovana europska slova su grčka kapitala (*velika slova*) ručno klesana u kamenu. S vremenom potezi postaju deblji i pojavljuju se serifi (ukrasi na krajevima poteza). Grčka forma pisma iskorištena je kao uzorni model pisma u Rimskom Carstvu, na čijoj formi pisma počiva zapadna tipografija posljednjih dvije tisuće godina.

When typographers choose a typeface, they take into account its history, current connotations as well as its formal qualities. Their goal is to find the adequate harmonization between the type style, the specific social situation and the body of the contents that define the project (*Thinking with type*: Ellen Lupton).

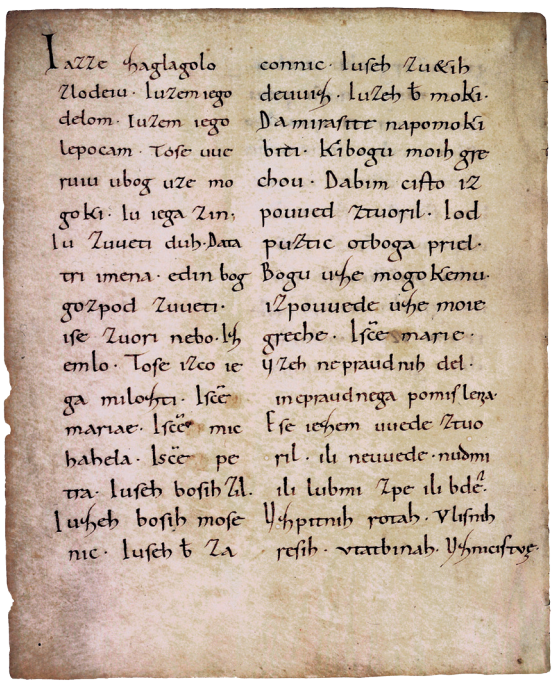
Typography is a craft which can explain, respect, share or deliberately hide the meaning of the text (*The Elements of Typographic Style*: Robert Bringhurst).

The earliest European letter forms are Greek capitals (*capital letters*) hand carved in stone. Over time the strokes became thicker and serified typeface appeared. Greek letter form was used as a model in the Roman Empire and the typography in the West has been based on the Roman letter form for the past two thousand years.

Rimska kapitala / Roman capitals

U srednjem vijeku pisanje je postalo vještina samostanskih pisara koji održavaju tradiciju oblikovanja prepisujući Bibliju i religijske tekstove koristeći razne forme slova za različite svrhe. Iz tih potreba se rađa osnovna podjela na verzale i kurente (*velika* i *mala* slova): rimska kapitala i karolinška minuskula. Karolinška minuskula svoje ime dobiva prema Karlu Velikom koji u 8. st. prvi pokušava standardizirati kurentna slova.

In the Middle Ages writing became a prowess of monastery scribes who kept the tradition of shaping scripts copying the Bible and the religious texts using various letter forms for different purposes. That led to the basic division on majuscule and cursive writing (*capital* and *small letters*): Roman Capitals and Caroline Minuscule Caroline Minuscule was named after Charlemagne, who was the first to try to standardize cursive letters in the 8th century.



Karolinška minuskula / Caroline Minuscule

Revolucija pisma zapadne civilizacije događa se pojavom Gutenbergova pomičnog sloga 1450. Zahvaljujući materijalima koje koristi pri oblikovanju, matrica omogućuje masovnu proizvodnju tiskanog materijala.

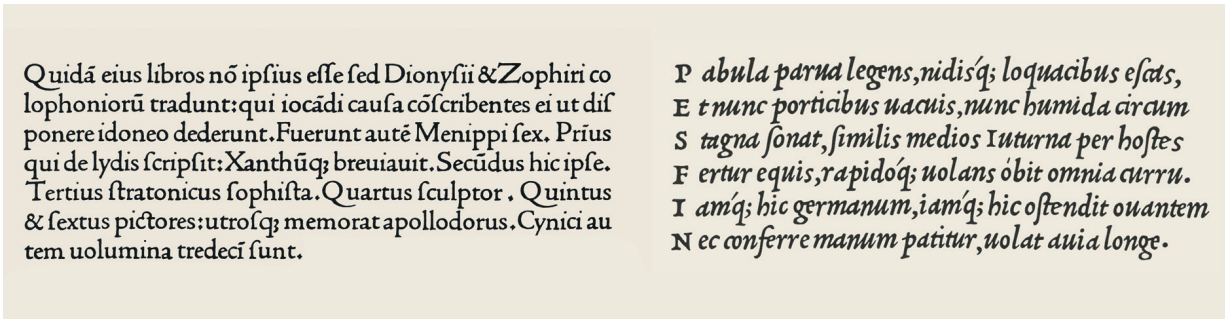
Geometrijsku i usku formu gotice u 15 st. u Italiji humanisti odbacuju i zamjenjuju klasičnim modelom rukopisa, otvorenije forme – renesansnom Antikvom koja služi kao okosnica oblikovanja skoro 500 godina. Svaki oblik pisma reflektira alat odnosno vrstu pera korištena pri izradi. Mnoga pisma koja koristimo danas se zovu prema tiskarima koji su radili u 15. i 16 st. Ta pisma se zovu i humanistička, proizvedena širokim perom, serifna i s blagim kontrastom unutar poteza (Garamond, Bembo, Palatino, Jenson).

The invention of Gutenberg's movable type printing press in 1450 revolutionized the writing systems in the West. The materials he used in making matrices made the mass production of the printed materials possible.

In the 15th century geometrical and narrow form of Gothic script was in Italy replaced by Humanists with a classical, more open form of hand-lettering, - Renaissance Antiqua which remained the model for the next 500 years. Every form of writing reflects the tools or the kind of the pen used. Many letter-forms we use today are named after the typographers who worked in the 15th and the 16th century. These letter-forms are also called Humanist, modelled with thick strokes, serifs with strokes at a slight angle (Garamond, Bembo, Palatino, Jenson).

Aldus Manutius prvi kreira pismo tipa Italik u ranom 16. st. u Italiji, modelirano prema ležernom stilu rukopisa. Dok se uspravno humanističko pismo koristilo u skupim knjigama, italik je kreiran da što više slova stane na stranicu te omogući jeftiniju proizvodnju. Sredinom 16. st. tiskari počinju kombinirati italik s uspravnim pismom u familije pisama istih debljina i visina.

Aldus Manutius was the first to design the italic letter-form in the early 16th century according to a less modulated handwriting style. Since the upright letter forms were used in more expensive books, Italic was modelled in such a way that more text can be written on one page, thus making the printing cheaper. In the mid-16th century the typographers started combining italic and more upright families of letter forms of the same stroke thickness and height.


Quidã eius libros nõ ipſius eſſe ſed Dionyſii & Zophiri colophoniorũ tradunt: qui iocãdi cauſa cõſcribentes ei ut diſponere idoneo dederunt. Fuerunt autẽ Menippi ſex. Prius qui de lydis ſcripſit: Xanthũq; breuiauit. Secũdus hic ipſe. Tertius ſtratonicus ſophiſta. Quartus ſculptor. Quintus & ſextus pictores: utroſq; memorat apollodorus. Cynici autem uolumina tredecĩ ſunt.

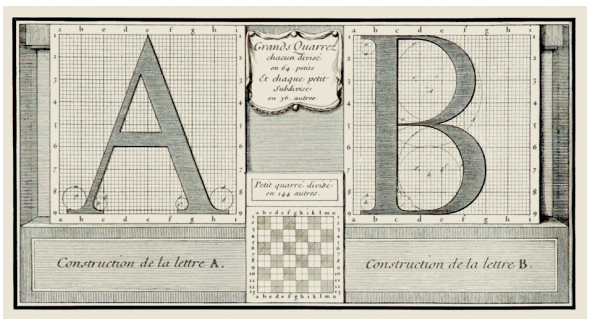
Pabula parua legens, nidiſq; loquacibus eſcas,
Et nunc porticibus uacuis, nunc humida circum
Stagna ſonat, ſimilis medios Iuturna per hoſtes
Fertur equis, rapidoq; uolans obit omnia curru.
Iamq; hic germanum, iamq; hic oſtendit ouantem
Nec conferre manum patitur, uolat auia longe.

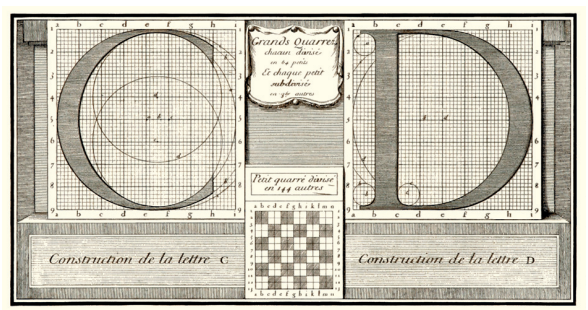
Jenson

Italik Aldusa Manutiusa / Aldus Manutius' Italic

U 17 st. Luj XIV naručuje pismo koje se oblikuje „znanstveno" prema fino konstruiranoj mreži, udaljeno od kaligrafskih principa, nazvano *Romain du roi.* Tu prijelaznu neoklasicističku Antikvu ne oblikuju tipografi već dva svećenika, računovođa i inženjer.

In the 17th century Louis XIV commissioned the design of the new typeface which was designed "scientifically" mapped on grids. It was called *Romain du roi.* This Transitional, or Neoclassical typeface Antiqua was not designed by typographers but by two monks, an accountant and an engineer.





Romain du roi

Tipografija 18. stoljeća pod utjecajem je novih stilova pisanja i graviranja. William Caslon i John Baskerville odbacuju strogi humanizam s fleksibilnim metalnim perom i šiljastim ptičjim perom koja stvaraju dramatični kontrast i oštrine. Baskervilleova barokna Antikva je optužena da „oslijepljuje" čitatelje zbog pretankih poteza.

The typography of the 18th century was under the influence of the new styles of letter-writing and engraving. William Caslon and John Baskerville discarded stern Humanism with flexible metal pen and pointed feather which produced dramatic contrast and sharpness. Baskerville's Baroque Antiqua was accused of "blinding" the reader because of its too thin strokes.

Baskerville
BASKERVILLE

Bodoni i Didot dovode taj stil do ekstrema prema 19. st. Njihova pisma obilježena su vertikalnim osima, ekstremnim kontrastima i oštrim serifima, udaljena od kaligrafije. Forme slova se suprotstavljaju tipografskoj tradiciji i otvaraju vrata novim eksperimentima gdje oblici slova postaju apstraktni i dehumanizirani.

Razdoblje 19. i 20. stoljeća, prema realizmu, donosi jednostavnost i iskrenost slične klasicizmu, ali bez serifa, ukrasnih ili dodatnih znakova (*Akzident Grotesk, Helvetica*). Nastaje i nova klasifikacija pisma, osim serifnih sada postoje i sans-serifna pisma (*Grotesk*) maksimalno apstrahirana i tehnička, ali i Egiptijana s debelim „slab" serifima jednolikih poteza koje se pronalazi najprije na natpisnim pločama iznad trgovina (*Clarendon*).

Bodoni
BODONI

Bodoni and Didot developed this style to an extreme in the 19th century. Their letter-forms are characterised by vertical stress of the letters, sharp serifs and are detached from calligraphy. These letter-forms contradicted typographic tradition and paved the way to new experiments and the letter-forms became abstract and dehumanized.

The 19th and the 20th century, towards Realism, brings simplicity and sincerity similar to Classicism, but without serifs, decorative or extra characters (*Akzident Grotesk, Helvetica)*. A new classification of letter-forms was made. As well as serif letter forms there are sans-serif letter-forms (*Grotesque*) highly abstract and technical, but also Egyptienne, with thick "slab" serifs with unified strokes that can be mainly found on shopsigns (*Clarendon*)

Helvetica
HELVETICA

Rastom industrijalizacije i tehnološkog napretka u 19. st. dolazi do eksplozije oglašavanja, nove forme komunikacije s potrebom za novom vrstom tipografije. Prisutna su velika i debela pisma nastala distorzijom anatomije klasičnih slova; visoka, široka, sjenčana, podebljana pisma i pisma ispunjena cvijećem. Nove tehnologije i materijali ohrabruju drugačiji pristup pismu, odvojen od kaligrafije i rukopisa. Slovo više ne mora biti proporcionalno, a odnos između slova u pismu postaje važniji od individualnog oblika. Pisma se više ne slažu ručno, već uz pomoć stroja (*linotype, monotype, fotoslog*).

Avangardni umjetnik ranog 20. st. odbacuje povijesne oblike i usvaja modele kritičnog razmišljanja. Neki tipografi se romantično vraćaju povijesnim oblicima dok se škole poput Bauhausa i De Stijla igraju geometrijom i modularnim komponentama.

Clarendon
CLARENDON

Industrialisation, mass consumption and technological advancements in the 19th century led to the explosion of advertising, a new form of communication which needed a new type of typography. Typeface families included big, thick letter forms which were designed by distorting the anatomy of classical letter forms; tall, wide, shadowed fonts and floral fonts. New technologies and materials encouraged a different approach towards letter forms, detached from calligraphy and handwriting. The letter didn't have to be proportional, and the relationship between letters became more important that the individual form. Typesetting was not done manually any more but with the help of a machine (*Linotype, Monotype, phototypesetting*)

The avant-garde artist of the 20th century discarded the historical shapes and forms and adopted the models of critical thinking. Some typographers had a romantic come-back to the historic forms, while the schools like Bauhaus and De Stijl played with geometry and modular components.

Paul Renner 1927. god. kreira pismo *Futura* kao primjer geometrijskog modernizma i avangardnog višenamjenskog i komercijalnog pisma.

Paul Renner designed the typeface *Futura* in 1927 as an example of geometric modernism and obsession with avant guard multi-purpose commercial typeface.

Bauhaus
BAUHAUS

Futura
FUTURA

Kao odgovor elektronskoj komunikaciji, 1967. Wim Crouwel kreira novi alfabet sastavljen od ravnih linija za optimalni prikaz na CRT ekranima, u potpunosti se odvajajući od kaligrafije.

U osamdesetima osobna računala i pisači niske rezolucije čine tipografiju pristupačnom. Rane devedesete donose pisače visoke rezolucije, novu font tehnologiju *Post Script* te internet i mobitele koji nadograđuju važnost fontova baziranih na pikselima, jer informacije publika čita na ekranima. Godine 1985. Zuzana Licko dizajnira ekspresionistička pisma koja iskorištavaju grubu zrnatost ravnih ekrana (Emigre: *Journal*).

As a response to electronic communication Wim Crouwel designed a new alphabet in 1967 which was made up of straight lines for optimal view on CRT screens. It was completely detached from calligraphy.

Personal computers and printers of low resolution made the typography available to wider population in the 80s. Early 90s brought the high-resolution printers, new font technologies of *PostScript*, the Internet, mobile phones which upgrade the importance of fonts based on pixels since the information is read on the screen. In 1985 Zuzana Licko designed expressionist typeface which exploited the low resolution of the early screens.

JOURNAL

BEOWULF

Kao odgovor na čiste i stroge forme, ranih devedesetih, dizajneri dizajniraju i okaljane, oštećene, distordirane fontove (*Template Gothic, Dead History, Beowolf* – slučajna slova oblikovana programskim kodom).

Međutim, i dalje se dizajniraju pisma opće upotrebe za različite vrste tekstova. Zuzana Licko dizajnira *Mrs. Eaves* (font nazvan prema ženi Baskervillea) u počast prošlosti, dok *Quadraat* i *Scala* predstavljaju svježu interpretaciju tipografske tradicije.

Postmodernizam kao i arhitektura često reciklira klasicizam, romantiku i druge forme (Veljovićev *Esprit*), a geometrijski postmodernizam vraća se Egiptijani i sans-serifnim pismima geometrijskih i asimetričnih formi.

As a reaction to the pure and stern forms of the early 90s, smeared, damaged and distorted fonts (*Template Gothic, Dead History, Beowolf* - random characters generated by a programme code) by were designed.

However, the typefaces for general use and various kinds of texts were still designed. Zuzana Licko designed *Mrs Eaves* (the font was named after Baskerville's wife) to celebrate the past, while *Quadraat* i *Scala* represent an innovative interpretation of the typographic tradition.

Post-modernism, as well as architecture, often recycles Classicism, Romanticism and other styles (Veljović's Esprit), while geometric post-modernism returns to Egyptienne and sans-serif letter forms of geometrical and asymmetric forms.

Scala
SCALA

Esprit
ESPRIT

E-knjige

Maja Turčić

E-knjige neće zamijeniti tiskane knjige jednako kao što radio nije iskorijenio novine, a televizija radio. E-knjige su novi medij koji se bazira na web-tehnologijama, a omogućuje kreiranje formata koji sadrži tekst, slike, video i audio materijale te interaktivnost. Tekst se može oblikovati pismom bilo kojeg kontinenta te istovremeno biti dostupan slijepim i slabovidnim osobama putem tehnologije *text to speech*. Knjiga se sada oslobađa vizualne paradigme jer može biti istovremeno i audioknjiga. Tehnologija nam dozvoljava kreiranje udžbenika nove generacije gdje se čitatelju omogućuje učenje npr. jezika slušanjem izgovora, fizike interaktivnim eksperimentiranjem i mijenjanjem parametara, traženjem relevantnog sadržaja unutar vodiča za putovanja putem geolokacije.

Problem nepopularnosti e-knjiga je dvojak. Najprije problem stvara pogrešna percepcija ovog medija koju snažno podupire popularni Amazonov e-čitač i format Kindle, zaustavljajući napredak kreiranjem vlastitog formata koji je i dalje ograničen na tekst i sliku te onemogućuje dijeljenje i arhiviranje knjiga. Problem nadograđuje industrija kojoj nedostaje vizije budućnosti, ali i radne snage potrebne za kreiranje novih i kompleksnih sadržaja i tehnologija e-čitača koja lijeno i usporeno prati standardni EPUB format.

Glavna karakteristika i prednost e-knjiga jest oslobađanje sadržaja iz konteksta fiksne veličine stranice. Sadržaj se sada tečno prilagođava bilo kojoj veličini zaslona, korisnik ima mogućnost biranja veličine i vrste fonta, boje pozadine, uređaja na kojem će čitati knjigu, načina kako će ju konzumirati (vizualno ili auditivno), a istovremeno ne brine je li fizičku knjigu ponio niti koliko mjesta i težine zauzima. Dizajner sada gubi povijesnu ulogu tipografskog oblikovanja stranice i brine o strukturi koda o kojem ovisi mogućnost prikaza.

E-books

E-books will not replace printed books for the same reason the radio has not eliminated the newspapers, and the TV (has not eliminated) the radio. E-book is a new medium based on web technologies which enables creating formats that contain text, images, video and audio contents and facilitates interactivity. The text can be formatted in the script from any continent and at the same time be available to the blind and visually impaired people by using *text-to-speech* technology. The book is now detached from its visual paradigm as it can also be an audio book at the same time. Technology allows us to create new generation textbooks which enable the reader to learn e.g. a foreign language by listening to the pronunciation, or physics by interactive experimenting and changing parameters, or to search for the relevant contents in the travel guidebook by means of geolocation.

The problem of unpopularity of e-books is two-sided. One of the problems is wrong perception of this medium which is strongly supported by the Amazon e-reader and Kindle format thus hindering the progress by creating its own format which is still limited to the text and image and makes the dissemination and archiving impossible. The problem is further exacerbated by the industry which lacks both vision and work force necessary for creating new and complex contents and technologies of e-readers, and which follows the standard EPUB format slowly and reluctantly.

The main characteristics and the advantage of e-books is unbinding the content from the context of a fixed page size. The content now easily adjusts to any screen size, the users can choose the size and type of the font, the background colour of the gadget on which they will read the book, the ways in which they will consume it (visually or auditorily). At the same time they neither have to take the book with them nor worry about its size and weight. The designer has lost his/her historic role in typographic design of the page and focuses on the code responsible for the layout options.

Brailleovo pismo

Braille Alphabet

Igor Uranić

Brailleovo pismo (*brajica*) sustav je pisanja i čitanja namijenjen slijepim ili slabovidnim osobama, koji je 1824. godine osmislio Louis Braille. Pismo je reljefno i točkasto. Svako slovo abecede, pravopisni znakovi, brojevi i ostala pravila pisanja i čitanja su u Brailleovu pismu osmišljeni sistemom od šest točaka klasificiranih brojevima od 1 do 6 (lijevi stupac 1, 2, 3; desni 4, 5, 6) te organiziranih u dva okomita stupca po tri točke koje mogu biti ispupčene ili udubljene. Kombinaciju ispupčenih i praznih mjesta će osoba koja poznaje brajicu prepoznati na dodir kao određeni znak: slovo abecede, broj, ili interpunkcijski znak. Značenje nekih kombinacija točaka može varirati među različitim jezicima, ovisno o slovima koja se koriste u abecedi nekog jezika. Ukupno ovo pismo ima 63 znaka, a od toga se 32 mogu prepoznati samostalno, dok se ostali prepoznaju po tome uz koji znak stoje ili pomoću pravila o eliminaciji znakova. Na primjer, velika slova su složeni znakovi koji se sastoje od malih slova i predznaka (točkice 4 i 5). Složeni glasovi dž, nj, lj pišu se posebnim znakovima umjesto da se sastavljaju od dva slova. U pisanju brojeva također se koriste predznaci. Čitanje brajice zahtijeva stalnu vježbu i vrlo razvijen osjet dodira ruku. U novije vrijeme sve se više zamjenjuje različitim audio-čitačima, no brajica je i dalje osnovno oruđe pismenosti za osobe oštećena vida.

Braille is a reading and writing system designed by Louis Braille in 1824 for the blind and visually impaired persons. It consists of embossed dots. Each letter of the alphabet, punctuation marks, numbers and other reading and writing patterns are based on the system of six dots defined by numbers 1 - 6 (the left column 1,2,3, and right 4,5,6) and organized in two vertical columns each containing three dots which can be either embossed or engraved. The person who can read Braille recognizes the combination of the embossed and empty cells by touch as a symbol for a letter of the alphabet, a number or a punctuation mark. The meaning of certain combinations can vary in different languages depending on the type of letters used in the alphabet of that language. Braille has a total of 63 symbols, and only 32 can be recognized independently while the others are recognized based on the sign they stand next to or the rules for eliminating signs. For example, the capital letters and the compound symbols consist of small caps and the signs (dots 4 and 5) placed in front of them. The ligatures dž, nj, lj are given special signs instead of combining the two letters. In writing numbers special signs are used in front of the symbols. Reading Braille requires constant exercise and very sensitive fingers. Reading by touch has recently been replaced by various audio readers but Braille still remains a basic literacy tool for visually impaired persons.

Braillovo pismo, Udruga slijepih Zagreb / Braille alphabet, Zagreb Association of Blind Persons

Kriptografija

Cryptography

Filip Beusan

Od Herodota saznajemo kako je 499. pr. Kr. Histijej dao svojem robu od najvećeg povjerenja obrijati glavu i na nju istetovirati poruku. Pričekavši da kosa ponovno naraste, roba je poslao Aristagori s porukom o podizanju ustanka protiv Perzijanaca. Oko 480. pr. Kr., Grk Demarat koji je živio u Perziji uočio je pripreme perzijske vojske te odlučio upozoriti svoje sunarodnjake na opasnost. Na dvije je drvene pločice za pisanje, ispod ostruganog voska, ispisao poruku upozorenja, a potom na pločice stavio nov sloj pčelinjeg voska. Tek kad je pronicljiva Leonidina žena, kraljica Gorgo, predložila da ostružu vosak s potpuno praznih pločica, zbunjenim se Spartancima ukazalo važno upozorenje.

U 1. stoljeću Rimljani su skrivene poruke pisali nevidljivom tintom koristeći se sokom jedne vrste mlječike, koji je u suhom stanju posve proziran, a nakon blagog zagrijavanja poprima smeđu boju. Kao nevidljivu tintu koristilo se i druge tvari, od kojih su najpoznatije limunov sok i urin. Giovanni Battista della Porta je u 16. stoljeću opisao kako otopina kalijeva sulfata u octu može poslužiti za pisanje poruke na tvrdo kuhanom jajetu. Nevidljiva bi poruka prodrla kroz opnu jajeta i ostala ispisana na bjelanjku.

Steganografija, vještina skrivenog pisanja, ima stanovitih prednosti nad kriptografijom, umijećem tajnog ili kodiranog pisanja. Ta metoda, naime, skriva i samu činjenicu o postojanju poruke. U praksi se stoga često kombiniraju obje metode zaštite tajnosti podataka.

Herodotus provides us with information that in 499 BC Histiaeus shaved the head of his most trusted slave and tattooed a message on it. After his hair had grown back, the slave was sent to Aristagoras, with a message of uprising against the Persians. Furthermore, around 480 BC, Demaratus, a Greek in exile in Persia, noticed the military preparations of the Persian army, and decided to send a warning to his fellow countrymen regarding the pending invasion. After scraping off the wax, he wrote a message on two wooden writing tablets, and then covered it with a new layer of beeswax. It was only after the clear-sighted queen Gorgo advised the Spartans to scrape off the wax from the completely empty tablets, that the confused men noticed the important warning.

In the first century AD, Romans used to write hidden messages using invisible ink from the milk of the tithymalus plant, which is completely transparent after drying, but gentle heating chars it and it turns brown. Various other ingredients were used to produce invisible ink, among these the most known are lemon juice and urine. In the 16th century, Giovanni Battista della Porta described how a solution of alum in vinegar can be used to write a message on the shell of a hard-boiled egg. The invisible message would seep through the shell and be shown on the egg's albumen.

Steganography, the art of hidden writing, has its certain advantages over cryptography, the art of its secret or encrypted writing. Namely, this method hides the very fact of the existence of a message. In practice, one often combines both of these methods of protecting the confidentiality of data.

Kodiranje, šifriranje odnosno enkripcija odvija se pomoću „ključa“ za koji je idealno da bude poznat samo pošiljatelju i primatelju poruke. Riječ šifra dolazi iz francuskog jezika, fr. *cifre = brojka, tajni znak, odnosno iz arapskog,* ar. صفر, *ṣafira = prazno, ṣifr* = nula, ništa.

U zanimljivoj povijesti namjerno nečitljivo napisanih pisama, na samom se početku klasične kriptografije izdvajaju transpozicijska i supstitucijska metoda. Supstitucijske šifre znakove zamjenjuju drugim znakovima ili simbolima, dok transpozicijske šifre ne mijenjaju simbole drugim simbolima, već djeluju mijenjajući poziciju simbola. U biti je riječ o načinu stvaranja anagrama na temelju jednostavnih matematičkih načela.

Spartanski skital jedan je od prvih primjera transpozicijske šifre, do koje se u tom primjeru dolazi mehaničkim putem. Oko drvenog štapa namotala bi se pergamentna vrpca i na nju okomito pisala poruka. Nakon toga vrpca bi se odmotala, a na njoj bi ostali izmiješani znakovi koje je mogao pročitati samo onaj tko je imao štap jednake debljine.

Šifra *Rail Fence* („cik-cak”) dobila je ime po načinu na koji se vrši enkripcija, odnosno dekripcija. Tekst se zapisuje silazno na paralelne „grede” zamišljene ograde dok se ne dođe do ruba, a onda se nastavlja zapisivati uzlazno do vrha. Postupak se ponavlja do kraja teksta. Nakon toga šifrirani se tekst dobiva iščitavanjem paralelno po redovima.

Encoding, ciphering or encryption occurs using a key that is ideally known only to the sender and the receiver of the message. The word *cipher* is derived from French *cifre* meaning “a number“, “a secret character“, i.e. from Arabic صفر, ṣafira = “empty“, ṣifr = “zero“, “nothing“.

In the interesting history of deliberately illegible scripts, in the very beginning of classical cryptography one finds the methods of transposition and substitution. Substitution ciphers replace characters with other characters or symbols, while transposition ciphers do not change the symbols with other symbols, but rearrange their order. Essentially, it is a way of creating anagrams on the basis of simple mathematical principles.

The Spartan scytale is one of the earliest examples of a transposition cipher, which is reached mechanically. A strip of parchment was wound around a wooden rod, and the message was written vertically on it. After writing a message, the parchment would be unwound, and signs would appear to be random, since they were readable only by the recipient who had a rod of the same diameter.

Rail Fence (*zigzag*) cipher derives its name from the way it was encoded or decoded. The text is written downwards on successive rails of an imaginary fence until one reaches the bottom rail, and then continues to move upwards. The procedure is repeated until the text is written out. After that, the coded message is obtained by reading the rows in parallel.

W . . . E . . . C . . . R . . . L . . . T . . . E
. E . R . D . S . O . E . E . F . E . A . O . C .
. . A . . . I . . . V . . . D . . . E . . . N . .

WECRL TEERD SOEEF EAOCA IVDEN

‘WE ARE DISCOVERED. FLEE AT ONCE’

Takozvane monoalfabetske supstitucijske šifre oslanjaju se na zamjenu svakog slova abecede ili drugim slovom abecede ili brojevima i simbolima (ponekad i kombinacijom svih triju).

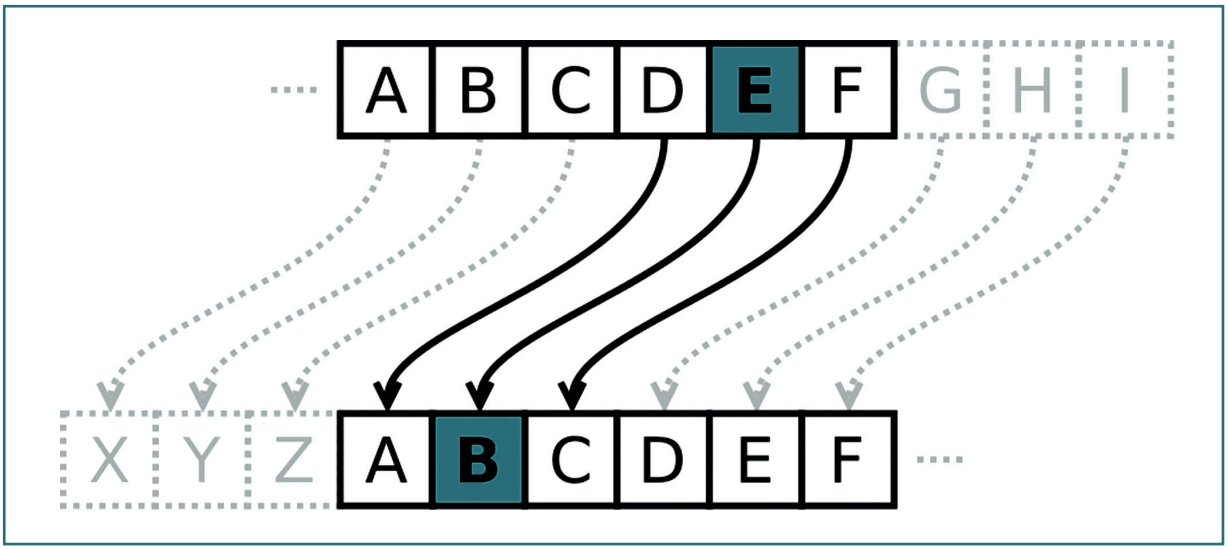
U zapisu dijela Biblije, Knjige o Jeremiji, korištena je jednostavna hebrejska monoalfabetska supstitucijska šifra *Atbash,* koja abecedu izvrće naopako. Još jedan od najglasovitijih i najranijih primjera supstitucijske šifre jest šifra koju

Monoalphabetic substitution ciphers rely on a substitution of every letter of the alphabet either by another letter, or by numbers and symbols (sometimes even by a combination of the three).

In a part of the Bible called the Book of Jeremiah, a simple Hebrew monoalphabetic substitution cipher Atbash was used which reverses the alphabet. One of the earliest and most famous examples of the substitution cipher is the cipher that Julius Cae-

je Julije Cezar koristio u vojnim kampanjama i državnoj komunikaciji. Njemu u čast šifra je kasnije dobila ime „Cezarova šifra“ ili „Cezarov pomak“. Ideja je bila u pomicanju svih slova za unaprijed određeni broj mjesta naprijed.

sar employed in military campaigns and domestic communication. In his honour, the cipher was later named Caesar cipher or Caesar shift. The idea lies in shifting all letters by a fixed number of positions to the right.



Cezarova šifra ili *Cezarov pomak* / *Caesar cipher* or *Caesar shift cipher*

U srednjem je vijeku kriptografija je osim na dvorovima vladara često korištena i u službi Crkve, pa tako na zahtjev pape Klementa VII Gabrieli di Lavinde stvara šifru nomenclator. Zbog prvenstvenog kodiranja imena, šifra je ime dobila prema službeniku koji je uz pomoć kodne knjižice najavljivao dugačke naslove velikodostojnika prilikom posjeta. S vremenom se postupno proširila i na druge opće pojmove i toponime. Kombinacija kodne knjige i supstitucijske abecede iznjedrila je šifru koja je ostala u upotrebi 450 godina, iako su u međuvremenu stvorene i sigurnije šifre. Nomenklatori su uobičajeno sredstvo tajne komunikacije gotovo svake diplomatske korespondencije, špijunaže i napredne političke urote od ranog 15. do kraja 18. st. Rossignolova „Velika šifra“ – *Grand chiffre* – koju je koristio Luj XIV, sadržavala je tako tisuće simbola. Zbog kompleksnosti šifre prošlo je gotovo 200 godina do trenutka kada ju je Bazeries uspio probiti.

Sustav koji se sastoji od niza matematičkih pomaka, omogućujući pošiljatelju kodirane poruke da neprestano mijenja kodni algoritam služeći se različitim abecedama, zabilježio je

In the Middle Ages, cryptography was used not only in royal courts, but in Church as well. Therefore, on pope Clement VII’s request, Gabrieli di Lavinde created a cipher called a *nomenclator*. Because of its purpose of encrypting names, the cipher was named after a public official who used a small code book to announce the long royal titles of visiting dignitaries. In later years, besides names, the code covered many common words and place names as well. A combination of a code book and a substitution alphabet gave birth to a cipher that was used for 450 years, even though safer ciphers were developed meanwhile. Nomenclators were the standard fare of almost every diplomatic correspondence, espionage and advanced political conspiracy from the early 15th to the late 18th century. The Rossignols’ Great Cipher (*Grand Chiffre*), used by Louis XIV, thus consisted of thousands of symbols. Because of the complexity of the cipher, it remained undeciphered for almost two hundred years until Bazaries deciphered it.

Leon Battista Alberti (1404 – 1472), a renaissance humanist, philosopher and architect from Italy, described in his treatise *De cifris* (1466) a system of a sequence of mathematical moves that enable the

renesansni humanist, filozof i graditelj iz Italije Leon Battista Alberti (1404.-1472.) u djelu *De cifris* (1466.). Opisao je pomagalo s vanjskim krugom (stabilis) i slovima talijanske abecede te brojevima od jedan do četiri raspoređenima oko ruba, te unutarnji pomični krug (mobilis) s nasumično raspoređenim slovima abecede. Alberti je osmislio i kodnu knjigu s više od 300 fraza koje su sadržavale numeričke vrijednosti. Zbog svoje jednostavnosti za upotrebu, kodni diskovi u Albertijevu stilu ostaju u upotrebi sve do američkog građanskog rata (1861.-1865.).

Zahvaljujući i snažnom suparništvu talijanskih renesansnih državica i vojvodstava, kriptografija je u 15. st. u Italiji bila vrlo traženo umijeće. Na tragu Albertija, Giovanni Battista Bellaso (1505.- oko 1580.) objavio je tri rasprave o kriptografiji u kojima je istražio razne višeabecedne sustave šifriranja, osobito matematički sustav šifriranja utemeljen na *tabuli recti*, u sklopu kojeg se poruka šifrira primjenom progresivna Cezarova pomaka, te koji tako ovisi o ključu. Mnogi zasebni putevi koji su vodili do razvoja poli-alfabetske šifre spojeni su i objavljeni 1586. u djelu francuskog diplomata Blaisea de Vigenèrea, čije je ime danas neizbrisivo vezano za taj sustav, prozvan po njemu Vigenèreova šifra. *Le chiffre indéchiffrable* (francuski za "neprobojna šifra") tako je prema nekim povjesničarima vezana nezasluženo uz čovjeka koji ju je samo popularizirao.

O značaju kriptografije u to doba svjedoči činjenica da su u Veneciji 1542. u Duždevoj palači čak trojica tajnika radila na razradi vlastitih novih kodova, dešifrirajući istodobno neprijateljske kodove. Prvi kriptografski odjel, *cabinet noir* – tzv. crnu sobu – uspostavio je 1590. u Francuskoj Henri IV. Uskoro je kriptografske odjele imala većina europskih sila.

Tehničke novotarije 19. stoljeća, izumi optičkog i električnog telegrafa, Morseove abecede i pisaćeg stroja, kao pravu revoluciju u komunikaciji i samoj tehnici pisanja, donijeli su i u svijet kriptografije nove neslućene mogućnosti. Olovku i papir zamjenjuju strojevi, a s kulminacijom šifriranih sadržaja u drugom svjetskom ratu i potrebe za velikom količinom matematičkih proračuna, kriptoanaliza posredno dovodi do izuma elektroničkog računala.

recipient of an encrypted message to continuously change the encrypting algorithm using various alphabets. He described a device with an outer disk (*stabilis*), inscribed with letters of the Italian alphabet and numbers from one to four along the edge, and the inner ring (*mobilis*) with randomly arranged letters of the alphabet. Alberti also devised a code book with more than 300 phrases which comprised numerical values. Because of their simple usage, Alberti cipher disks were utilized up to the American Civil War (1861 – 1865).

Thanks to the fact that different Italian renaissance city states and dukedoms vied for power, cryptography was very much in demand in 15th-century Italy. Following Alberti, Giovan Battista Bellasso (1505 – ca 1580) published three treatises on cryptography in which he investigated various multialphabetic cipher systems. He focused on a mathematical cipher system based on a tableau *tabula recta*. In it, the message is encrypted using a progressive Caesar shift which thus depends on the key. The roads that lead to the development of a polyalphabetic cipher met in the work of a French diplomat Blaise de Vigenère in 1586, and the system continued to be associated with his name and was known as the Vigenère cipher. *Le chiffre indéchiffrable* (French for "unbreakable cipher") was thus, according to some historians, linked erroneously to the man who only popularized the method.

The importance of cryptography in that day is illustrated by the fact that in 1542 in Ducal palace in Venice as many as three secretaries were working on creating their own ciphers, while at the same time deciphering enemy ciphers. The first *cabinet noir* ("the black room") was established in 1590 in France by Henry IV. Soon every major European force had its own cryptographic divisions – the so-called black rooms.

Technical novelties of the 19th century – the invention of the optical and electrical telegraph, Morse code and the typewriter – while bringing a true revolution in communication and the very technique of writing, also brought new unimagined possibilities to the world of cryptography. Pen and paper were replaced by machines, and with the culmination of production of ciphered content in World War II and the need of a large amount of mathematical calculations, cryptanalysis had indirectly led to the invention of the electronic computer.

Enigma

Jedan od najzanimljivijih strojeva 20. st., neposredno vezan uz izum računala, poznati njemački kriptografski stroj Enigma, funkcionirao je kao pisaći stroj koji bi kriptirao i dekriptirao poruke napisane poli-alfabetskom supstitucijskom šifrom.

Enigmu, elektromehanički stroj s rotorima za šifriranje konstruirao je njemački inženjer Arthur Scherbius. Ranih su se 20-ih godina pojavili prvi komercijalni modeli na tržištu, no naprava je ubrzo privukla pažnju njemačke vojske.

S vremenom je njemačka vojska nabavila više od 30 tisuća primjeraka Enigme. Najveća prednost takvog mehaničkog kodiranja bila je brzina i male mogućnosti pogreške – početna se poruka upisivala s pomoću tipaka i tako se dobivao šifrirani tekst, koji se prenosio preko Morseova koda radijskom vezom. Primatelj je trebao samo ugoditi svoj uređaj na postavke identične uređaju pošiljatelja i utipkati šifriranu poruku, a uređaj bi izbacio dešifrirani tekst. Povodeći se za dnevnim kodnim postavkama, navedenim u kodnoj knjizi izdanoj za tekući mjesec, operateri bi svakog jutra promijenili poredak diskova za šifriranje, prilagodili orijentaciju te promijenili raspored na kontaktnoj ploči. Zahvaljujući spomenutim sustavima, u svakom pokušaju analize teksta bilo bi potrebno izvesti ukupno 10 000 000 000 000 000 proračuna. Budući da su se kodovi mijenjali svakoga dana, za takav posao valjalo je izmisliti računalo.

Koristeći se teorijskom matematikom i podatcima dobivenim od francuske obavještajne službe, trojica poljskih kriptoanalitičara: Marian Rejewski, Jerzy Różycki i Henryk Zygalski, konstruirala su 1932. obrnutim inženjeringom uređaj kojim je probijen kod njemačkih vojnih poruka šifriranih Enigmom. Zbog glasnih otkucaja koje je stroj ispuštao, njegovi konstruktori duhovito su ga prozvali „Bomba“. Od 1938. nadalje, kompleksnost novih modela Enigme nadmašila je sposobnosti „poljske Bombe“.

Enigma

One of the most interesting machines of the 20th century, directly connected to the invention of a modern computer, the famous German cryptographic machine Enigma, functioned as a typewriter that encrypted and decrypted messages written using the polyalphabetic substitution cipher.

Enigma – an electro-mechanical rotor cipher machine – was constructed by a German engineer Arthur Scherbius. In the early 1920s the first commercial models appeared on the market, and the device soon drew the attention of the German military.

The German army eventually bought more than 30,000 Enigma machines. The greatest advantage of such mechanical ciphering was the speed and small possibility of an error – the initial message was entered using the keys, and thus the encrypted text was given, which was further on transferred in Morse code via radio link. The receiver only had to adjust his machine to the sender's settings, type in the encrypted message, and the machine would produce a deciphered text. Following the daily key settings, specified in the code book published for the current month, operators would change the order of the cipher disks, adjust the orientation, and change the layout on the contact plate. Thanks to the mentioned system, in every attempt to analyze the text, one ought to carry out 10 000 000 000 000 000 calculations. Since the keys were changed every day, for that kind of work it was necessary to invent the computer.

Using theoretical mathematics and material supplied by French intelligence, three Polish cryptanalysts – Marian Rejewski, Jerzy Różycki and Henryk Zygalski – reverse-engineered the device which was used to break the cipher of German military messages enciphered on the Enigma. The loud ticking noise it made while computing made his constructors name it the "Bomba". From 1938 onward, the complexity of new Enigma models surpassed the abilities of the "Polish Bomb".

Probijanje Enigmina koda
Turingova bomba

Za dešifriranje njemačkih ratnih planova i pokreta, tijekom 2. svjetskog rata Britanci su u Bletchley Parku, sjedištu novoosnovane vladine škole za kodove i šifre (GS&CS), okupili iznimnu skupinu kriptoanalitičara, matematičara, znanstvenika, povjesničara, lingvista i raznoraznih stručnjaka uz pomno odabrano vojno osoblje.

Britanski elektromehanički stroj koji su za vrijeme drugog svjetskog rata, posudivši poljsko ime, razvili Alan Turing i Gordon Welchman dok su radili kao kriptoanalitičari u Bletchley Parku, poslužio je za razbijanje njemačkih Enigminih kodova. Stotine takvih „Turingovih bombi" izgrađeno je s namjerom da svakoga dana što prije otkriju početne pozicije rotora na njemačkim Enigmama, i omoguće dešifriranje neprijateljskih poruka.

Britanski su kriptolozi tijekom rata dešifrirali golemu količinu poruka kriptiranih Enigmom. ULTRA, kodno ime za obavještajne podatke dobivene dešifriranjem Enigme, bilo je, prema izjavi Winstona Churchilla pred kraljem Georgeom VI „Zahvaljujući ULTRI dobili smo rat".

Prvo elektroničko računalo bilo je Colossus. Računalo je konstruirano 1943. godine, u strogoj tajnosti, za kriptoanalizu poruka njemačkog kriptografskog uređaja Lorenz SZ-40/42 između 1943. i 1945. Colossus se za izradu svojih proračuna koristio elektroničkim (vakuumskim) cijevima i smatra se prvim svjetskim programibilnim, elektroničkim digitalnim računalom, iako je bio programiran pomoću prekidača i promjenama spojeva a ne s pohranjenim programom. Računske operacije obavljalo je 2000 elektroničkih cijevi. Po završetku rata Colossus je odmah prenamijenjen za dekriptiranje ruskih šifriranih poruka, što je radio sve do 60-ih godina. Uništenje Colossusa i njegove dokumentacije radi čuvanja vojne tajne, uskratilo je sve do 1970. priznanja za veliki pioniorski napredak u eri digitalnog elektroničkog računarstva svima uključenim u taj važni pothvat. Funkcionalna kopija Colossusa dovršena je 2007. Izložena je u Nacionalnom muzeju računalstva u Bletchley Parku.

Cracking the Enigma Code
Turing's Bomb

To decipher German war plans and movements during World War II, the British gathered the most unusual group of cryptanalysts, mathematicians, scientists, historians, linguists and other experts in Bletchley Park, the headquarters of the newly founded Government Code and Cypher School (GS&CS).

Borrowing the Polish name, the British electromechanical machine – developed in World War II by Alan Turing and Gordon Welchman, while working as cryptanalysts in Bletchley Park – was used to break the German Enigma codes. Hundreds of these "Turing bombs" were built to find out the initial rotor settings on German Enigmas and enable deciphering the enemy messages.

During the war, the British cryptologists deciphered a vast amount of messages encrypted using the Enigma machines. ULTRA – the code name given to intelligence data gained by deciphering the Enigma – was, as Winston Churchill once told King George VI, the reason they won the war: "It was thanks to ULTRA that we won the war".

Colossus was the first electronic computer. The computer was constructed in 1943 during the World War II. It had been constructed in strict secrecy and used for cryptanalysis of the German Lorenz SZ-40 cipher machine between 1943 and 1945. *Colossus* used its electronic (vacuum) tubes for its calculations, and it is considered the world's first electronic digital programmable computer, even though it was programmed using switches and plugs, and not a stored programme. Two thousand valves performed the calculations. After the war, Colossus was repurposed to decrypt the Russian encrypted messages, which was its task until the 1960s. The destruction of the Colossus machine and its documentation in order to keep military secrets, deprived everyone involved in this far-reaching project the recognition for the pioneering progress in the era of digital electronic computing until 1970.

A functional copy of Colossus was completed in 2007. It is now on display in the National Museum of Computing in Bletchley Park.

Suvremeni pogled na čitanje i pisanje
Modern View on Reading and Writing

Pismo i um
Writing and Mind

Igor Uranić

Za sposobnost čitanja i pisanja ljudi mogu zahvaliti velikoj preobrazbi koja se dogodila u posljednjih pet tisuća godina u ljudskom umu. Nesagledivim spletom evolucijskih okolnosti razvili smo moždanu mrežu koja povezuje vidna i jezična područja i dovoljno je plastična da sama prepoznaje oblike slova. Ljudski mozak sadrži kortikalne mehanizme koji su složenim vezama ugođeni za prepoznavanje pisanih riječi.

Isti mehanizmi kod svih ljudi smješteni su u identične regije mozga pa se pojavilo mišljenje da postoji zaseban moždani organ za određene funkcije. O toj mogućnosti razmišljalo se još sredinom 20. stoljeća, kad su u medicinskoj praksi opisani bizarni slučajevi ljudi koji su odjednom zaboravili čitati uslijed lakših moždanih udara lociranih tako da su oštetili isključivo funkciju čitanja dok su sve druge ostale očuvane. U svojoj knjizi *Čitanje u mozgu,* Stanislas Dehaene, direktor neurološkog odijela INSERMa (Institut national de la santé et de la recherche médicale) poziva se na danas poznatu činjenicu da se za različite funkcije: čitanje riječi, slušanje govora, pisanje i druge, koriste razni dijelovi mozga. Do spoznaje o tome došlo se magnet-

People owe the ability to read and write to the great transformation that occurred in the human brain in the last five thousand years. Through an unpredictable mix of evolutionary circumstances, the brain network developed that connects visual and linguistic areas of the brain, and is sufficiently plastic to recognize letters. The human brain contains cortical mechanisms that use complex connections to recognize written words.

In every person, the same mechanisms are located in the same regions of the brain, giving rise to the idea that there is a separate organ in the brain for distinct functions. This possibility was also studied in the middle of the 20th century, when scientists described bizarre cases of people who suddenly forgot how to read due to minor strokes in specific parts of the brain that damaged only the ability to read while all other faculties remained intact. In his book, *Reading in the Brain*, Stanislas Dehaene, director of the INSERM Cognitive Neuroimaging Unit (Institut national de la santé et de la recherche médicale) refers to a fact that for various functions (reading, listening) different parts of the brain are used. This concept was confirmed through functional magnetic resonance imaging (fMRI). It was found that the centre for recognizing written words, together with

skom rezonancijom (fMRI). Ustanovljeno je da se odozdo, sa stražnje strane lijeve moždane polutke nalazi centar za prepoznavanje pisane riječi, zajedno s još nekim centrima koji služe za prepoznavanje lica i predmeta. Zahvaljujući tim istraživanjima znamo da se znakovi vrlo različitih pisama, na primjer latinice i kineskog pisma, raspoznaju istim lijevim (okcipitotemporalnim) režnjem. Zanimljivo je da, bez obzira na sve razlike u pismu, kulturi i obrazovanju, čitamo istim dijelom mozga u svim dijelovima svijeta.

Danas se dosta zna i o samom procesu čitanja. Dok očima prelazimo preko stranice teksta, svaka riječ kroz oko dopire do centralnog područja naše mrežnice. To se središte mrežnice naziva *fovea* i ima veliku gustoću stanica visoke rezolucije osjetljivih na svjetlo. Da bi se riječi s podloge prenijele u foveu, oči su pri čitanju stalno u pokretu. Tim brzim pokretima usmjeravamo fotone koji odražene s ispisane stranice/podloge u mrežnicu, koja ih prosljeđuje u sitnim djelićima prema pojedinim dijelovima mozga, gdje se ponovno slažu tako da omogućuju razumijevanje. Naše oči se pri čitanju ne pokreću neprekinuto, nego i u sitnim pomacima zvanim sakade. Oči čine četiri do pet takvih pokreta u sekundi, omogućujući prijenos podataka u foveu. Pri tome jasno vidimo samo fokusirani dio teksta, iako imamo iluziju da nije tako. Ostatak okolnog teksta nam je mutan. Jedan skok oka, ili sakada, identificira 10 do 12 slova, i to 3 do 4 lijevo od fiksiranog mjesta i 7 do 8 desno. Iz navike čitanja proizlazi da smjer čitanja određuje i asimetričnost našeg vidnog polja. U zapadnoj kulturi je vidni opseg širi s desne strane, a kod čitatelja arapskog i hebrejskog pisma s lijeve. Kod čitatelja kineskog pisma sakade su znatno kraće jer je veća gustoća znakova, odnosno oni su složeniji. Time je vidni opseg čitatelja kineskog znatno uži. Za detekciju riječi dovoljno je 50 milisekundi.

Manje riječi poput veznika i zamjenica mogu se preskočiti jer se razumiju po ukupnom značenju teksta, a imenice i glagoli ne mogu. Na svakoj složenijoj riječi oči se moraju zadržati. Vježbom se čitanje može ubrzati premještanjem fokusa, pa najbrži čitači mogu pročitati i do 1600 riječi u minuti, što je tri do četiri puta

several other centres that serve to identify faces and objects, is located in the lower back part of the left hemisphere. Because of these studies, we know that the signs from different writing systems, for example Latin and Chinese, are recognized with the left (occipitotemporal) lobes. It is interesting that, despite the differences in writing systems, culture and education, we all read with the same part of the brain.

Today, we know a lot about the process of reading. As our eyes move across the page, every word goes through the eye and reaches the central area of the retina. The centre of the retina is called the *fovea*, composed of closely packed photosensitive cells. In order for the words to reach the *fovea*, the eyes constantly move while we read. These quick movements direct photons reflected from the printed page/substrate into the retina, which forwards them in tiny bits to certain parts of the brain, where they are reconnected to allow understanding. While reading, our eyes do not move continuously, but in tiny movements called *saccades*. Our eyes make four to five such movements per second, allowing the transfer of data to the *fovea*. In doing so, we can clearly see just the part of the text we are focusing on, although we have an illusion that it is not so. The rest of the text is blurry. One movement of the eye, or *saccade*, identifies 10 to 12 letters, 3 to 4 left from the position we are focusing on, and 7 to 8 to the right. The habit of reading shows that reading direction determines the asymmetry of our visual field. In Western culture, the visual field is wider on the right side, and for readers of Arabic and Hebrew it is wider on the left. For readers of Chinese, saccades are significantly shorter because of the higher density of characters, i.e. they are more complex so the visual field of the Chinese readers is much narrower. It takes 50 milliseconds to detect a word.

Smaller words like conjunctions and pronouns can be skipped because we understand them through the context, but nouns and verbs cannot. The eyes must stop on every more complex word. By practicing reading a person can accelerate shifting the focus, and the fastest readers can read up to 1,600 words per minute, which is three to four times faster than the average. By increasing the reading speed, we reduce the number of *saccades* per line and avoid going back to the part of the text we have already gone over.

brže od prosjeka. U vježbanju brzine čitanja smanjuje se broj sakada po retku i izbjegava povratak prema već prijeđenom tekstu.

Mehanizam prepoznavanja teksta nevjerojatno je sofisticiran. Bez problema zanemaruje promjene vrste fonta i velikih i malih slova. Međutim, zamjenu nekog slova koje mijenja značenje brzo ćemo uočiti jer ona bitno mijenja lanac obrade značenja.

Ulaskom u mozak na obradu, riječi se prosijavaju kroz niz sve finijih filtera koji ih postupno odvajaju i pridružuju stavkama u mentalnom leksikonu. Mozak vrlo brzo raščlanjuje složene riječi, tako da vadi iz njih morfeme (najmanje značenjske jedinice) pripremajući brzi put do značenja. Zahvaljujući sposobnosti prepoznavanja morfema, vrijeme potrebno za čitanje neke riječi ne ovisi o njezinoj duljini. Također, u cilju brzog usvajanja teksta riječi se vizualno usvajaju kao cjeline, a slova zanemaruju. Do tog saznanja se došlo testovima u kojima su ispitanici morali reći koja od niza ponuđenih riječi sadrži na primjer slovo „a". Pokazalo se da trebaju razmisliti iako su ih upravo pročitali.

Dok čitamo, možemo riječi bezglasno izgovarati u umu, ili im pristupiti samo mentalno. To su dvije različite putanje obrade teksta. Izgovaranje u umu, ili moglo bi se reći zamišljanje zvučnosti riječi, korisno je pri čitanju zahtjevnog teksta, ili teksta na stranom jeziku. Te dvije putanje asimilacije teksta u umu, leksička i fonološka, u prošlosti su bile temom rasprave. Mnogi su pretpostavljali da pri čitanju uvijek zamišljamo zvuk teksta. Prema najnovijim saznanjima te dvije putanje čitanja funkcioniraju paralelno i podržavaju jedna drugu. Tražimo li u tekstu riječi koje pripadaju drugom jeziku, moramo zamisliti njihov zvuk. Zvučnost također pomaže pri susretu s novim ili nepravilno napisanim riječima (na primjer, tekst koji citira govor osobe s govornom manom).

Brže se uče čitati jezici koje svako slovo koriste kao fonem (npr. talijanski), a sporije oni kod kojih je potrebno naučiti izgovaranje (engleski, francuski). Najzahtjevniji su za učenje sustavi morfosilabičkog tipa, poput kineskog. Naime, svaki fonem u tom je pismu popraćen fonetskim markerom prema kojem varira njegov izgovor. Dakle, sustavi pisanja su razvijeni ili

The mechanism for recognizing the text is incredibly sophisticated. It has no problem disregarding the changes in font or upper and lower case letters. However, the replacement of a letter that changes the meaning will be quickly perceived because it significantly changes the process of determining the meaning.

After entering the brain for processing, words go through a series of increasingly finer filters which gradually separate and join them with entries in the mental lexicon. The brain quickly breaks down complex words by removing morphemes (the smallest meaningful units of a language) and preparing a quick path to meaning. Because we have the ability to recognize morphemes, the time required to read a word does not depend on its length. Also, in order to quickly go through a text, words are visually perceived as whole units, and the letters are ignored. This was confirmed by a series of tests where participants had to say which of the offered words, for example, contained the letter "a". It turned out that they needed to think about the answer even though they had just read the words.

As we read, we can sound out the words silently in our heads, or access them mentally. These are two different ways of processing a text. Sounding out a word in your head, or simply imagining how a word sounds, is useful when reading a difficult text, or a text in a foreign language. These two types of text assimilation, lexical and phonological, were a subject of discussion in the past. Many speculated that while reading we always imagine the sound of the text. According to the latest research, these two types of reading are used at the same time and they support each other. If we are looking for words in a text that belong to another language, we need to imagine what they sound like. Resonance also helps when we come across new or incorrectly written words (for example, a text that quotes a person with speech impairments).

The languages that use each letter as a phoneme (Italian) are learnt faster, and those, for which you need to learn the correct pronunciation (English, French), slower. Morphosyllabic systems like Chinese are the most difficult to learn because each phoneme in the writing system is accompanied by a phonetic marker that determines the pronunciation. Hence, writing systems have developed based either on the precise representation of sounds (Ital-

na bazi točnog prikaza glasova (kao talijanski i hrvatski) ili brzog prenošenja značenja (npr. riječi „right", „writte" i „right" u engleskom zvuče jednako ali su u pismu odmah prepoznatljive kao različite).

Mentalni rječnici kod većine ljudi sadrže 50 do 100 tisuća riječi. Oko funkcioniranja mozga u prepoznavanju takvog kvantuma riječi našalio se informatičar Oliver Selfridge, koji je reakciju mozga na pojavu neke riječi nazvao „pandemonijom". On je rekao da je to kao da 100 tisuća demona u mozga skoči da vide kome od njih pripada pročitana riječ, a kad ih svih stotinu tisuća čuje, javi se jedan kome riječ pripada.

Čitanje nečitko napisana teksta, na primjer pisana rukom, omogućava nam njegovo značenje, jer je nekoliko čitljivih slova dovoljno da rekonstruiramo tekst. Upravo ta činjenica dovodi do pitanja o nastanku pisma i povezanosti toga izuma s ljudskim umom.

Mogućnosti mozga odredile su i povijest pisma. Postoje dileme je li u tome bio presudniji utjecaj ograničenja i mogućnosti mozga s jedne strane, ili utjecaj kulture i okoline. Je li dakle, neuronska obrada podataka osnovno ograničenje svakog sustava pisanja? Dok prema teoriji kulturnog relativizma kulturne granice u osnovi ne postoje. Iz te postavke slijedi da svaka kultura može razviti vrlo jedinstveno pismo. Tražeći, radi usporedbe i nadopune tih dvaju pristupa, zajedničke karakteristika svih vrsta pisama, istraživači su utvrdili: prvo, da se sva pisma odražavaju u fovei kao crna slova na bijeloj pozadini; drugo, znakovi svih pisama imaju relativno malen broj osnovnih oblika. To se odnosi i na kinesko i na japansko *kanji,* iako barataju velikim brojem znakova. Naime i u tim pismima svaki se znak sastoji od dva, tri ili četiri osnovna oblika, pa se neuroni vida suočeni sa sustavom s mnogo znakova koriste tim osnovnim oblicima. Nadalje, svim sustavima pisama zajedničko je to da istovremeno predstavljaju i zvuk i značenje.

Analiza 115 pisama navedena u spomenutoj knjizi, a kojom su bila obuhvaćena pisma od lineara B i etruščanskog pa do latinice, pokazala je nekoliko bitnih sličnosti. Većina znakova u pismima sastoji se od triju poteza ili krivulja koje se mogu iscrtati bez zaustavljanja olovke,

ian and Croatian) or rapid transfer of meaning (e.g., English words ''right'', ''write'' and ''rite'' all sound the same but are immediately recognizable as different in their written form).

Most people have mental lexicons that include about 50,000 to 100,000 words. Oliver Selfridge, a computer pioneer, made a joke about how the brain functions when recognizing a quantum like this. He called the brain's response to the occurrence of a word "pandemonium". He said it was like 100,000 demons in the brain jump when they hear a word in order to see who it belongs to, and when all of them have heard it, one that it belongs to will speak up.

Reading an illegible text, for example a text written by hand, allows us to understand its meaning, because only a few legible letters are enough to reconstruct the text. This is the fact that leads to questions about the origin of writing systems and the connection of their invention to the human brain.

The potential of the brain has also determined the history of writing systems. There are doubts whether the deciding factor was the limitations and possibilities of the brain, or the impact of the culture and the environment. Therefore, is the processing of the neural signal the principal limitation of any writing system? At the same time, according to the theory of cultural relativism, cultural boundaries basically do not exist. Accordingly, we can conclude that every culture can develop a unique writing system. While looking for common features of all types of writing systems to improve these two approaches, researchers have come to several conclusions: first, all writing systems are reflected in the fovea as black letters on a white background; second, the signs of all writing systems have a relatively small number of basic forms. This applies to both the Chinese writing system and the Japanese *kanji*, although they have a large number of symbols. In these scripts, each character consists of two, three or four basic forms, so neurons, faced with a system with a lot of characters, use the basic forms. Furthermore, all writing systems have one thing in common – they represent both sound and meaning at the same time.

By analysing 115 writing systems listed in the abovementioned book, which included writing systems from the Linear B and the Etruscan alphabet to the Latin script, several important similarities have been discovered. Most of the characters in all

a varijacije broja poteza kreću se od jedan do četiri. Na primjer slova latinske abecede sastoje se od jednog (C, I, J, S, U), dvaju (D, G, L, P, Q, T, V, X), triju (A, B, F, H, K, N, R, Y, Z) ili četiriju poteza (E, M, W). Čini se da su ljudi u davnini, kad su ta pisma nastajala, izabirali prosječno tri poteza po znaku, jer to najbolje odgovara recepcijskom polju neurona. Isto se tako u kineskom pismu većina znakova sastoji od spoja dvaju, triju ili četiriju semantičkih ili fonetskih oznaka.

Daljnja sličnost je u tome što su u svim su pismima odabrani oblici koje slijede jasne linije prirodnih pojava, ili okoline, jer njihovo usvajanje zahtijeva najmanje napora. Već crteži nastali prije 33000 godina u spilji Chauvet u južnoj Francuskoj pokazuju kako se sa samo nekoliko poteza može dobiti prepoznatljiva slika životinje.

Što se tiče dileme znanstvenika oko utjecaja ljudskog mozga i kulture na nastanak i razvoj pisma, to jest oko toga koji je od ta dva faktora važniji, tu možemo govoriti o kulturnim, ali ne i kognitivnim razlikama.

Čovjek i njegova kultura jesu dio prirode, a mogućnosti mozga i oka razvijene su u skladu s evolucijskim potrebama. No razvoj uma koji je stvorio pismo isključivo je ljudsko postignuće, pa se čini logičnim da upravo iz njega dolazi nevjerojatna sposobnost pisanja i čitanja.

Čini se da se upravo nalazimo na kraju ere pisanja rukom i da će, po nekima, ono nestati tijekom ovog stoljeća. Djeca, nakon završene škole pisanje rukom svode na minimum, a takozvani krasopis je već sada povijest. Rukopis otkriva osobine svakog pojedinca i razvija se tijekom čitavoga života prolazeći kroz različite faze. U početku sva djeca pišu gotovo jednake znakove, jer je oblikovanje slova pod kontrolom. S vremenom se javljaju odstupanja i rukopis sve više izražava individualnost. Grafološki vještaci, kako navodi udžbenik *Forenzika* (ur. Gordan Mršić), koji se bave porijeklom rukopisa iz svakoga teksta mogu dobiti niz podataka: je li riječ o zatvorenoj ili komunikativnoj osobi, mlađoj ili starijoj, je li toj osobi narušeno zdravlje i slično. To se iščitava iz jasnoće rukopisa, veličine slova, nagiba i drugih značajki. Uredan rukopis ne otkriva inteligenciju već učestalost pisanja, a

writing systems are composed of three strokes or curves that can be drawn without stopping the pen, and variations in the number of strokes go from 1 to 4. For example, the letters of the Latin alphabet consist of one (C, I, J, S, U), two (A, G, L, P, Q, T, V, X), three (A, B, F, H, K, N, R, Y, Z) or four strokes (E, M, W). It seems that the people in ancient times, when the writing systems were created, chose an average of three strokes per character, because it corresponds to the receptive field of neurons. Similarly, the majority of characters in the Chinese script consists of a combination of two, three or four semantic or phonetic symbols.

Another similarity is that all writing systems have forms that follow clear lines of natural phenomena, or the environment, because learning them requires a minimum of effort. Even paintings created 33,000 years ago, in the Chauvet Cave in southern France, show that you can draw an easily recognizable Pic. of an animal with just a few strokes.

As for the dilemma the scientists have about the impact of the human brain and culture on the formation and the development of writing systems, or which of these two factors is more relevant, only cultural and not cognitive differences are to be taken into account.

Humans and their culture are a part of nature, and the capabilities of the brain and the eyes were developed in accordance with our evolutionary needs. However, the development of the brain that created different writing systems is solely a human achievement, so it seems logical that our astonishing ability to read and write comes from it.

It seems that we are at the end of the era of writing by hand and that, according to some, it is going to disappear in the course of this century. Children, after leaving school, rarely write by hand, and calligraphy is already history. Handwriting reveals characteristics of each individual and develops throughout our lives by going through various stages. When children start writing, they all write almost identical characters, since the formation of the letters is under control. Over time, there are more and more differences and handwriting increasingly expresses one's individuality. Graphology experts, according to the textbook *Forensics* (ed. Gordan Mršić), that study the origin of handwriting, can get a lot of information from any handwritten text: whether it was written by an introvert or an extrovert, young

potpis osobe velikim i nečitljivim slovima može ukazivati na lukavu i samouvjerenu osobnost.

Kako je sposobnost čitanja i pisanja iznimno važna u razvoju ljudskog mozga, postavlja se pitanje što će se dogoditi u digitalnoj eri. Hoće li pisanje na digitalnim uređajima promijeniti strukturu ljudskog mozga? Prema recentnim istraživanjima neurologa, pokazalo se da pisanje rukom aktivira ona područja u mozgu koja nam pomažu u bržem učenju. Pisanjem na tipkovnici, s druge stane, štedimo dosta vremena, a tekst je u svakom trenutku moguće preraditi. Ali pisanje rukom ima neke druge prednosti. Neurološke studije potvrdile su u djece lakše i trajnije pamćenje novih informacija do kojih se došlo zapisivanjem rukom. Isto tako, i povećanu kreativnost. Naime, dok pišemo aktivira se neuronski krug koji nije aktivan pri pisanju na uređajima.

Nove tehnologije komuniciranja pisanja, čitanja i učenja u smislu interaktivnih mrežnih knjiga donose novo i drugačije u ovom evolucijskom segmentu ljudskosti. U digitalnom dobu pisanje rukom i umjetnost kaligrafije žive u tišini, u sjeni masovnog tipkanja na računalima i smatrphonima. Ljudi koji pišu rukom ponovno otkrivaju bit umijeća koje nas je oblikovalo.

or old person, or whether the person is ill, etc. That information can be extracted from the precision of the handwriting, font size, slope and other features. Neat handwriting does not reveal intelligence but the frequency of writing, and a large signature with illegible letters may indicate a cunning and confident personality.

As the ability to read and write is extremely important in the development of the human brain, we must ask ourselves: what will happen in the digital era? Will writing on digital devices change the structure of our brain? Recent neurological research has shown that writing by hand activates areas of the brain that help us learn faster. Writing on a keyboard, on the other hand, saves a lot of time, and the text can be revised at any point. However, writing by hand has some other advantages. Neurological studies have confirmed that children will acquire new information more easily, and remember it for a longer time, if they write by hand. In fact, a neural circuit, not active when writing on digital devices, is activated while writing by hand.

New technologies of communication, writing, reading and learning, in terms of interactive network books, bring something new and different to this evolutionary segment of humanity. In the digital age, writing by hand and the art of calligraphy live in silence, in the shadow of mass typing on computers and smartphones. In a way, people who write by hand are rediscovering the essence of the skill that shaped us.

Zlatna ploča s Voyagera 1
Voyager 1 Golden Record

Igor Uranić

Ploča poslana u svemir 1977. godine, s porukom koju bi trebala razumjeti inteligentna bića što bi je mogla pronaći, uspoređuje se s vremenskom kapsulom i porukom u boci bačenom u beskraj svemira. Zapisi na ploči prikazuju glavne karakteristike ljudske kulture, biologije i planete Zemlje. Sadržaj zapisa na Voyagerovoj Zlatnoj ploči izabrala je komisija sa Sveučilišta Cornell kojoj je predsjedavao poznati znanstvenik Carl Sagan. Odabrali su 116 slika te mnogo audio-zapisa, od zvukova prirode, preko raznih vrsta glazbe, do rečenica izgovorenih na 55 jezika. Na njoj su i pisane poruke tadašnjeg predsjednika SAD-a Jimmyja Cartera te predsjednika UN-a Kurta Waldheima. Čini se da je Saganova komisija zaključila da bi izvanzemaljci najlakše od svega mogli razumjeti slike pa se poruke o čovječanstvu uvelike oslanjaju na piktograme. Među slikama su prikazani muškarac i žena, DNK, Sunčev sustav i položaj Zemlje u njemu, slike prirode, životinja, arhitekture, hrane i drugo. Ploča je izrađena od pozlaćenog bakra i postavljena na pojas oko trupa letjelice, a presvučena je izotopom urana 238 čije vrijeme poluraspada iznosi 4 milijarde 486 milijuna godina. Poruke je ponio i Voyager 2. Voyager 1 izišao je iz Sunčeva sustava 1990. godine, a trenutno se nalazi u Kuiperovu pojasu. Za 40 tisuća godina stići će do zvijezde Gliese 445 u zviježđu Camelopardalis. U to vrijeme Voyager 2 stići će do zvijezde Ross 248 u zviježđu Andromede. Dospiju li u ruke (ili što već) izvanzemaljaca, možemo se nadati da će oni ne samo uživati u Bachu i u „Johnny B. Goode" Chucka Berrya, nego i shvatiti da smo bića koja barataju jezikom i pismom.

The record which was launched into space in 1977 contains a message which intelligent beings should be able to understand, in case they happen to find it. The Golden Record is being compared to a message in the bottle, thrown into the abyss of the Universe. The surface of the record depicts the main characteristics of human culture, biology and the planet Earth. The contents of the Voyager Golden Record were chosen by a commission established at Cornell University and chaired by a famous astronomer Carl Sagan. The commission chose 116 Pic.s and a large collection of audio records, ranging from natural sounds, different styles of music, to a few sentences spoken in 55 different languages. The record also contains written messages by the then president of the United States, Jimmy Carter and the then UN Secretary-General, Kurt Waldheim. It appears that the Sagan Commission concluded that the aliens would find it much easier to understand Pic.s, so they chose to base their messages on pictograms. Among them are images of a man and a woman, of the DNA, of the solar system and Earth's position in it, Pic.s of nature, animals, architecture, food etc. The record itself was made of gold plated copper, placed on the middle section of the spacecraft and was coated with isotope of Uranium 238, which has a half-life of 4 billion and 486 million years. Voyager 2 also carries its own messages. Voyager 1 departed the solar system in 1990, and is currently inside the Kuiper belt. It should reach the star Gliese 445 located in the Camelopardalis constellation in 40,000 years. During that time Voyager 2 should reach the star Ross 248 in the Andromeda constellation. Should they fall into the hands (or whatever?) of the aliens we can only hope that they will not only enjoy the music of Bach or Chuck Berry's "Johnny B. Goode", but also understand that we are beings which have a grasp of language and script.


THE
SOUNDS
OF
EARTH
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POST SCRIPTUM

Povijest i značenje umijeća pisanja

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