

# Liber i mumija

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**Uranić, Igor; Appio Giunio, Kornelija; Petrović, Ante; Šekrst, Kristina;  
Dujmušić, Dorela; Modrić, Damir; Džimbeg-Malčić, Vesna; Čavka, Mislav**

**Edited book / Urednička knjiga**

*Publication status / Verzija rada:* **Published version / Objavljena verzija rada (izdavačev PDF)**

*Publication year / Godina izdavanja:* **2020**

*Permanent link / Trajna poveznica:* <https://um.nsk.hr/um:nbn:hr:300:668966>

*Rights / Prava:* [In copyright](#)/[Zaštićeno autorskim pravom.](#)

*Download date / Datum preuzimanja:* **2024-11-23**



*Repository / Repozitorij:*

[AMZdepo - Repository of the Archaeological  
Museum in Zagreb](#)



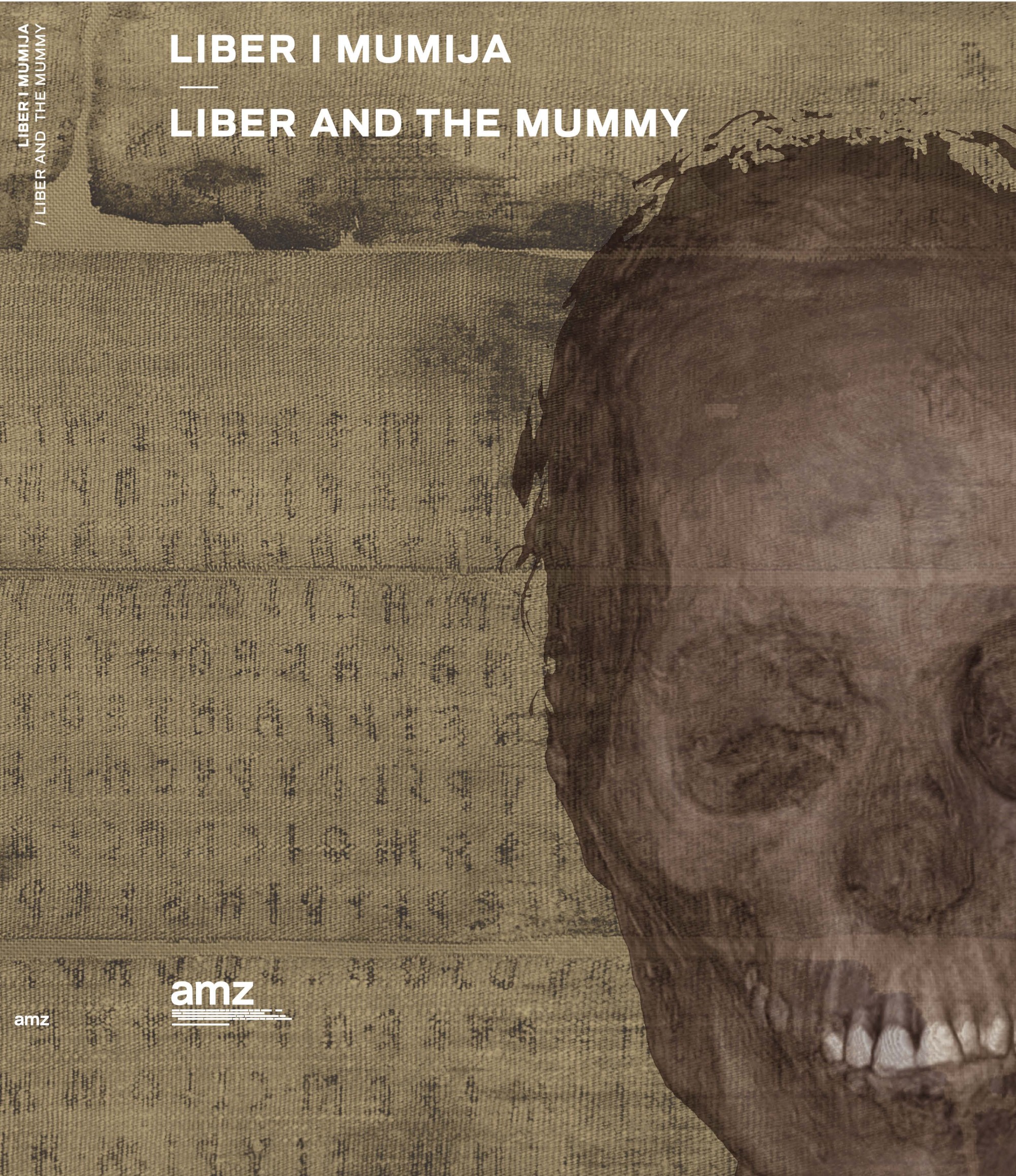
# LIBER I MUMIJA

# LIBER AND THE MUMMY

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/ LIBER AND THE MUMMY

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**LIBER I MUMIJA**  
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UREDNIK  
EDITOR

**IGOR URANIĆ**

**amz**  
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Musei Archaeologici Zagrabienis  
Opera varia

SVEZAK II  
VOLUME II



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**LIBER AND THE MUMMY**

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UREDNIK

EDITOR

**IGOR  
URANIĆ**

arheološki  
muzej  
u zagrebu  
archaeological  
museum  
in zagreb

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2019.

**Musei Archaeologici Zagrabienis  
Opera Varia**

SVEZAK II.  
VOLUME II

Tiskanje kataloga  
financijski je pomogli su  
Gradski ured za kulturu  
Grada Zagreba  
i Ministarstvo kulture i medija RH.  
The printing of this catalogue  
were financed by the  
City office for Culture  
of the City of Zagreb  
and Ministry of Culture and Media  
of the Republic of Croatia.



ISBN 978-953-8143-34-2

CIP ZAPIS dostupan  
u računalnome katalogu  
Nacionalne i sveučilišne  
knjižnice u Zagrebu  
pod brojem 001074539.

NAKLADNIK  
PUBLISHER

**Arheološki muzej u Zagrebu  
Archaeological Museum in Zagreb**

ZA NAKLADNIKA  
FOR THE PUBLISHER

**Sanjin Mihelić**  
Arheološki muzej u Zagrebu  
Archaeological Museum in Zagreb

UREDNIK  
EDITOR

**Igor Uranić**  
Arheološki muzej u Zagrebu  
Archaeological Museum in Zagreb

AUTORI TEKSTOVA  
AUTHORS

**Igor Uranić**  
**Kornelija A. Giunio**  
**Ante Petrović**  
**Kristina Šekrst**  
**Dorela Dujmušić**  
**Damir Modrić**  
**Vesna Džimbeg-Malčić**  
**Mislav Čavka**

RECENZENTI  
REVIEWERS

**Ivan Mirnik**  
**Ivan Radman Livaja**

LEKTURA HRVATSKOG JEZIKA  
CROATIAN LANGUAGE EDITOR

**Kristina Šekrst**

PRIJEVOD NA ENGLISKI JEZIK  
ENGLISH TRANSLATION

**Iva Stojević**

PRIJELOM  
LAYOUT

**Srećko Škrinjarić**

TISAK  
PRINTED BY

**Stega tisak, Zagreb**

NAKLADA  
PRINT RUN

**500**



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# I. POVIJEST

# I. HISTORY





# LIBER I MUMIJA — ATRAKCIJA I ENIGMA ARHEOLOŠKOGA MUZEJA U ZAGREBU

## LIBER AND THE MUMMY — THE ATTRACTION AND THE ENIGMA OF THE ARCHAEOLOGICAL MUSEUM IN ZAGREB

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Igor Uranić

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### Dolazak u Zagreb

U desetljećima djelovanja Ilirskoga pokreta, koji se oslanjao na ideju panslavizma i hrvatskoga narodnoga preporoda, u prvoj polovici 19. stoljeća hrvatska intelektualna elita nastojala je obnoviti i razvijati hrvatske kulturne specifičnosti i baštinu, što dovodi do osnivanja glavnih nacionalnih institucija, među kojima je i bio Narodni muzej. Po uzoru na europske trendove u tom se muzeju započinje skupljati umjetnička i arheološka građa, koja je dijelom iz drugih i egzotičnih izvora. Mnogi domaći kolekcionari i donatori pridonijeli su osnivanju ranoga fundusa Narodnoga muzeja. Jedna od tih „egzotičnih“ akvizicija dogodila se 1862. godine, a bila je osobito zanimljiva javnosti.

Između 22. i 25. srpnja 1862. godine, trideset tri godine prije otvorenja Hrvatskog narodnog kazališta, i dvadeset osam godina prije dovršenja zagrebačkoga Glavnoga kolodvora, tri velika sanduka prevezena su željeznicom iz Beča do postaje Zidani Most, a odande kolima do Zagreba, gdje su spomenici pohranjeni u Narodnom muzeju. Taj podatak navodi dopis<sup>1</sup> Ivana Mažuranića, predsjednika Kraljevske dvorske kancelarije dalmatinsko-hrvatsko-slavonske. Iz dopisa se ne može točno utvrditi kojega je od dana u tom intervalu građa točno prispjela u Zagreb, no kako izvještaj završava s 25. srpnja, tako je vjerojatno da se to dogodilo upravo toga dana. U pošiljci se nalazila egipatska mumija i njezini ispisani povoji te niz manjih predmeta povezanih s ukopom mumije. U to vrijeme vrijedan dar postat će još vrijedniji kad se nekoliko desetljeća poslije ustanovi da je ono što je napisano na povojima mumije najduži ikad pronađeni etruščanski tekst te stoga nazvan *LIBER LINTEUS ZAGRABIENSIS* (Zagrebačka lanena knjiga), a mumija s kojom je povezan postat će poznata kao *ZAGREBAČKA MUMIJA*.

### The arrival to Zagreb

During the first half of the 19<sup>th</sup> century, in the decades when the Illyrian movement (based on the idea of pan-Slavism and the Croatian national revival) was active, the Croatian national elite tried to renew and develop Croatian cultural specificities and heritage, thereby leading up to the establishment of the main national institutions, including the National Museum. Based on European trends, that museum started to collect works of art and archaeological material that partially originated from other, exotic, sources. Numerous local collectors and donors contributed to the creation of the National Museum's fundus. One of the mentioned "exotic" acquisitions, which were especially interesting to the public, occurred in 1862.

Between July 22 and 25, 1862, thirty-three years before the Croatian National Theatre was opened, and twenty-eight years before the completion of the Main train station in Zagreb, three large crates were transported from Vienna to Zidani Most via railroad, and were hauled from there to Zagreb by wagons and then stored at the National Museum. This data was recorded in a letter<sup>1</sup> written by Ivan Mažuranić, the president of the Royal Dalmatian-Croatian-Slavonian Court Office. The record does not specify the exact date when the material arrived to Zagreb, but, seeing as the record was finished on July 25, it seems likely that it happened precisely on that day. The shipment included an Egyptian mummy, its inscribed wrappings, and a series of items that could be connected to the burial of the mummy. What was then seen as a valuable gift become even more precious when, and few decades later, it was determined that what was written on the wrappings of the mummy was the longest text in the Etruscan language ever discovered – it was therefore given the name of *LIBER LINTEUS ZAGRABIENSIS* (the Linen Book of Zagreb), and the associated mummy would become known as the *ZAGREB MUMMY*.

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1 Mirnik – Rendić-Miočević 1986: 43-44.

1 Mirnik, Rendić-Miočević 1986: 43-44.



Zagrebačka mumija.

The Mummy of Zagreb.

Neobičan je spoj, ali i put kojim su ta dva spomenika došli do Arheološkoga muzeja u Zagrebu (jednoga od četiriju koji su nastali iz tadašnjega Narodnoga muzeja) te dug oko 2300 godina. A od toga dugoga putovanja poznajemo tek neke dijelove, dok ih većinu tek nastojimo otkriti. Govoreći od donaciji koja se odigrala u 19. stoljeću, riječ je o ostavštini Mihaela Barića<sup>2</sup>, koji je u svojem testamentu izrazio želju da se spomenici doniraju Akademiji ili Narodnomu muzeju u Zagrebu. Mihael Barić rođen je 1791. godine u Semeljima u Slavoniji. Studirao je teologiju, a nakon studija nalazi posao u strukturama Austrougarske Monarhije. Pojednost iz Barićeva života nisu poznate, no čini se da je njegova karijera bila uspješna jer je zabilježeno da je 1829. radio u Beču u dvorskoj administraciji. Očito dobrostojeći Barić potkraj 1848. i početkom 1849. godine boravio je u Egiptu te je tom prilikom kupio mumiju, za koju se pretpostavlja da je još bila zaštićena povojima. Čini se da je imao ozbiljne kolekcionarske pobude jer je uz mumiju Barić kupio predmete za koje je vjerovao da joj pripadaju: cvijeće, lišće, ogrlice od staklene paste, dijelove kartonaže i mumiju mačke te jedan svitak papirusa s nekoliko poglavlja iz egipatske *Knjige mrtvih*. Što se tiče tih predmeta, koje je Barić povezivao s mumijom jer ih je možda tako prezentirao neki egipatski trgovac, ipak nema uvjerljivih dokaza da su oni uopće bili povezani s mumijom o kojoj govorimo. Veća je vjerojatnost da su oni trebali pospješiti ponudu same mumije i podići joj cijenu. Najvjerojatnije, trgovac je posjedovao više predmeta pronađenih na nekim od pogrebnih lokaliteta pa je te predmete nudio povezujući ih radi prodaje. Što se same *Knjige mrtvih* tiče, budući da raspoložemo autentičnim egipatskim tekstom, razvidno je da je papirus barem jedno stoljeće mlađi od same mumije. Nažalost, o uvjetima kupnje mumije, točnom mjestu, a kamoli lokaciji njezina nalaska ne zna se ništa bliže. No nedavno provedena istraživanja (kao i neka starija, primjerice datiranje pomoću <sup>14</sup>C) potvrdila su da nema sumnje da se radi o mumiji iz faraonskoga doba, izrađenoj tehnikom primjerenom starim Egipćanima.

Both the connection between these two monuments, as well as the about 2300-year-long path they took to get to the Archaeological Museum in Zagreb (one of four museums that developed from the then National Museum) are unusual. Only parts of this long journey are known, while most are still being reconstructed. The donation that occurred in the 19<sup>th</sup> century is, in fact, the inheritance of Mihael Barić<sup>2</sup> who, in his testament, expressed his wish to donate the monuments to either the Academy, or the National Museum in Zagreb. Mihael Barić was born in 1791, in the village of Semeljci in Slavonia. He studied theology and, upon graduation, got a job in the structures of the Austro-Hungarian Monarchy. Details about Barić' life are not known, but it seems he had a successful career, seeing as records mention him working at the Court administration in Vienna in 1829. The clearly well-off Barić traveled to Egypt at the end of 1848 and the start of 1849, and acquired a mummy that was, presumably, still protected by its wrappings. It seems he was a highly motivated collector, because he also bought items he believed accompanied the mummy: flowers, leaves, glass paste necklaces, parts of cartonnage and the mummy of a cat, as well as a scroll of papyrus that contained several chapters from the Egyptian *Book of the Dead*. There is no convincing evidence that the items Barić connected with the mummy, probably based on the words of an Egyptian vendor, are in fact connected to the mummy in question. It seems more likely that they were used to enhance the offer and raise the price of the mummy itself. The vendor was, most likely, in possession of numerous items discovered at some of the burial sites, and presented them as a unit so as to sell them more easily. Regarding the *Book of the Dead*, it seems that the papyrus is at least a century younger than the mummy, seeing as it is an authentic Egyptian text. Unfortunately, the conditions of the acquisition of the mummy and the exact place, let alone the location of its discovery, are unknown. However, recently conducted research (as well as some older ones, such as the <sup>14</sup>C datation) confirms that the mummy is undoubtedly from the pharaonic period and that it was made in a technique ascribed to the ancient Egyptians.

Probably thinking it would make it look impressive, Barić fastened the mummy onto a wall in standing position in his house in Vienna. This, of course, was not the best idea when it came to its long-term preservation. Even in the oldest photographs, the linen wrappings were already removed from the mummy. It is not clear how this collector came to the idea of removing the wrappings from the mummy. Was it already partially unwrapped, or were the wrappings in poor condition? When it comes to these questions, we can only speculate, but what is known is that, at the time, the unwrapping of Egyptian mummies was seen as an attraction by the intellectual elites, so it is possible that Barić arranged a private event of that type to appease the curiosity of his contemporaries who saw Egypt as an intriguing and mysterious country.

<sup>2</sup> Opširnije s citatima izvornih dokumenata vidi: Mirnik – Rendić-Miočević 1986: 41-49.

<sup>2</sup> For more detailed information and quotes from original documents, see: Mirnik, Rendić-Miočević 1986: 41-49.

Barić je u svojoj kući u Beču mumiju pričvrstio na zid u stojećem položaju, smatrajući valjda da tako djeluje impresivno, što dakako nije bilo baš najbolja zamisao kad je riječ o njezinu dugoročnom čuvanju. Na najstarijim fotografijama mumija je već bez lanenih povoja. Nije jasno kako je ovaj kolekcionar došao na ideju skidanja povoja s mumije. Je li možda ona već bila dijelom razmotana ili su možda povoji bili u lošem stanju? O tome možemo samo nagađati. Ono što znamo jest da su odmotavanja egipatskih mumija u to vrijeme bila atrakcija za intelektualnu elitu pa postoji mogućnost da je Barić upriličio neko privatno događanje toga tipa kako bi zadovoljio znatiželju svojih suvremenika, za koje je Egipat još uvijek bio intrigantna i tajnovita zemlja. No, ne postoji dokument koji bi to potvrdio. Skinuvši lanene povoje, Barić je na njima otkrio tekst, za koji je vjerovao da je napisan na staroegipatskome pismu. Time su dva spomenika zauvijek fizički razdvojena, a Lanena knjiga otkrivena, možda pukim slučajem koji je inicirala znatiželja kolekcionara.

Mumija i *Liber* ostali su u Barićevoj kući do njegove smrti 1859. godine, nakon koje se realizirala spomenuta donacija, čime je zaključeno ono što pouzdano znamo o povijesti tih dvaju spomenika od njihova otkupa do donacije, što su se odigrali u 19. stoljeću.

Rani kustosi muzeja nisu pobliže poznavali egiptološku građu, ali pretpostavljali su da se na lanenim povojima nalazi egipatski tekst. Godine 1892. u posjet zagrebačkoj Egipatskoj zbirci doputovao je bečki egiptolog Jakob Krall. Upoznavši se s tekstem na spomeniku *Liber linteus*, on je prvi zaključio da se ne radi o staroegipatskom već etruščanskome rukopisu. Uskoro je u znanstvenoj javnosti postalo poznato da se u Zagrebu čuva najduži dosada pronađeni etruščanski tekst. Time je rukopis dospio u središte pozornosti etruskologa i lingvista diljem svijeta. Naime, riječ je o jeziku koji je još uvijek nepoznat znanosti upravo iz razloga nedostatka izvornika koji bi omogućili njegovu potpunu rekonstrukciju. Od vremena dolaska u Zagreb pa sve do danas Lanena knjiga i mumija izloženi su u postavima muzeja, ali bili su i predmetom brojnih istraživanja i znanstvenih radova koji su pokušavali odgonetnuti njihov nastanak, povezanost i svrhu.

There are, however, no documents to support this hypothesis. Once he removed the linen wrappings, Barić discovered a text that he believed was written in ancient Egyptian script. In doing this, he physically separated the two monuments forever, and the linen book was discovered possibly by sheer chance initiated by the collector's curiosity.

The mummy and the *Liber* remained in Barić's house until he died in 1859. This was followed by the mentioned donation that marked the end of what can conclusively be said about the history of the two monuments from their acquisition and the donation that occurred in the 19<sup>th</sup> century.

Some of the first Museum curators were not familiar with Egyptological material, but assumed the wrappings contained an Egyptian text. In 1892, the Zagreb Egyptian collection was studied by Egyptologist Jakob Krall from Vienna. Seeing the text on the *Liber*, he was the first to conclude that it was an Etruscan, and not an ancient Egyptian manuscript. Soon, the scientific public became aware that the longest discovered text in Etruscan was being kept in Zagreb. Thereafter, the manuscript made its way to the center of Etruscologists and linguists from all over the world. Namely, it is a language that is still unknown in science precisely because there are no original texts that would allow for its complete reconstruction. From its arrival to Zagreb the present day, the Linen Book and the mummy have been parts of museum displays, but were also the subjects of numerous research and scientific papers that strive to uncover the mystery of their creation, connections and purpose.

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Zagrebačka mumija izložena u Narodnom muzeju (današnja zgrada HAZU na Trgu Nikole Šubića Zrinskog).

The Zagreb Mummy on display at the National Museum (today's building of the Croatian Academy of Sciences and Arts, Nikola Šubić Zrinski Square).



## Rekonstrukcija, istraživanja i izlaganja

Bivši ravnatelj muzeja Ante Rendić-Miočević i također umirovljeni kustos Numizmatičke i Egipatske zbirke dr. Ivan Mirnik u posebnoj su izdanju *Vjesnika Arheološkog muzeja u Zagrebu* iz 1986. godine *Liber linteus Zagrabienensis* vrlo iscrpno opisali povijest *Libera linteusa* i Zagrebačke mumije, predloživši i citirajući pritom sve relevantne povijesne dokumente povezane s akvizicijom spomenika, sva istraživanja provedena u 20. stoljeću i sve ljude koji su se ovi spomenicima na bilo koji način bavili. Uz veliku zahvalnost toj dvojici stručnjaka u ovom novom izdanju, prije nego što se posvetimo novijim istraživanjima, potrebno je ukratko ponoviti sve navedeno.

Nakon Krallove ekspertize i otkrića da se radi o etruščanskom tekstu u Zagrebu je boravio niz stručnjaka koji su pokušavali istraživati Lanenu knjigu. Među njima treba izdvojiti Nijemca Gustava Herbiga (Kaiserslautern, 3. lipnja 1868. — München, 1. listopada 1925.), koji je Zagreb posjetio 1910. godine u pratnji fotografa. Objavio je zapažen prilog o tekstu Lanene knjige, a Herbigova je osobita zasluga što je u masi preostalih povoja slijepljenih balzomom otkrio još jedan, dotada nepoznat, ulomak teksta, za koji se ustanovilo da pripada samom početku rukopisa Lanene knjige.

Tadašnji upravitelj Arheološkoga odjela Narodnoga muzeja Josip Brunšmid (1858.–1929.) zamolio ga je da u njegovoj prisutnosti izvede djelomičnu vodoravnu rekonstrukciju Lanene knjige lijepljenjem povoja steriliziranim ljepljivom na podlogu od grube gaze, kako bi se na taj način umanjila mogućnost njihova oštećenja. Budući da je Herbig 1913. godine postao redovni profesor Sveučilišta u Rostocku u Mecklenburgu, usto što je u istom gradu kao direktor Instituta za farmakologiju i fizikalnu kemiju djelovao Rudolf Kobert (1854.–1918.), poznati stručnjak za zaštitu arheološkoga materijala, osobito staroga tekstila, u Rostock je upućen manji ulomak neispisanih povoja, kako bi se, u slučaju da se zahvat pokaže uspješnim, postupak zaštite mogao primijeniti i na dijelove povoja ispisane tekstem. Rezultat je bio zadovoljavajući, pa je Kobertu povjereno i čišćenje „novoga fragmenta“.

Restauratorica švicarskoga Abegg-Stiftung (Fondacije Abegg iz Riggisberga) Dr. Mechtild Flury-Lemberg, inače istaknuta stručnjakinja za tekstil, koja se između ostaloga u svojim radovima bavila i problemima restauriranja Torinskoga platna, posjetila je Zagreb 1984. godine upoznavši se sa stanjem Zagrebačke lanene knjige, nakon čega je u siječnju 1985. u Abegg-Stiftungu obavljena ponovna restauracija<sup>4</sup> prema programu zahvata koji je Flury predložila. Lanene trake s tekstem skinute su s grube lanene gaze, na koju su prethodno bili prilijepljene, te je s njih bio skinut sloj ljepljive. Uklanjanje ljepljive bio je ujedno i najteži dio posla. Nakon toga stupci spomenika *Liber linteus* ponovno su poslagani. Budući da su se pojedini dijelovi ispisanih povoja u međuvremenu izobličili, korišteni su specijalni postupci vlaženja vodenom parom kako bi ti deformirani fragmenti zadobili svoj prethodni oblik. Ta rekonstrukcija značila je da su se pojedini stupci teksta morali točno poklopiti kako bi Lanena knjiga bila vraćena u svoj izvorni oblik. To je učinjeno na drvenoj ploči prekrivenoj mekim

## Reconstruction, research and displays

In the 1986<sup>3</sup> special edition of the *Vjesnik Arheološkog muzeja u Zagrebu*, entitled “*LIBER LINTEUS ZAGRABIENSIS*”, Ante Rendić-Miočević, the former director of the Museum, and Ivan Mirnik, PhD, the retired curator of the Egyptian and Numismatic Departments, went into great detail when describing the history of both the *Liber linteus* and the Zagreb Mummy, thereby presenting and quoting all relevant historical documents connected to the acquisition of the monuments, all research conducted in the 20<sup>th</sup> century, and mentioning all the people that handled the monuments in any way. Along with expressing gratitude to these two experts, in this new issue, it is necessary to summarize what has already been written.

After Krall's inquiry and the discovery that it was an Etruscan text, Zagreb was visited by a number of experts who tried to study the Linen Book. Special notice should be made of the German, Gustav Herbig, (Kaiserslautern, June 3, 1868 – Munich, October 1, 1925) who visited Zagreb in 1910, accompanied by a photographer. Herbig published a note on the text from the Linen Book, and is especially important because he discovered a previously unknown piece among the wrappings that were glued together by balm. This new piece of text, as was later established, goes to the very beginning of the manuscript of the Linen Book.

The then director of the Archaeological department of the National Museum, Josip Brunšmid (1858-1929), asked him to make a partial horizontal reconstruction of the Linen Book by using sterilized glue to fasten the wrappings to rough gauze in order to lessen possible damage. Seeing as, in 1913, Herbig became a professor at the University of Mecklenburg, and that Rudolf Kobert (1854-1918), and well-known expert on the preservation of archaeological material, especially ancient textiles, also worked in the same city as the director of the Institute of Pharmacology and Physical Chemistry, and a small piece of wrappings that contained no inscription was sent to Rostock so that, if the protective procedure was successful, the same could be applied to the parts of the wrappings that did contain inscriptions. The result was satisfying, so Kobert was given the task of cleaning the “new fragment”.

The restorer from the Swiss Abegg-Stiftung (the Abegg Foundation from Riggisberg), Mechtild Flury-Lemberg, PhD, a noted expert on textiles who, among other things, also studied the restoration of the *Turin Shroud*, visited Zagreb in 1984 to study the condition of the Linen Book of Zagreb. The book was restored anew in 1985 in Abegg-Stiftung<sup>4</sup> based on the procedures suggested by Flury. The linen bands that contained text were removed from the rough linen gauze that they had previously been glued to, and a layer of glue was removed. Removing the glue was the hardest part of the procedure and, after it was done, the columns of the *Liber linteus* were put back into place. Seeing as some of the wrappings with text changed their shape in the meantime, some of these deformed fragments were moistened with steam in order to give them back their previous shape. This reconstruction meant that individual columns had to be perfectly arranged so that the

3 Prema: Mirnik – Rendić-Miočević 1986: 40–71.

4 Flury – Lemberg 1986: 73-82.

3 According to: Mirnik-Rendić-Miočević 1986: 40-71.

4 Flury-Lemberg 1986: 73-82.





Lanena knjiga tijekom restauracije u Abegg-Stiftungu.

The Linen Book during the restoration at Abegg-Stiftung.

slojem tkanine i zaštićenom metalnim rubom te s prednje strane staklom. Tako rekonstruirana Lanena knjiga, zajedno s infracrvenom fotografijom iz toga vremena, može se vidjeti i danas u postavu Muzeja.

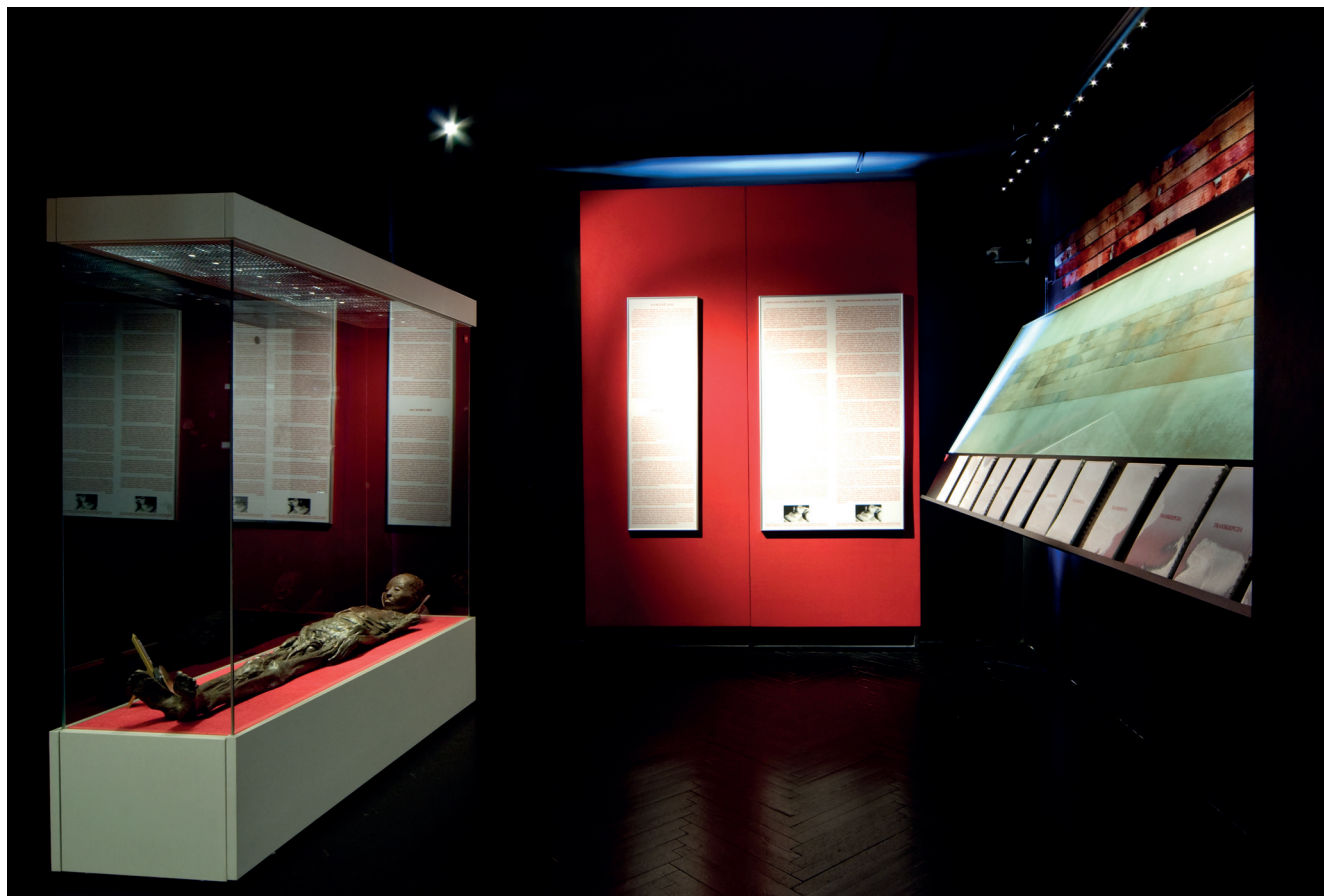
Uz voditeljicu laboratorija Mechtild Flury-Lemberg radovima je nazočio i Francesco Roncalli, nekadašnji redoviti profesor etruskologije na Sveučilištu u Perugiji. Tijekom ovoga zahvata izvršene su propedeutičke analize uzoraka tinte uzetih s povića br. 5, visini stupca X, kako bi se utvrdila vrsta crne i crvene tinte na lanenoj knjizi. Te analize izvršio je *Centraal Laboratorium voor Onderzoek van Voonverpen van Kunst en Wettenschap* u Amsterdamu u Nizozemskoj. Radovi na konzervaciji Lanene knjige završeni su potkraj travnja 1985. godine, nakon čega je 24. travnja taj dragocjeni spomenik u obnovljenom izdanju prikazan brojnim zainteresiranim stručnjacima iz Švicarske i nekih susjednih zemalja u predvorju muzeja Fondacije Abegg u Riggisbergu, uz prigodno predavanje prof. F. Roncallija. Nakon konzervacije iz Švicarske Zagrebačka lanena knjiga posebnim je transportom izravno prenesena u Italiju, gdje je bila prikazana na izložbi, što je pod nazivom *Scrivere etrusco* bila otvorena u Perugiji u obnovljenom izdanju Rocca Paolina, gdje je izložba trajala od 4. svibnja do 24. listopada 1985. godine. Tom prilikom izložen je bio i već spomenuti infracrveni snimak čitave Lanene knjige u boji, koji je izradio inženjer Maurizio Seracini, voditelj E. DI. TECH — *Electronics, Diagnostics and Technology* — Centra za umjetničku i arhitektonsku dijagnostiku iz Firence. Taj snimak djela *Liber linteus* izložen je uz spomenik jer se na njemu nešto jasnije vidi tekst. Izložbu u Perugiji pratio je i katalog-monografija s detaljnom

Linen Book could obtain its original shape. This was done on a wooden board that was covered by a soft layer of cloth and protected by a metal rim on the sides and glass in the front. The Linen Book, including the infrared photograph taken at the time, is what is still on display in the Museum's collection.

Along with Mechtild Flury-Lemberg, the head of the laboratory, the procedure was also witnessed by Francesco Roncalli, a former professor of Etruscology from the University of Perugia. The procedure included propedeutical analyses of ink from wrapping no. 5, column X, so as to establish the kind of black and red ink used in the Linen Book. The analyses were carried out at the *Centraal Laboratorium voor Onderzoek van Voonverpen van Kunst en Wettenschap* in Amsterdam, the Netherlands. The restoration of the Linen Book was finished at the end of April, 1985, and, on April 24, the renewed precious monument was revealed to numerous experts from Switzerland and some neighboring countries in the courtyard of the Abegg Foundation in Riggisberg, followed by a related lecture given by Professor F. Roncalli. After conservation, the Linen Book of Zagreb made its way from Switzerland directly to Italy, where it was part of an exhibition entitled *Scrivere etrusco* that was held in Perugia, in Rocco Paolini's renewed venue, between May 4 and October 25, 1985. The exhibition also included the aforementioned infrared photograph taken by engineer Maurizio Seracini, the head of E. DI. TECH - Electronics, Diagnostics and Technology - The Center for Artistic and Architectural Diagnostics from Florence. The shot of *Liber linteus* was displayed next to the monument because it was possible to see the text on it a bit clearer. The Perugia exhibi-

Mumija i Liber u novom Stalnom postavu Egipatske zbirke.

The Mummy and the Liber in the new permanent exhibition of the Egyptian collection.



dokumentacijom, koja se odnosi na tri najznačajnija spomenika prikazana na toj izložbi, tri najduža teksta etruščanskoga jezika na svijetu, Zagrebačku lanenu knjigu, Cibus iz Perugije i Tegulu iz Capue. U povodu održavanja te značajne izložbe u Perugiji je, u palači Gallenga, 27. rujna 1985. godine, organiziran i skup pod nazivom *Dan etruščanske knjige (Giornata del libro etrusco)* i tom prilikom o Zagrebačkoj lanenoj knjizi, o nekim njezinim karakteristikama te povijesnom i lingvističkom značenju govorili su F. Roncalli i M. Pallottino. Nakon toga *Liber linteus Zagrabienensis* predstavljen je i domaćoj javnosti u sklopu izložbe *Pisati etruščanski*, koja je od 27. siječnja do 2. ožujka 1986. godine bila otvorena u Muzejskom prostoru na Jezuitskom trgu u Zagrebu. Kao i u Perugiji, i na zagrebačkoj izložbi prikazana su tri spomenuta najduža etruščanska natpisa te poklopac urne iz Chiusija, na kojemu se sačuvao prikaz Lanene knjige iz etruščanske grobnice. U Zagrebu je bila izložena i mumija i njezini rendgenski snimci načinjeni u Kliničkom bolničkom centru Rebro u Zagrebu. Bila je izložena i ostala oprema koja navodno pripada mumiji.

U francuskom gradiću Lattara kraj Montpellieria u Musée archéologique Henri-Prades u suradnji s pariškim Louvreom održana je izložba *Les Étrusques en toutes lettres* (listopad 2015. – veljača 2016.). Ista izložba grupe autora, mahom najistaknutijih stručnjaka za etruščansku kulturu, održana je u talijanskoj Cortoni, gradu koji se nalazi u regiji koja obiluje etruščanskim nalazima. Izložba je održana u Museo dell'Accademia Etrusca (ožujak – srpanj 2016.) pod nazivom *Gli Etruschi maestri di scrittura* tijekom 2016. godine. Ta je izložba prikazala sve važne epigrafske spomenike iz opusa riznica talijanskih, ali i francuskih muzeja, ispisane

tion was accompanied by a catalogue-monograph with detailed documentation about the three most important monuments that were part of the exhibition – the world's three longest texts in Etruscan: the Linen Book of Zagreb, the Cippus from Perugia and the Tegula from Capua. To mark the significant exhibition, on November 27, 1985, the Gallenga palace in Perugia became the venue for the conference entitled *The Day of the Etruscan Book (Giornata del libro etrusco)*. On this occasion, F. Roncalli and M. Pallottino spoke about the Linen Book of Zagreb, some of its characteristics, as well as its historic and linguistic importance. After that, the *Liber Linteus Zagrabienensis* was presented to the national public at the *To write Etruscan* exhibition, held between January 27 and March 2, 1986, at the Museum's venue at Jezuitski Square in Zagreb. Just like in Perugia, the Zagreb exhibition also included the world's three longest Etruscan inscriptions, as well as the lid of the urn from Chiusi that has a preserved representation of a linen book from an Etruscan tomb. The Zagreb exhibition also included the mummy and X-rays of it that had been made at the Rebro Clinical-hospital center. All of the other finds that assumedly accompanied the mummy were also on display.

In cooperation with the Paris Louvre, the *Les Étrusques en toutes lettres* exhibition (October 2015 – February 2016) was set up in the French town of Lattar near Montpellier. The same exhibition, created by a group of authors, all experts on Etruscan culture, was held in Cortona in Italy – a city situated in a region that is abundant with Etruscan finds. The exhibition was set up at the Museo dell'Accademia Etrusca (March – July 2016), under the title *Gli Etruschi maestri di scrittura* in 2016. This exhibition included

Gabrijelli radi na Zagrebačkoj mumiji 1997. godine.

Gabrielli works on the Zagreb Mummy in 1997.



etrušćanskim pismom, među kojima naravno i najduži poznati – *Liber lintheus Zagrabienensis* iz Arheološkoga muzeja u Zagrebu.

Godine 2012. Zagrebačka mumija obrađena je metodom skeniranja računalnom tomografijom (CT), koju je obavio je dr. Mislav Čavka<sup>5</sup> u KB Dubrava. Ta istraživanja između ostaloga su pokazala da su kosti mumije trajno oštećene tijekom boravka u Beču, gdje ju je Barić izložio u okomitom položaju na zidu svoje kuće. Skenovi i filmovi iz toga istraživanja bili su izloženi uz ostale mumificirane ostatke (pet cjelovitih ljudskih mumija i mumificirani dijelovi tijela te osam životinjskih mumija) i rezultate novih istraživanja računalne tomografije (CT) i magnetske rezonancije (MR) u Arheološkom muzeju na izložbi *Mumije – znanost i mit* 2012. i 2013. godine, koja je privukla velik interes zagrebačke publike. Izložba se bavila mitskom i znanstvenom stranom pristupa egiptaskomu običaju mumificiranja.

Ove izložbe imale su velik odjek u medijima te kulturnoj i znanstvenoj javnosti, no istraživanja su ta koja su spomeniku *Liber lintheus* pridala njegovo pravo značenje. Jedno od najvažnijih bilo je određivanje starosti metodom radioaktivnoga izotopa ugljika (poznatoga kao ugljik <sup>14</sup>C). Taj postupak obavili su i objavili Dušan Srdoč i Nada Horvatinčić<sup>6</sup> u Institutu Ruđer Bošković, koji su metodu primijenili na uzorke lanenih pivoja, balzam i lišće, koji su bili povezani sa Zagrebačkom mumijom. Uzorci topivih i netopivih dijelova balzama te lišća i pivoja testirani su više puta te je naposljetku obavljena i dendrokronološka korekcija kojom se bitno smanjuje pogreška datiranja. Zaključak je bio da se laneni pivoji Zagrebačke mumije mogu smjestiti u 390. godinu pr. Kr. s mogućom pogreškom od +/- 45 godina. To bi značilo da je mumificiranje obavljeno u Egiptu u vrijeme kasnoga razdoblja (747. – 332. pr. Kr.), točnije, pri kraju toga perioda.

Inače, prvu radiološku obradu mumije obavili su Branko Plavšić i Janko Hančević koji su RTG mumije izradili u Kliničkom bolničkom centru Rebro 1986. godine. I to je istraživanje objavljeno u posebnom izdanju *Liber lintheus Zagrabienensis*<sup>7</sup> Arheološkoga muzeja u Zagrebu. Tijelo je snimljeno u četiri sekcije, a na rendgenogramima je bilo vidljivo da se radi o tijelu odrasle osobe ženskoga spola. U stražnjem dijelu lubanje i u području prsnoga koša detektirana je kuglasta masa smole, koja se koristila pri egiptaskim metodama mumifikacije.

Što se tiče čitanja samoga teksta lanene knjige veliki napredak postignut je 1932. god. To se dogodilo zahvaljujući fotografijama snimljenim pomoću tada inovativne tehnike infracrvenih zraka što ih je načinio poznati rusko-hrvatski fotokemičar Ivan Plotnikov (1878.—1955.) u suradnji s asistentima L. Splaitom i K. Weberom. Na infracrvenim snimcima načinjenim tom prilikom mogli su se znatno jasnije čitati dijelovi teksta prekriveni mrljama balzama, kao i oni što su s vremenom posve oksidirali. Kasnije je I. Plotnikov snimio 90 od ukupno 245 redaka, što ih je 1935. god. objavio M. Runes zajedno sa S. P. Cortsenom.

Potkraj 1966. godine fotograf Ivan Lukan u Institutu za kriminološka ispitivanja RSUP-a u Zagrebu još je jednom uspješno snimio čitav tekst Lanene knjige u 86 fo-

all important epigraphic monuments written in the Etruscan script from the corpora of both Italian and French museums, as well as the longest known inscription – *Liber lintheus Zagrabienensis* from the Archaeological Museum in Zagreb.

In 2012, the Zagreb Mummy was scanned via the method of computer tomography (CT) by Mislav Čavka, PhD,<sup>5</sup> at the Dubrava clinical hospital. This analysis revealed, among other things, that the mummy's bones were permanently damaged when it was being kept in Vienna, where Barić displayed it vertically on a wall at his house. Scans and films made during this analysis were displayed at the *Mummies – Science & Myth* exhibition in 2012 and 2013 at the Archaeological Museum, along with other mummified remains (five complete human mummies, mummified body parts, and animal mummies) and the results of new CT and MRI (computer tomography and magnetic resonance) analyses. The exhibition attracted large audiences, and focused on both the mythological and scientific approaches to the Egyptian custom of mummification.

These exhibitions were well received by the media, as well as the cultural and scientific public, but research was what really gave *Liber lintheus* its true meaning. One of the most important analyses strived to determine its age by applying the radioactive carbon isotope method (better known as carbon <sup>14</sup>C). This procedure was carried out by Dušan Srdoč and Nada Horvatinčić<sup>6</sup> at the Ruđer Bošković Institute, and the method was applied to samples of the linen wrappings, as well as to the balm and leaves that had been associated with the Zagreb Mummy. Samples of soluble and insoluble balm, as well as the leaves and the wrappings, were tested several times and then underwent dendrochronological corrections to significantly decrease the chance of obtaining a wrong datation. The results revealed that the linen wrappings of the Zagreb Mummy could be dated to 390 BC, with a possible shift of +/- 45 years, which means that the mummification was done at the end of the Late Period in Egypt (747–332 BC).

The first radiological scan of the mummy was made by Branko Plavšić and Janko Hančević, who made an RTG of the mummy at the Rebro Clinical-hospital center in 1986. The results of this scan were published in a special publication of the Archaeological Museum in Zagreb – the *LIBER LINTEUS ZAGRABIENSIS*.<sup>7</sup> The body was scanned in four sections, and the X-rays revealed that it was the body of an adult woman. Spherical masses of resin, used in the Egyptian methods of mummification, were discovered in the back part of the skull and in the chest cavity.

When it comes to the reading of the text noted in the Linen Book, great advances were made in 1932 thanks to the photographs taken by the, then innovative, technique of infrared rays, created by the famous Russian-Croatian photochemist Ivan Plotnikov (1878-1955) in cooperation with his assistants L. Splait and K. Weber. The infrared shots taken on that occasion revealed a clearer image of some parts of the text that were covered with balm stains, as well as those that had completely oxidized over time. I. Plotnikov later took shots of 90 out of the total 245 lines that had previously been published with M. Runes and S. P. Cortsen in 1935.

5 Vidi više u nastavku od autora Mislava Čavke.

6 Srdoč – Horvatinčić 1986: 83-98.

7 Plavšić – Hančević 1986: 99-103.

5 See more by the same author in this volume.

6 Srdoč-Horvatinčić 1986: 83-98.

7 Plavšić-Hančević 1986: 99-103.

tografija. Na temelju ovoga snimanja fotografkinja Ramiza Pflieger iz Zagreba izradila je u crno-bijeloj tehnici uspjeti faksimil Lanene knjige na platnu i poklonila ga Muzeju.

Prije restauracije povoji su posljednji put bili izloženi zajedno s mumijom 1967. godine. Aktualni stalni postav Arheološkoga muzeja u Zagrebu, u kojem je uređena Etrušćanska soba, otvoren je 2006. godine..

### Restauracija i konzervacija Zagrebačke mumije

Nakon što je *Liber linteus Zagrabienensis* obrađen i rekonstruiran u laboratoriju Abegg-Stiftunga u Švicarskoj u devedesetim godinama 20. stoljeća, uočeno je drastično propadanje Zagrebačke mumije. Osim namakanja u petroleju početkom 20. stoljeća, mumija je tijekom rata u Hrvatskoj 1991. – 1996. bila evakuirana zajedno s većinom građe u podzemne prostorije, gdje su uvjeti u kojima je čuvana bili daleko od idealnih. Nakon rata, 1997. godine, uočeno je da je mumija u znatno lošijem stanju i da su se u njoj pojavile crvotočine. Iako je u tim godinama Muzej još bio bez postava i u stanju ponovnoga uređenja, vodstvo muzeja brzo je reagiralo i uz pomoć financija Grada Zagreba i Ministarstva kulture Republike Hrvatske u Zagreb je pozvan Nazareno Gabrielli, istaknuti stručnjak iz Vatikanskih muzeja. On u svojem članku<sup>8</sup> iscrpno izvješćuje o svim zahvatima na Zagrebačkoj mumiji. Mumija je već početkom 20. stoljeća tretirana umakanjem u petrolej da bi se spasila od crvotočina. Taj je postupak, kao i njezino premještanje, među uzrocima lošega stanja koje je Gabrielli zatekao. Kako piše, koža mumije bila je popucala na mnogo mjesta, tkivo odvojeno od kostiju, a najveća su oštećenja bila oko koljena. Boja čitave mumije bila je gotovo bijela, sa smeđim raspuklinama posvuda po tijelu. Mumiju su ponovno bili napali nametnici. Gabrielli je pomoću plina izveo dezinfekciju u dvama koracima. Prvo protiv bakterija i gljivica, a zatim protiv insekata i larvi. Postupci koji su slijedili bili su: povezivanje zglobova, popravci na koži i napokon ponovna mumifikacija. Na kraju je ispod glave mumije postavio novi držač od pleksiglasa. Čitav zahvat završen je 25. siječnja 1998. godine i njime je Zagrebačka mumija spašena od daljnega raspadanja i očuvana za izlaganje generacijama koje dolaze. Nazareno Gabrielli objavio je dnevnik radova, koji se u skraćenom obliku može naći u njegovu članku *The restoration of the Zagreb Mummy*. Danas se mumija čuva u klimatiziranom prostoru u etrušćanskoj sobi i vjerojatno je da joj dulje vrijeme neće biti potrebni novi konzervatorski zahvati.

Što se tiče spomenika *Liber linteus*, 2011. godine na staklu su primijećena neka zatamnjenja te je on tom prilikom otvoren i ustanovljeno je da je u neizmijenjenom stanju, a uočene su bile nakupine vlage na staklu, zbog čega se pristupilo snižavanju vlage u prostoriji u kojoj je izložen. Njegove posudbe na dvije spomenute etrušćanske izložbe podrazumijevale su strogo kontrolirane uvjete prijevoza i izlaganja. Sve u svemu, može se reći da je *Liber linteus* u neizmijenjenom stanju od zahvata u Abegg-Stiftungu.

Značajniji zahvat bio je proveden na papirusu bračnoga para, koji je slijedom Barićeve akvizicije dospio u Zagreb kao dio pogrebne opreme Zagrebačke mumije. Papirus je unutar fundusa

At the end of 1966, at the Institute of Criminological and Research of the Republican Secretariat of the Interior in Zagreb, photographer Ivan Lukan once more captured the entire text of the Linen Book in 86 photographs. Based on these records, photographer Ramiza Pflieger from Zagreb managed to create a successful black and white facsimile of the Linen Book and donated it to the Museum.

Before restoration, the last time the wrappings were displayed alongside the mummy in 1967. The current permanent exhibition of the Archaeological Museum in Zagreb, with the Etruscan room, was opened in 2006.

### The restoration and conservation of The Zagreb Mummy

After the *Liber linteus Zagrabienensis* was processed and reconstructed in the Abegg Stiftung laboratory in Switzerland in the 1990s, it was noted that the Zagreb Mummy was rapidly decaying. Other than being soaked in petroleum at the beginning of the 20<sup>th</sup> century, during the 1991-1996 war in Croatia, the mummy was, along with most other material, evacuated to underground rooms where the conditions were far from ideal. After the war, in 1997, it was noticed that the mummy was in terrible shape and that wormholes were forming. Although, at the time, the Museum did not have a permanent exhibition and was being re-decorated, the Museum leadership reacted and, with the help of funds from the City of Zagreb and the Ministry of Culture of the Republic of Croatia, contacted Nazareno Gabrielli from the Vatican Museums. In his paper, he goes into great depth to describe all of the procedures that he conducted on the mummy.<sup>8</sup> At the beginning of the 20<sup>th</sup> century, the mummy was soaked in petroleum to prevent the creation of wormholes. That procedure and the evacuation were the cause of the terrible state that Gabrielli recorded. He recorded that the mummy's skin had torn in numerous places and that tissue was separating from the bones, especially around the knees. The mummy was almost white in color and had cracks all over the body, as it had been attacked by parasites. Gabrielli used gas to disinfect the mummy in two steps. First, he sprayed it against bacteria and fungi, and then against insects and larvae. He then went on to connect the joints, fix the laceration on the skin, and, finally, to re-mummify. He then placed a new Plexiglas stand under the head for extra support. The entire procedure was finished on January 25, 1998. The Zagreb Mummy was, thus, saved from further decay and preserved so that it could be displayed to the generations to come. Nazareno Gabrielli published a diary of the procedures, and a short version of it can be read in his paper *The restoration of the Zagreb Mummy*. Today, the mummy is being kept in the air-conditioned Etruscan room and will probably not need to undergo restorative procedures for quite some time.

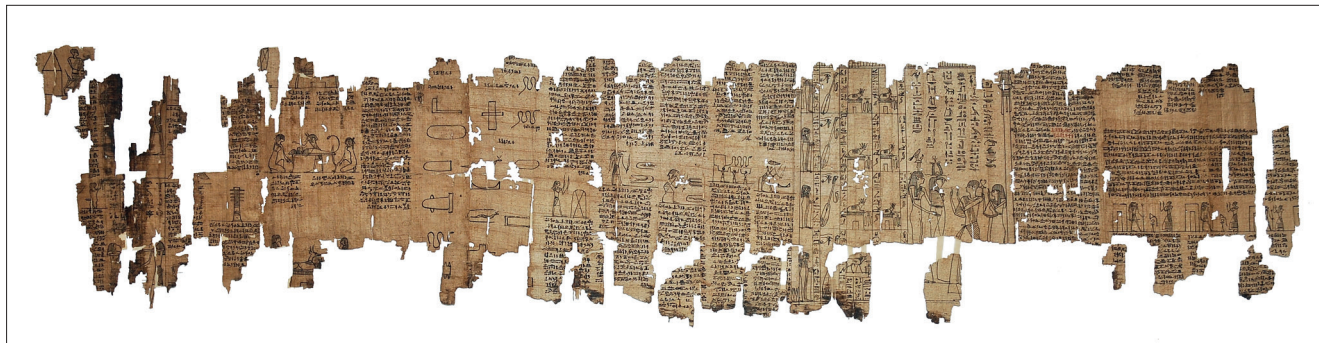
When it comes to the *Liber linteus*, some dark stains were noticed on the glass in 2011. When the monument was studied, it was established that its condition had not changed, and that the stains were exclusively on the glass, which is why the moisture in the display room was reduced. When it was moved to be on display at the two aforementioned Etruscan exhibitions, the

8 Gabrielli 2005.

9 Uranić 2006.

8 Gabrielli 2005.

9 Uranić 2006.



Papirus Zagreb E-602.

The Zagreb E-602 Papyrus.

Egipatske zbirke zaveden kao *Papirus Zagreb E-602* te se smatrao povezanim s mumijom. Međutim, usporedivši stil pisanja i gramatiku i testiranje metodom  $^{14}\text{C}$  Zagrebačke lanene knjige, utvrđeno je<sup>9</sup> da je papirus između jednoga i dvaju stoljeća mlađi od mumije. Taj fragment ispisan je tekстом *Knjige mrtvih* u čast bračnoga para Paher-Honsa i Nesi-Honsu iz okoline Luksora i nastao je za 2. stoljeća stare ere. Veza između Zagrebačke mumije i papirusa broj E-602 time je odbačena kao put moguće identifikacije same mumije. Papirus je također bio povrgnut rekonstrukciji i konzervaciji u Odjelu za tekstil Hrvatskoga restauratorskoga zavoda. Prije zahvata papirus je bio u mnogo fragmenata, od kojih su mnogi nagorjeli i toliko sitni da ih se nije moglo točno povezati s glavinom teksta i vinjetama koje ga prate. Međutim, pretežit dio papirusa uspješno je povezan i pripremljen za izlaganje stavljanjem između dva stakla.

### Mnogo pitanja – malo odgovora

Etruščani, narod čija je civilizacija nastala na Apeninskom poluotoku prije Rimskoga Carstva, naselili su središnju Italiju već između 9. i 8. stoljeća stare ere. Rimljani su ih nazivali *Etrusci* ili *Tusci*, dok su ih Grci zvali *Tyrrhenoi* (Tirenci). Taj grčki naziv govori da se njihova kultura razvila od Tirenskoga mora, pa sve do rijeke Arno i na jugu do Tibera. Sami sebe Etruščani su nazivali *Rasenna*. Malo se pouzdano zna o njihovom porijeklu, a među stručnjacima se javljaju četiri glavne teorije. Prema jednoj oni su se doselili iz Male Azije, a prema drugoj iz istočnoga Mediterana, odnosno s grčkih otoka. Treća je mogućnost da su oni bili autohtoni narod Apeninskoga poluotoka. Također se pojavljuje još jedna teorija, koja se oslanja na lingvističke korijene, da su Etruščani doselili u Toskanu preko Alpa, negdje s područja današnje Švicarske. U drugu teoriju vjerovao je i Herodot, koji je zapisao da su još u 12. stoljeću došli iz Lidije i Egejskoga mora.

Razvoj kulture Etruščana na vrhuncu je već u 6. stoljeću stare ere. Razvijaju se njihovi samostalni gradovi-države Clusium (Chiusi), Tarqini (Tarquinia), Perugia (Perugia), Volsinii (Orvieto), Caere (Cerveteri) i drugi, a Etruščani postaju i pomorska sila trgujući duž Mediterana, osnivajući i kolonije na Korzici, Elbi, Sardiniji, u Španjolskoj i drugdje. U tom razdoblju Etruščani održavaju prijateljske odnose i s Kartagom. Koristeći se rudnim bogatstvima srednje Italije, posebno željezom, civilizacija Etruščana brzo se razvija, dosežući visok stupanj u obradi metala, graditeljstvu, pismu, umjetnosti i religiji. Etruščanska umjetnost, posebno zidno slikarstvo i skulptura, podsjeća na grčku i staru minojsku. Freske Etruščana prikazuju scene iz raznih svečanosti i rituala te sva-

conditions for its storage, transfer and display were strictly defined. All in all, it can be said that the *Liber linteus* is, so far, in the same condition that it was in after the restoration in Abegg Stiftung.

A more significant procedure was done to the papyrus of a married couple that came to Zagreb as part of Barić's donation, and that was considered to be a part of the grave goods that accompanied the Zagreb Mummy. In the Egyptian collection, the papyrus was registered as *Papirus Zagreb E-602*, and was thought to be connected with the mummy. However, once the style of writing and grammar were compared and the  $^{14}\text{C}$  dating of the Zagreb Linen Book was done, it was established that the papyrus is between one and two centuries younger than the mummy.<sup>9</sup> The fragment contains a text from the *Book of the Dead* that is dedicated to a married couple, Paher-Honsa and Nesi-Honsu. It originates from the Luxor area and was made during the 2<sup>nd</sup> century BC. These realizations broke the connection between the Zagreb Mummy and the papyrus listed as number E-602, thereby deleting a possible way of identifying the mummy itself. The papyrus was also restored and reconstructed at the Department for Textiles, Paper and Leather of the Croatian Conservation Institute. Before the procedure, the papyrus was very fragmented. Many of the fragments had been burnt and were so tiny that they could not be precisely connected to the main text and the accompanying vignettes. However, the majority of the papyrus was successfully reconnected and prepared for display between two pieces of glass.

### Many questions – few answers

The Etruscans, and people whose civilization developed at the Apennine peninsula before the Roman Empire, settled central Italy somewhere between the 9<sup>th</sup> and the 8<sup>th</sup> century BC. The Romans called them *Etrusci* or *Tusci*, while the Greeks called them *Tyrrhenoi* (Tyrrhenians). The Greek name indicated that their culture developed from the Tyrrhenian Sea, and spread all the way to the Arno River, and the Tiber in the south. The Etruscans referred to themselves as *Rasenna*. Little is known about their origin, and experts are considering four main theories. According to one of them, they moved from Asia Minor, according to another, they came from the eastern Mediterranean, i.e. the Greek islands. The third possibility is that they were the autochthonous people of the Apennine peninsula. Another theory, based on linguistic roots, suggests that the Etruscans moved to Tuscany across the Alps from the territories of today's Switzerland. Herodotus was

kodnevnoga života. Osobitosti etruščanskih pogrebnih običaja prepoznatljivi su u izvanrednim sarkofazima od gline na kojima su prikazani vlasnici, bračni parovi, koji u počivaju u poluležećem položaju, kao da uživaju u odmoru. Također su majstorski izrađivali urne, brončane kipove i mnogo različitih predmeta od keramike. Osobito je prepoznatljiva njihova crna *bucchero* lončarija. Vrlo je intenzivna bila njihova trgovina s Grcima pa je u regiji koju su naseljavali pronađeno mnogo grčke keramike, odnosno one koja je izrađena po uzoru na nju.

Okolo 616. godine Etruščani osvajaju Rim te u njemu vladaju do 509. godine stare ere. No već u 4. stoljeću Etrurija je izložena napadima Gala te bitno oslabljena postupno gubi gradove koje osvajaju Rimljani. Kultura i civilizacijski identitet Etruščana nestaje već u 1. stoljeću stare ere, a jezik biva potpuno zaboravljen.

Etruščansko pismo varijanta je grčkoga pisma i sastojalo se od 27 znakova. Pisalo se zdesna ulijevo. Većina epigrafskih spomenika sadrži kratke tekstove. Među najvažnijim spomenicima s etruščanskim zapisima jesu *Cippus* iz Peruggie (Museo Archeologico Nazionale dell'Umbria) i *Tabula Cortosinesis* (Museo dell'Accademia Etrusca e Città di Cortona), te Natpis na jetri iz Piacenze. Također su poznati duži zapisi na freskama u grobnicama iz Tarquinije. Izvanredni su i tekstovi s Crijepe (ili ploče) iz Capue i Sarkofaga iz Norchije, koji se čuvaju u Berlinu, te još mnogo jednako važnih tekstova.

Kako etruščanski jezik ne pripada u indoeuropsku jezičnu skupinu, tek je manji broj riječi poznat. Dosadašnje znanje o etruščanskom jeziku ne raspolaže s dovoljno predložaka koji bi doveli do mogućnosti korištenja etimoloških usporedbi s drugim poznatim idiomima koji bi nam omogućili cjelovit leksički i gramatički sustav. Zbog toga je tekst Zagrebačke lanene knjige u cijelosti neprevodiv u smislu doslovnoga prijevoda izraza i riječi, no različite su analize ipak moguće. U tom smislu moguće je sadržaj teksta podijeliti u tri cjeline, posvećene žrtvenim darovima tri ma božanskim bićima – dva lokalna italska božanstva i Neptunu. Također, u sadržaju djela *Liber linteus* javlja se mnogo datuma, iz čega Pallottino zaključuje da je manuskript koncipiran prema obrascu kakva kalendara. Datumi se javljaju od 6. stupca nadalje. On pomišlja na kalendar kulturnih propisa koji je pripadao nekomu svetištu ili određenoj grupi vjernika. Tako bi se dokument o kojem govorimo mogao slobodno smatrati dijelom opusa Obrednih knjiga (*Libri rituales*), koji se spominje kao jedno od triju velikih područja etruščanske sakralne književnosti. Štoviše, etruščanska je civilizacija usko vezana uz knjigu. Knjige ispisane na lanu često se nalaze na prikazima u terakoti ostavljanim u etruščanskim grobnicama. No, na nesreću nedovoljan fundus sačuvanoga teksta doveo je do nepoznavanja njihova jezika, a Zagrebačka lanena knjiga jedini je očuvani obrednik toga tipa. Stoga do danas poznati opus tekstova dosada nije bio dostatan za rekonstrukciju ukupnoga jezika, gramatike i leksika. U tom smislu *Liber linteus Zagrabienensis* najveće je blago onih stručnjaka koji se bave ovim zaboravljenim jezikom.

Na povojima Zagrebačke mumije, odnosno na spomeniku *Liber linteus*, detektirano je 1130 više-manje čitljivih riječi. Gotovo polovina izvornoga teksta izgubljena je. Tekst je bio složen u 12 kolonni koje imaju najviše 35 vodoravnih redaka. *Liber linteus* ima sva obilježja knjige koja prenosi neke ritualno-religiozne upute, i u tome se slažu svi znanstvenici koji su ga dosad izučavali. Na to u prvom redu ukazuje često ponavljanje riječi *ais* (*aiser*, *aiseraš*,

in favor of the second theory, and he recorded that they came over from Lidia and the Aegean Sea back in the 12<sup>th</sup> century.

The development of the Etruscan culture reached its peak already in the 6<sup>th</sup> century BC. Their independent city-states developed: *Clusium* (Chiusi), *Tarqini* (Tarquinia), *Perusia* (Perugia), *Volsinii* (Orvieto), *Caere* (Cerveteri), and many others. The Etruscans also became a naval force through their Mediterranean trade, and they established colonies on Corsica, Elba, Sardinia, in Spain, and elsewhere. During that period, the Etruscans kept friendly relations with Carthage. By using the ores from central Italy, especially iron, the Etruscan civilization quickly developed and reached high levels of processing iron, construction, writing, art, and religion, Etruscan art, especially wall painting and sculpture, are reminiscent of Greek and Minoan art. Etruscan frescoes depict scenes from different celebrations and rituals, as well as everyday life. The particularities of Etruscan burial rituals are recognizable through outstanding clay sarcophagi that have depictions of their owners – married couples who are resting in semi-sitting positions, as if they were enjoying their rest. They also mastered the production of urns, bronze statues and many different ceramic objects. Their black “*bucchero*” pottery is especially recognizable. They frequently traded with the Greeks, so the region they inhabited yielded large amounts of Greek pottery, that is, pottery that was produced under Greek influences.

Around 616, the Etruscans conquered Rome, where they ruled until 509 BC. However, already in the 4<sup>th</sup> century BC, Etruria was attacked by the Gauls, causing it to weaken and lose cities that were then conquered by the Romans. The culture and the civilizational identity of the Etruscans disappeared in the 1<sup>st</sup> century BC, and their language was completely forgotten.

The Etruscan script is a variant of Greek, and contained 27 letters. It was written from right to left. Most epigraphic monuments contain short texts. The most important monuments with Etruscan inscriptions include the *Cippus* from Perugia (Museo Archeologico Nazionale dell'Umbria), the *Tabula Cortosinesis* (Museo dell'Accademia Etrusca e Città di Cortona), and the inscription on the *Liver from Piacenza*. Longer inscriptions were also recorded on frescoes from tombs in Tarquinia. Important texts also include those found on the *Roof tile* (or plate) from Capua and the sarcophagus from Norchia that are being kept in Berlin, and many others.

Seeing as Etruscan is not a part of the Indo-European language group, only a small number of words are known. Today's insight into the Etruscan language is based on insufficient examples, so there is no way to create possible etymological comparisons with other known idioms that could lead to a complete reconstruction of the entire lexical and grammatical system. This is precisely why the text of the Linen Book of Zagreb is untranslatable in the sense of literally translating phrases and words. However, it is possible to make different analyses. In that sense, it is possible to divide the content of the text into three parts, dedicated to sacrificial gifts devoted to three divine creatures – two local Italic deities, and Neptune. Additionally, the *Liber* also contains many dates – a fact based on which Pallottino concluded that the manuscript follows some sort of calendar template. The dates appear from the 6<sup>th</sup> column. He referred to a calendar of cult-related regulations that belonged to a sanctuary or a certain religious group. In that sense, the discussed document could eas-

*aisvale, aisna, aisunal*), koju, oslanjajući se na više antičkih izvora, s priličnom sigurnošću možemo prevesti kao „bog“ i „bogovi“, s raznim izvedenicama. Usto, ovoj se riječi često pridružuju poznata imena rimskih božanstva poput Neptuna i Junone u etrušćanskim inačicama *Neiusul* i *Uni*. U ostatku vokabulara učestao je i glagol *tur*, što znači „prinositi“. Upravo se na ovome temelji i zaključak uglednoga talijanskoga etruskologa Massima Pallottina<sup>10</sup> da je riječ o religioznome tekstu s uputama za obavljanje nekoga rituala.

## Teorije

Najveći kuriozitet *Lanene knjige* jest u tome da su Etrušćani uz razne vrste epigrafskih spomenika u grobnicama često prikazivali „lanene knjige“, u biti modele knjiga, izrađivane iz gline, koji prikazuju široke trake lana položene na važnim mjestima u grobnicama. Očito, *Libri rituali* i druge knjige imale su važnu ulogu u pogrebu kao zavjetni darovi, a možda i u zagrobnom životu osobe kojoj su bile posvećene. No, budući da je lan osjetljiv materijal, a srednja Italija vrlo vlažno područje, koliko je poznato nijedna takva lanena knjiga nije doživjela naše doba<sup>11</sup>. Nijedna, osim one otkrivene na povojima egipatske mumije iz Zagreba, koju danas nazivamo Zagrebačkom lanenom knjigom. A upravo je ta pojava na povojima mumije i veza s Egiptom ono što do danas nema jasno tumačenje. Dakle, koja su moguća objašnjenja da se taj etrušćanski tekst mogao naći na povojima jedne egipatske mumije?

Povijest Zagrebačke mumije poznata nam je od vremena njezine akvizicije u Egiptu davne 1847. ili 1846. godine kad je Mihael Barić posjetio Egipat te kao pasionirani kolekcionar tijekom toga putovanja kupio mumiju. Fotografije njegova doma u Beču pokazuju nam kako je ona zauzimala važno mjesto u izlošcima, kojima se hvalio u tadašnjim kulturnim krugovima. Nažalost, o uvjetima kupnje mumije, točnom mjestu, a kamoli lokaciji njezina nalaska ne zna se ništa. No nedavno provedena istraživanja potvrdila su da nema sumnje da se radi o mumiji iz faraonskoga doba izrađenoj u Egiptu.

Ključan podatak na koji se oslanjamo jest datiranje povoja i mumije metodom <sup>14</sup>C na otprilike 390. (+/- 40) godinu stare ere. Etrušćanska civilizacija postojala je između 8. i 1. stoljeća stare ere. U tom razdoblju u Egiptu je kasno razdoblje (747. – 332. stare ere) i ptolomejsko razdoblje (332. – 30. stare ere). Tako, naše datiranje mumije i spomenika *Liber linteus* pada u središnji period etrušćanske kulture i sam kraj kasnoga razdoblja u Egiptu. Što se egipatskih izvora tiče, ne postoje jasni dokazi o boravku ikakve kolonije Etrušćana u toj zemlji. Naravno, povijest ne bi zabilježila pojedinačne slučajeve imigranata koji bi eventualno mogli biti Etrušćani. Tako je, u povijesno slabo utemeljenoj i nedokazivoj teoriji, mumija bi mogla biti posmrtni ostatak žene koja je bila etrušćanskoga porijekla te je stoga sahranjena kombinacijom običaja obaju naroda – postupak mumificiranja u stilu Egipćana i polaganje etrušćanskoga obrednoga teksta iz njihove tradicije.

ily be ascribed to the group of Ritual Books (*Libri Rituals*) that is mentioned as one of the three large parts of Etruscan literature. Moreover, the Etruscan civilization is closely related to writing. Books written on linen are often seen on terracotta depictions that were placed into Etruscan tombs. However, the insufficient number of preserved texts caused their language to remain unknown, and the Linen Book of Zagreb is the only preserved ordinal of its kind, making it impossible to reconstruct the entire language, grammar and lexis based on the available opus. In that sense, the *Liber linteus Zagrabensis* is the greatest treasure to those experts who study this forgotten language.

The wrappings of the Zagreb Mummy, i.e. the *Liber linteus*, contain 1130 more or less readable words. Almost half of the original text is lost. The text was arranged into 12 columns that have, at the most, 35 horizontal lines. In the opinion of all scientists who have studied it thus far, the *Liber linteus* has all the characteristics of a book that conveys some sort of ritualistic-religious instructions. This is primarily indicated by the frequently repeated use of the word *ais* (*aiser, aiseraš, aisvale, aisna, aisunal*) and its different derivatives that can, based on several ancient sources, quite safely be translated to “god” and “gods”. Additionally, this word is often followed by *Neiusul* and *Uni*, Etruscan variants of known names of Roman deities Neptune and Juno. The verb *tur*, meaning “to offer”, is also frequent in the rest of the vocabulary. This is precisely on what the influential Italian Etruscologists Massimo Pallottino<sup>10</sup> based his conclusion that this was a religious text with instructions on how to perform a certain ritual.

## Theories

The biggest surprise about the Linen Book stems from the fact that the Etruscans often depicted “linen books”, i.e. models made out of clay that depict wide strips of linen placed at important points, alongside other epigraphic monuments in their tombs. Obviously, the *Libri rituali* and other books played an important role in burial rites as votive gifts, and possibly even in the afterlife of the person they were dedicated to. However, seeing as linen is a sensitive material, and central Italy is a very damp territory, no such book survived to this day.<sup>11</sup> None, except the one discovered on the wrappings of the Zagreb Mummy that is today known as the Linen Book of Zagreb. The fact that it exists on the mummy wrappings, as well as its connection to Egypt, are what is still unclear. But, what are the possible explanations of how this Etruscan text came to be on the wrappings of an Egyptian mummy?

The known history of the Zagreb Mummy starts with its acquisition in Egypt back in 1847 or 1846, when Mihael Barić visited Egypt and, being a passionate collector, bought the mummy. The photographs of his home in Vienna reveal that it held an important place among the exhibits he showed off to his contemporaneous cultural circles. Unfortunately, nothing is known about the conditions of the purchase, the exact place of acquisition, let alone the location of its creation. However, recently

10 Pallottino 1986: 1-8

11 Također, uzevši u obzir činjenicu da je etruski gradovi potpadaju pod rimsku vlast otprilike tri stoljeća prije uspostave Rimskog carstva, te da već u tom razdoblju njihovi spomenici i grobnice vjerojatno počinju propadati.

10 Pallottino 1986: 1-8.

11 Also, considering the fact that Etrurian cities fell under Roman rule about three centuries before the creation of the Roman Empire and that, at the time, their monuments and tombs were probably already decaying.



Dakako, nedostaci su ove pretpostavke brojni. Osim što ne raspoložemo podacima o Etruščanima u Egiptu prije helenističkoga razdoblja, čini se da tekst Zagrebačke lanene knjige nije korišten s razumijevanjem njegova značenja, bilo obrednoga, bilo sadržaja samoga teksta. Tekst spomenika *Liber linteus*, naime, izrezan je bez previše obraćanja pažnje na njegov smještaj, pa se čini da je bio naprosto iskorišten kao materijal za omatanje tijela. Lan je doduše rezan vodoravno, dakle u istom smjeru u kojem se prostire tekst, kako bi trake za umatanje mumije bile što duže, ali rezovi na mnogo mjesta idu preko zapisa. Rezan je i okomito te su na taj način razni fragmenti bili izmješteni, tako da je jedinstvenost teksta izgubljena. Nema dakle mnogo sumnje oko toga da je korištenje djela *Liber* za povoje mumije bila ponovna njegova uporaba, iz čega bi se moglo zaključiti da to nije bila njegova namjena. Također je moguće pretpostaviti da onaj tko je upotrijebio *Liber linteus* za umatanje mumije nije znao ništa o značenju teksta.

U razdoblju o kojem govorimo Egipat već potresa duboka kriza i česta je, kad je riječ o pogrebnoj opremi, njezina reciklaža. Dobar je primjer i sarkofag iz Arheološkoga muzeja u Zagrebu na kojem se nalazi posveta „gospodarici kuće Kareset“, dok se u sarkofagu, kako se pokazalo prilikom istraživanja pomoću računalne tomografije, nalazi mumificirano tijelo muškarca. No, *Liber linteus Zagrebiensis* pronađen je na mumiji koja je evidentno egipatska. Osim što znamo da ju je Mihael Barić nabavio u Egiptu, također je vidljivo da su na njoj izvršeni svi uobičajeni postupci egipatskoga običaja mumifikacije. Prema svemu ovome izniče drugi scenarij nastanka čudne veze spomenika *Liber linteus* i mumije, a to je pretpostavka da oni nisu idejno povezani, to jest da je njihova veza zapravo posljedica ponovne uporabe lanenoga platna i time zapravo slučajna. Poznato je također da je platno u Egiptu staroga vijeka imalo znatnu vrijednost te je kao takvo moglo biti predmetom trgovine ili nasljeđivanja, pa je također moguće da se dolazak djela *Liber* u Egipat dogodio prije smrti i mumifikacije tijela.

Za razliku od Etruščana, komunikacija Grka s Egipćanima, njihovo naseljavanje u Egipat i sudjelovanje grčkih plaćenika u postrojbama kralja Psametika, poznati su i zabilježeni u povijesti. Taj faraon 26. dinastije, koji je stupio na vlast kao marioneta Asiraca, a poslije se oslobodio njihova utjecaja, ne samo da je koristio grčke plaćenike već je dopustio Grcima da osnuju svoj grad Naukrat u Donjem Egiptu. Psametik I. vladao je između 664. i 610. godine stare ere.

Dakle, uzmemo li u obzir da su u vrijeme nastanka djela *Liber linteus* i Zagrebačke mumije već postojala grčka naselja i 2-3 stoljeća povijesti interakcije Grka i Egipćana, moguće je da je *Liber linteus* pristigao iz sasvim drugoga izvora. Poznata je vrlo intenzivna trgovina između Grka i Etruščana. Primjerice, u Italiji su pronađene velike količine grčke keramike (vaza i drugoga posuđa), koja je očito ondje bila visoko cijenjena. U tom svjetlu moguće je zamisliti da je netko od Grka naseljenih u Egiptu došao u posjed spomenika *Liber linteus* te ga je poslije bio lišen ili je preprodao to platno, kako bi ono na kraju svojega puta bilo iskorišteno pri mumificiranju. Ni ova teorija, dakako, nema potvrde u materijalnim dokazima. No ona možda daje za nijansu realniju ideju od one o koloniji Etruščana u faraonskom Egiptu. Ipak, pomicanje datacije u ptolomejsko razdoblje dalo bi sasvim novu sliku. Naime, u tom periodu u Egipat se naseljavaju mnogi, pa i manji broj ljudi etrurskoga porijekla.

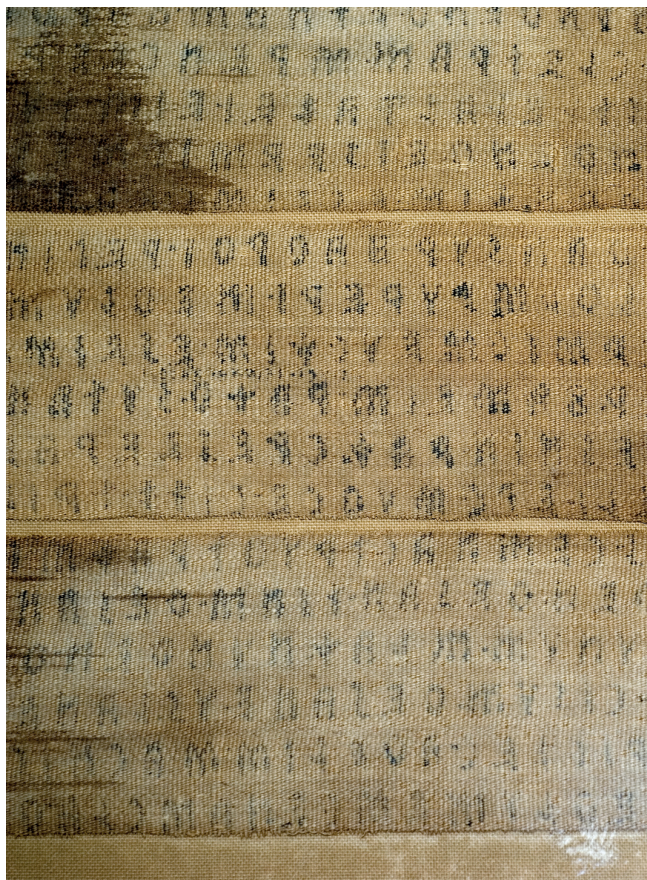
conducted research confirmed that there is no doubt that it is definitely a mummy from the Pharaonic period that was made in Egypt. Barić hung the mummy from a wall, probably thinking it would look impressive. That was certainly not the best idea when it came to the finds long-term preservation, especially as photographs reveal that it was already without its wrappings. It is also unclear why this collector came to the idea of unwrapping the mummy. Was it already partially unwrapped, or were the wrappings in poor condition? We can only speculate. What we do know is that the unwrapping of Egyptian mummies was, at the time, an attraction for the intellectual elite, so it is possible that Barić arranged a private event of this type to satisfy the curiosity of his contemporaries who still thought of Egypt as an intriguing and mysterious country. After removing the linen wrappings, Barić discovered a text that he thought was written in ancient Egyptian script. That is how the two monuments were separated, and the Linen Book discovered.

The key piece of information we refer to is the 14C date of the Mummy and wrappings that place it about 390 (+- 40) BC. The Etruscan civilization existed in the period between the 8<sup>th</sup> and the 1<sup>st</sup> century BC. At the time, Egypt was in its Late Period (747–332 BC) and the Ptolemaic period (332–30 BC). Therefore, the datation of the Mummy and the *Liber linteus* falls into the middle period of the Etruscan culture and the very end of the Late Period in Egypt. When it comes to Egyptian sources, there is no clear evidence that any Etruscan colony stayed in their country. Of course, history would not record individual examples of immigrants that could potentially be Etruscan. In that sense, in the historically poorly-founded and unprovable theory, the Mummy could be the remains of a woman of Etruscan origin whose burial was, due to that fact, organized as a combination of customs of both peoples – the mummification process in the Egyptian style, and using the Etruscan ritual texts as a grave good.

Naturally, there is a shortage of evidence to support this theory. Other than the fact that there is no data about Etruscans in Egypt before the Hellenistic period, it seems that the text of the Linen Book of Zagreb was not used for the purpose of being understood in the sense of ritual or its contents. The text of the *Liber* was, namely, cut without paying much attention to its placement, so it seems that it was simply used as a material to wrap the body. The linen was indeed cut horizontally, i.e. in the same direction as the layout of the text, in order to make the wrappings as long as possible, but the cuts go through the text in numerous places. It was also cut vertically, causing many fragments to become misplaced in a way that ruined the entirety of the text. There is, clearly, not a lot of doubt about the fact that the *Liber* was reused to serve as the wrappings of the mummy, which leads to the conclusion that that was not its original purpose. It is also possible to assume that whoever used the *Liber linteus* to wrap the Mummy did not know anything about the meaning of the text.

In the discussed period, Egypt was already in deep crisis and recycling, especially when it came to grave goods, was common. A good example of this is a sarcophagus held at the Archaeological Museum in Zagreb that is dedicated to the “house mistress Kareset”, because, as indicated by computer tomography, it contains the mummified body of a man. However, the *Liber linteus Zagrebiensis* was discovered on a mummy that is evidently Egyptian. Apart from knowing that Mihael Barić obtained it in Egypt, it is

U nastavku će biti predstavljena najnovija istraživanja koja bi trebala baciti novo svjetlo na moguće zaključke o točnom porijeklu mumije i njezinoj povezanosti s *Lanenom knjigom*.



also clear that it underwent all of the usual procedures of the Egyptian custom of mummification. Based on all of this, another explanation arises about the creation of the curious connection between the *Liber* and the Mummy – the assumption that they are not conceptually connected, i.e. that their connection is, in fact, the result of reusing linen fabric, meaning that their connection is accidental. It is known that, in ancient Egypt, fabric was of great value, and that, as such, it could have been obtained through trade or inherited, so it is also possible that the *Liber* came to Egypt before the death and mummification of the body.

Unlike with the Etruscans, the Greek communication with the Egyptians, their settlement in Egypt, and the participation of Greek mercenaries in king Psamtik's troops are well known and recorded. The pharaoh of the 26<sup>th</sup> dynasty, who came to power as a puppet of the Assyrians and later freed himself from their influence, not only used Greek mercenaries, but also allowed the Greeks to found the city of Naucratis in Lower Egypt. Psametik ruled between 664 and 620 BC.

Therefore, if we consider that the *Liber* and the Zagreb Mummy were created at a time when Greek settlements already existed, and that the Greeks and the Egyptians had been interacting for 2–3 centuries, it is possible that the *Liber* came from a completely different source. The intensive trade between the Greeks and the Etruscans is well-known. For example, Italy yielded large amounts of Greek pottery (vases and other vessels) that were obviously highly praised. In that sense, it is possible to imagine that one of the Greek settlers in Egypt obtained the *Liber linteus*, and was later deprived of it, or resold the fabric so that it could, at the end of its road, be used for mummification. Obviously, there is no material evidence to support this theory either. However, it might be slightly more realistic than the theory about there being an Etruscan colony in pharaonic Egypt. However, the re-dating to the Ptolemaic period would offer a completely different picture. Namely, during that period, Egypt was settled by many people, some of Etruscan origin.

The following chapters bring the results of the latest research that should shed new light onto the possible conclusions about the exact origin of the Mummy and its connection to the Linen Book of Zagreb.

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# ETRUŠČANI — PODRIJETLO I VJEROVANJA NARODA ZAOGRNUTOGA MISTERIJOM (*IN BREVIS*)

## THE ETRUSCANS — THE ORIGIN AND BELIEFS OF A PEOPLE SHROUDED IN MYSTERY (*IN BREVIS*)

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Kornelija A. Giunio

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Na području između rijeka Arno i Tiber u Italiji u 8. st. prije Kr. naselili su se Etruščani (današnje područje regije Toscana), a poslije su se proširili na sjever do Veneta i na jug do Kampanije. Etrurska je kultura dosegla vrhunac civilizacije u 4. st. prije Kr.

Etruščani su bili i osnivači Rima, oni su bili organizatori države i nosioci nove civilizacije na području Italije. Grad Rim osnovao je, prema tradiciji, Romul 21. travnja 753. god. prije Kr. Grad je bio raspoređen kulturnim obredima, tzv. *postmoenium* ili *pomerium*.<sup>1</sup> Grad je ležao na lijevoj obali rijeke Tiber, otprilike 25 km od njezina ušća. Osnivanje grada u pravom smislu riječi arheolozi datiraju u 7. st. prije Kr., a zbog svojega četverokutnoga oblika nazvan je *Roma Quadrata*.<sup>2</sup> U historijsko doba tako je nazvano mjesto na Palatinskom brežuljku, koje je bilo ograđeno i poštovano kao svetinja. U doba vladanja etrurskih kraljeva (zvani *lucumones*) grad se proširio i na okolne brežuljke, *Septimontium* – Kapitolij, Aventin, Palatin, Kvirinal, Viminal, Eskvilin i Celij.<sup>3</sup> Dobio je čvrste zidine u doba kralja Servija Tulija u 6. st. prije Kr. (*cinta Severiana*) i postao jedan od najjačih naseljenih centara srednje Italije.

Uobičajeno je da se arhitekture Etrurije i Rima izučavaju potpuno odvojeno i nezavisno jedna od druge. Međutim, etrurska umjetnost može biti gledana i kao rani period rimske umjetnosti. Etruščani su zaslužni za podizanje prvih stvarno monumentalnih građevina u Rimu, ostvarili su drenažu Foruma, koji je u to doba bio močvara. Gradnja rimskih kuća i hramova strogo se bazira na etruščanskim modelima.

Herodot navodi da su Etrurci došli iz Male Azije i da potječu od skupine Lišana, koja je u 13. st. prije Kr. pod vodstvom sina kralja Atisa, Tirena ili Tirsena, od kojega potječe naziv *Tyrseoi*,

In the 8<sup>th</sup> century BC, the area between the rivers Arno and Tiber in Italy was settled by the Etruscans (today's region of Tuscany), who later spread northwards to Veneto and southwards to Campania. The Etruscan culture reached its peak in the 4<sup>th</sup> century BC.

The Etruscans were also the founders of Rome, the organizers of state and the carriers of a new civilization on Italian territory. The city of Rome was, according to tradition, founded by Romulus on April 21, 753 BC. The city was organized according to cult-related rituals, the, so called, *postmoenium* or *pomerium*.<sup>1</sup>

The city was on the left bank of the Tiber River, about 25 km from its spring. The founding of the city, in the real sense of the word, was dated by archaeologists to the 7<sup>th</sup> century BC. Due to its square shape, it was called *Roma Quadrata*.<sup>2</sup> In historical times, the name was transferred to the fortified settlement on the Palatine Hill that was worshipped as a holy place. During the rule of Etruscan kings (called *lucumones*), the city spread to the surrounding hills, the *Septimontium* – the Capitoline Hill, the Aventine Hill, the Palatine Hill, the Quirinal Hill, the Viminal Hill, the Esquiline Hill, and the Caelian Hill.<sup>3</sup> The city got its strong walls during the reign of king Servius Tullius in the 6<sup>th</sup> century BC (*cinta Severiana*), when it became one of the strongest settled centers of central Italy.

Usually, the architecture of Etruria and Rome are studied as completely separated and unconnected occurrences. However, Etruscan art can be viewed as the early period of Roman art. The Etruscans were responsible for the creation of the first truly monumental buildings in Rome – they created the drainage sys-

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1 Varo, *De lingua latina*, V, 143.

2 Castagnoli 1951: 389-399.

3 Polovicom 7. st. prije Kr. Rim su osvojili Etruščani i njime vladali slijedeće stoljeće i po. U doba Carstva obuhvaćao je i jedan dio brežuljka Janikula na desnoj obali rijeke Tiber: Cristofani – Quilici – Quilici Gigli 1990: 60-109.

1 Varo, *De lingua latina*, V, 143.

2 Castagnoli 1951: 389-399.

3 At the middle of the 7<sup>th</sup> century BC, the Etruscans conquered Rome and ruled over it for the next century and a half. During the Empire, Rome also included a part of the Janiculum on the right bank of the Tiber River: Cristofani – Quilici – Quilici Gigli 1990: 60-109.

odnosno Etruščani, emigrirala u Italiju kako bi ondje utemeljila nove gradove.<sup>4</sup> Ovaj podatak potvrđivali bi orijentalni elementi u etruskoj umjetnosti. U arhitekturi oni su prvi narod u Europi koji je konstrukcijama luka i svoda dao dominirajuće mjesto, što bi također govorilo u prilog Herodotovoju tvrdnji.

Prema drugom povjesničaru, Dioniziju iz Halikarnasa, Etruščani su, drukčiji od svih ostalih naroda po jeziku i običajima, bili autohtono pleme.<sup>5</sup> Na temelju jednoga Livijeva zapisa, prema kojemu su Etruščani bili povezani s alpskim Retima, oni su zapravo došli sa sjevera.<sup>6</sup>

Na Apeninskom poluotoku Etrurci su došli u dodir s Grcima, koji su ondje imali svoje kolonije. Grci ih nazivahu *Tyrsenoi* ili *Tyrrheonoi* (odatle i ime mora čije su obale nastavali),<sup>7</sup> Rimljani pak *Tusci* ili *Etrusci*, a izvorno ime, kojim su sami sebe nazivali, jest *Rasenna*.<sup>8</sup> Spajanjem svojih starih orijentalnih i novih grčkih elemenata stvorena je etruska civilizacija, koja je postala osnova rimskoj civilizaciji.<sup>9</sup>

Sasvim je izvjesno da su "primitivni" oblici kulta bili vezani uz prirodne ambijente kakvi su pećine, jezera i izvori, termalne vode, šume, a koji zadržavaju svoju važnost i razvojem urbane civilizacije. Nedostaju nam direktna svjedočanstva štovanja u svetim šumama kod Etruščana, a kakvo nalazimo kod Sabinjana (*Iucus Feronia*) i kod Latina (*Diana Nemorenses*).

Religija je u životu Etruščana imala središnje mjesto. Kako su od Etruščana sačuvane uglavnom grobnice, neki znanstvenici tvrde da je etruščanska religija mračno obojena i okrenuta zagrobnom životu. U podzemnom svijetu, prema najrazvijenijim etruščanskim učenjima, smješteno je kraljevstvo mrtvih.<sup>10</sup> Veliki dio našega znanja o etruščanskoj kulturi proizlazi iz grobnica. Velika većina natpisa grobnoga je karaktera, a grobnim slikama i kipovima i opremi dugujemo osnovne podatke o raznim vidovima života starih Etruščana. Sam karakter grobova i njihove opreme, osobito u najstarijim fazama, nudi nedvosmisleno svjedočanstvo da su se održale prvotne zamisli kakve su bile proširene mediteranskim svijetom. Pokojnikova osobnost, kako god da se zamišljala, preživljava ondje gdje su sahranjeni njegovi smrtni ostaci, nekako povezana s njima. Iz toga proizlazi temeljni zahtjev preživjelima da zajamče, obrane i produže taj nastavak života. To nije samo iz sućuti, nego i vjerska obveza uz koju je vjerojatno vezan i strah. Toj vrsti zamisli pripada u Etruriji težnja da se grob zamisli u obliku kuće, da ga se opremi pokućstvom i uporabnim predmetima, da ga se obogati prikazima punim čarobnoga značenja (grobnice s prizorima gozbe, glazbe, plesa, atletskih igara), da se pokojnik okruži svojom odjećom, nakitom i oružjem, da mu se posluže jelo i piće, da ga se poprati kipićima članova familije i da se reproducira slika samoga pokojnika, kako bi se duhu ugroženu zbog raspadanja tijela pružio "oslonac". Treba naglasiti da je na početku povijesti etruščanskih gradova prevladavao isključivo jedan pogrebni obred, onaj paljevinski.

tem on the Forum that was, at the time, a swamp. The construction of Roman houses and temples is strictly based on Etruscan models.

Herodotus recorded that the Etruscans came from Asia Minor and that they originated from the inhabitants of Lidia, who migrated to Italy in order to form new cities in the 13<sup>th</sup> century BC, led by the son of king Atis, Tyren or Tyrsen, whose name was given to the *Tyrsenoi*, i.e., the Etruscans.<sup>4</sup> This information is confirmed by oriental elements in Etruscan art. Regarding architecture, they were the first people in Europe who used arches and domes as the dominant feature – a fact that also speaks in favor of Herodotus' claim.

According to another historian, Dionysius from Halicarnassus, the Etruscans were an autochthonous tribe that was different from all other peoples when it came to language and customs.<sup>5</sup> Based on one Livy's records, wherein Etruscans were linked to the Alpine Rhaetians and actually came from the north.<sup>6</sup>

On the Apennine peninsula, the Etruscans came into contact with the Greeks who already had colonies there. The Greeks called them *Tyrsenoi* or *Tyrrheonoi* (which also gave the name to the sea the shores of which they inhabited),<sup>7</sup> the Romans called them *Tusci* or *Etrusci*, and their original name for themselves was *Rasenna*.<sup>8</sup> The Etruscan civilization developed by combining oriental and new, Greek, elements, and it became the foundation of the Roman civilization.<sup>9</sup>

It is clearly evident that the "primitive" forms of cult were related to natural surroundings, such as caves, small lakes and springs, thermal waters – features that stayed important after urban civilization developed. There are no direct records suggesting that Etruscans worshipped in holy forests, the likes of which can be found for the Sabines (*Iucus Feronia*) and the Latins (*Diana Nemorenses*).

Religion was at the heart of Etruscan life. Seeing as mostly Etruscan tombs are preserved, some scientists claim that Etruscan religion had a dark undertone and was focused on the afterlife. According to the most developed Etruscan teachings, there was a kingdom of the dead in the underworld.<sup>10</sup> A large part of our knowledge about Etruscan culture comes from tombs. The majority of inscriptions is connected to graves, and images, statues and goods from these graves have provided the basic information about different aspects of life of the ancient Etruscans. The character of the graves and grave goods, especially in the earliest phases, provide unambiguous evidence that the original ideas, which were spread all across the Mediterranean world, were still alive. The personality of the deceased, however it was interpreted, survived at the place the remains of the body were buried, and was somehow connected to them. That is why the living were required to guarantee, defend and extend the continu-

4 Herodot 2007, 94-95 (I, 94).

5 Dionizije, *Ant.*, I, 30. 2.

6 Livije, *Ab urbe*, V, 33.

7 Strabon, V, 247.

8 Dionizije, *Ant.*, I, 30; u etruščanskim tekstovima sačuvan je oblik *Rasna*.

9 MacNamara 1989: 5 i d.

10 Pallottino 2008: 316-319.

4 Herodotus 2007, 94-95 (I, 94).

5 Dionysius, *Ant.*, I, 30. 2.

6 Livy, *Ab urbe*, V, 33.

7 Strabo, V, 247.

8 Dionysius, *Ant.*, I, 30; the form *Rasna* is preserved in Etruscan texts.

9 MacNamara 1989: 5 and others.

10 Pallottino 2008: 316-319.

Pod utjecajem grčke religije i mitologije nastaje kraljevstvo “onoga svijeta”, prepuno podzemnih božanstava, duhova starih junaka i sjena pokojnika. Smrt posebno simboliziraju dva podzemna lika: božica Vanth, velikih krila i s bakljom, i demon Kharun, poluzvjerski lik oboružan teškim čekićem. Prisutan je grozovit Tukulka, koji ima lešinarski kljun i magareća ušesa, a oboružan je zmijama.

U dodiru s drugim civilizacijama dolazi do asimilacije različitih vjerovanja, pa su Etruščani svoja viša božanstva, pod grčkim utjecajima, personalizirali. Niža božanstva i demoni zadržavaju svoje podzemno podrijetlo. Glavni bog bio je Voltumna (lat. *Vertumnus*), a njegovo glavno svetište nalazilo se u gradu Volsiniju (*Volsinii*, Bolsena). Očinski bog bio je Tinia (Zeus/Jupiter) u paru sa zaručnicom, kraljicom Uni (Hera/Junona), slijede Menrva (Ate-na/Minerva), bogovi mora i zemljotresa Maris i Netun (Posejdon/Neptun), božica ljubavi Turan (Afrodita/Venera), Herkle (Heraklo/Herkul), Artumes (Artemida/Dijana), Aplu (Apolon), Fufluns (Dioniz/Bakho), Laran (Ares/Mars), Turm (Hermes/Merkur), Sethlans (Hefest/Vulkan). Etruščani su imali veliki broj božanstava za koje se nije točno znalo koliko ih je. Oni su bili čuvari neba, voda, zemlje i ljudskih duša. Bili su zaduženi pratiti i posluživati viša božanstava. Posebno su bili poznati Lase, koji su kao i rimski Lari bili dobri duhovi doma i kućnoga ognjišta.

Proces organizacije religije u toku 8. st. prije Kr. posvjedočen je prvim svetim mjestima kulta. Oni su naznačeni nekim votivnim prilozima, pogotovo brončanim statueta koji prikazuju dedikante, nikad božanstva, zatim statuete bikova kasno geometrijskoga ili orijentalizirajućega stila. Ovo pokazuje kakva je bila tradicionalna etrurska religija povezana s primarnim aktivnostima, pogotovo zemljoradnjom. Nedostatak monumentalnih struktura svetih mjesta, kao i potpuni nedostatak figura bogova, pokazuju scenarij pod kojim se razvija etrurska religija.

Prva su se kulturna prakticiranja odvijala oko žrtvenika. Njihov je izgled (struktura) odavao kojim su bogovima bili posvećeni. Takozvanim nebeskim božanstvima bili su posvećeni žrtvenici namijenjeni žrtvama paljenicama ili životinjskim žrtvama. Božanstvima zemlje i podzemlja bili su posvećeni žrtvenici koji su imali rupu koja je žrtvenu tečnost (mlijeko, vino, krv žrtvene životinje) odvodila u zemlju. Neki su kasniji hramovi u svoju strukturu uključivali i stari žrtvenik, kao što je primjerice slučaj u Tarkviniji gdje je podij velikoga hrama *Ara della Regina* obuhvaćao i stari žrtvenik. Prepoznavanje jednoga takvoga žrtvenika moguće je i po različitoj orijentaciji žrtvenika i hrama. Gradnja hramova uz takve žrtvenike započinje u 6. st. prije Kr.

Hramovi – kuće božanstva – grade se po uzoru na kuće aristokracije. Ako kroz etrursku religiju promatramo osnovu njihova hrama, izgleda nam da Etrurci u hramu ne gledaju kao mnogi drugi božju kuću, već zemaljski izgled jednoga pravilnoga, ograničenoga nebeskoga polja (*templum*). Etrursko-italski hramovi građeni su od sirovih opeka i drva s dekorativnim oplatom od terakote, s temeljima od kamena, s visokim podijima gotovo uvijek od kamena te s niskim i uskim pristupnim stepeništem. Iz tih su se razloga mnogobrojni otkriveni etrurski hramovi sačuvali samo u temeljima, a od njihove nadgradnje sačuvani su mnogobrojni ulomci arhitektonske terakotne dekoracije.

Arheološka istraživanja potvrdila su točnost modela etrurskoga hrama, kakvoga nalazimo kod Vitruvija, a koji se javlja od kraja 7.

ation of that life. This did not only happen because of pity, but it was a religious obligation that was probably accompanied by fear. The same idea is what caused graves to be seen as houses in Etruria, to supply tombs with furniture and everyday objects, to embellish them with depictions full of magical meanings (grave images depicting feasts, music, dancing, athletic games), to surround the deceased with their clothes, jewelry and weapons, to serve them meals and drinks, to give them statuettes of family members, and to reproduce the images of the deceased in order to “support” the soul that was endangered due to the decomposition of the body. It should be noted that, at the beginning of the history of Etruscan graves, only one burial rite was used – incineration.

Under the influence of Greek religion and mythology, the kingdom of the “underworld” was created, which was thought to be full of underground deities, ghosts of ancient heroes, and shadows of the deceased. Death is especially symbolized by two characters from the underground: the goddess Vanth, with great wings and a torch, and the demon Charun, a semi-beastial character carrying a heavy hammer. The nightmarish Tuchulcha is also present, with a vulture’s beak and donkey ears, and is armed with snakes.

Contacts with other civilizations led to the assimilation of different beliefs, so the Etruscans personalized their higher deities under Greek influences. The lower deities and demons kept their underground origin. The main god was Voltumna (lat. *Vertumnus*), and his main sanctuary was in the city of Volsinii (*Volsinii*, Bolsena). The fatherly god was Tinia (Zeus/Jupiter), coupled with his fiancé, the queen Uni (Hera/Juno), followed by Menrva (Ate-na/Minerva), the gods of the sea and earthquakes, Maris and Netun (Poseidon/Neptune), Turan, the goddess of love (Aphrodite/Venera), Herkle (Herakles/Hercules), Artumes (Artemis/Diana), Aplu (Apollo), Fufluns (Dionysius/Bakho), Laran (Ares/Mars), Turm (Hermes/Mercury), and Sethlans (Hephaestus/Vulkan). The Etruscans had such a great number of deities, that it was impossible to tell how many there were. These deities were the guards of the sky, waters, earth, and human souls. They were also obliged to serve the higher deities. The Lase were especially famous; and they were, just like the Roman Laari, the good spirits of home and household hearths.

The process of organizing religion took place during the 8<sup>th</sup> century BC, as attested to by the first holy cult-related places. These places were marked by votive gifts, especially bronze statuettes that depicted the devotees, never the deities, and statuettes of bulls depicted in the late geometric or the oriental style. This shows that traditional Etruscan religion was connected to primary activities, especially agriculture. The lack of monumental structures at holy places and the complete lack of depictions of gods by which scenario the Etruscan religion developed.

The first cult-related practices took place around the altar. The appearance (structure) of the altar showed which god they were dedicated to. The, so called, heavenly deities were given altars intended for incineration or animal sacrifice. The gods of the earth and the underworld were given altars with a hole that led the liquid sacrifice (milk, wine, the blood of sacrificed animals) into the ground. The structure of some younger temples included older altars, as is the case in Tarquinia, where the floor of the big *Ara della Regina* temple included an old altar. Recognizing one such

stoljeća, odnosno od prve polovice 6. stoljeća prije Kr. Vitruvije u svojem poglavlju o etruskim hramovima obavještava nas o tzv. *Tuscanicae dispositiones*, o tipičnim pravilima gradnje etruskih hramova. Tri su glavna tipa etruskih hramova, od kojih Vitruvije posebno obrađuje dva tipa, njihov raspored i proporcije, jer to su oni od kojih se razvija tip rimskih kapitoljskih hramova.<sup>11</sup> To su bili, u prvom redu, hram s jednom celom i hram s trima celama, a treći bio bi tip s jednom celom i bočnim krilima (*alae*). Unutar cele čuva se lik božanstva (*simulacrum*), ali i dalje se obredi vrše kod žrtvenika. Tipični za sve etruske hramove jesu prostrani pronaosi sa stupovima pred celama s ulazima samo na fasadi, što je opet u vezi s etruskom vjerskom liturgijom. Sve daje dojam aksijalnosti, frontalnosti još kod najranijih etruskih hramova.

Kada Vitruvije govori o *mos tuscanicus* ili *tuscanicae dispositiones*, govori o nečemu po čemu se etruski hramovi razlikuju od svih ostalih. Takozvani etrusko-italski hram, za razliku od grčkih hramova, gradi se od drva i opeke, dok se kamen upotrebljavao samo kod donjih dijelova građevina (baza hrama).

Hram je bio pokriven dvoslivnim krovom od drva. Temelj gradnje krova čini okvir od arhitrava (*trabes compactiles*), nad tim okvirom presijecaju se horizontalne grede koje nose teret nagnutih greda (*mutuli*) i središnje grede (*columen*) postavljane na visoke podupirače na dvama krajevima krova.<sup>12</sup> Krila krova bila su prekrivena drvenim pločama, koje su onda bile zaštićene tegulama i imbreksima od gline, dok je krunište krova, duž pročelja i bočnih strana, bilo obloženo posebnim terakotnim dekorativnim elementima. U Etruriji je postojala organizirana obrtnička tradicija koja je izrađivala složene sisteme dekoracije od terakote, posebno od 6. st. prije Kr. Tegule i crjepovi koji su pokrivali strukturu krova bili su ukrašeni bojanim reljefnim korničima – antefiksima – s olucima u obliku mačjih glava. Terakotne ploče kojima su bile popločane grede bile su ukrašene mitskim životinjama. Arhitrav je bio ukrašen biljnim motivima. Dekoracija je uglavnom istočnjačkoga podrijetla: palmeta kao akroterij, pupoljak ili cvijet lotusa, rozete, meandri, prepleti itd. Zabatno polje nije uvijek bilo ukrašeno, a činile su ga skulptorske grupe dopunjene akroterijima. Prikazuju se razne mitske figuracije, ponekad u vezi s božanstvom kojemu je hram posvećen. Manje su grupe obrtnika kružile Etrurijom i nudile svoj zanat.

Najljepše ostatke ulomaka terakotne arhitektonske dekoracije nalazimo na lokalitetima Veji (*Veii*), Poggio Civitate (Murlo), Santa Severa (*Pyrgi*), Talamone, Orvieto, Tarquinia, Conca (*Satricum*), Volterra, Civitalba, *Falerii* te u samom gradu Rimu.

Grad Veji nalazio se na jugu Etrurije. Do 5. st. prije Kr. zauzimao je i desnu obalu rijeke Tiber i nekoliko budućih četvrti grada Rima – Janikul, Vatikan, *Monte Mario*, *Trastevere*. 396. god. prije Kr., nakon deset godina opsade, Veje je zauzeo rimski junak *Furius Camillus*, a u Rim je preseljen kult *Iuno Regina*.

altar is possible due to the different orientation of both the altar and the temple. The construction of temples along such altars began in the 6<sup>th</sup> century BC.

Temples – the houses of deities, were modeled based on the houses of the aristocracy. If the basis of Etruscan temples is studied through their religion, it seems that the Etruscans did not see temples as houses of god, as so many others did, but as the earthy manifestation of a regularized and limited heavenly field (*templum*). The Etruscan-Italic temples were made of raw bricks and wood with decorative terracotta paneling, had stone foundations with tall podiums that were almost exclusively made of stone and had low narrow stairs. This is why only the foundations of the numerous discovered Etruscan temples have been preserved. The upper parts of temples were only preserved in the form of numerous fragments of architectural terracotta decorations.

Archaeological research has confirmed the accuracy of the models of Etruscan temples recorded by Vitruvius, and which appeared between the end of the 7<sup>th</sup> and the first half of the 6<sup>th</sup> century BC. In his chapter on Etruscan temples, Vitruvius informs us about the, so called, *Tuscanicae dispositiones* – the typical rules used in the construction of Etruscan temples. There are three main types of Etruscan temples, and Vitruvius went into great detail about the layout and proportions of two types, because those were the ones that Roman Capitoline temples developed from.<sup>11</sup> These were, primarily, a temple with one *cella*, and a temple with three *cellae*. The third type had a single *cella* and side wings (*alae*). The *cella* was used to store the depiction of a deity (*simulacrum*), but the rituals were still done at the altar. All Etruscan temples typically had spacious porticos in front of the *cellae* and entrances only on the façade – something that is also connected with Etruscan religious liturgy. Even in the earliest Etruscan temples, everything gives off the impression of axiality and frontality.

When Vitruvius speaks about *mos tuscanicus* or *tuscanicae dispositiones*, he refers to something that makes Etruscan temples different from others. The, so called, Etruscan-Italic temple, unlike the Greek, was constructed out of wood and brick, and stone was only used to construct the lower parts of buildings (the base of the temple).

The temple was covered with a wooden gable roof. The base of the roof was composed of an architrave frame (*trabes compactiles*) covered by intersecting horizontal beams that support the slanted (*mutuli*) and the central (*columen*) beams placed onto tall supports at the two ends of the roof.<sup>12</sup> The sides of the roof were covered by wooden panels that were then protected with clay tegulae and imbrices, while the crown of the roof, spread along the façade and the sides of the temple, was covered with special

11 Najtipičniji etrusko-rimski hram nastao je u 6. st. prije Kr., posvećen je Jupiteru Kapitoljskom, odnosno Kapitoljskoj trijadi – Jupiter, Junona i Minerva. Posvećen je 509. god. prije Kr., u prvoj godini rimske Republike. Trijada Tinia, Uni, Minerva koja bi odgovarala onoj rimskoj Jupitera, Junone i Minerve, nije nikada bila spomenuta u etruskim epigrafskim tekstovima, iako ova imena često nalazimo pojedinačno i u grupama različitim od ove. Ovaj je hram postao modelom za sve glavne kultne hramove – hramove posvećene trijadi Jupiter, Junona i Minerva, u svim većim gradovima Rimskoga Carstva, a po njemu su nosili ime kapitoljski hramovi.

12 Vitruvije 1999: 92-93; Boëthius 1994: 54-58.

11 The most typical Etruscan-Roman temple was created in the 6<sup>th</sup> century BC, and is dedicated to the Capitoline Jupiter, i.e. the Capitoline triad – Jupiter, Juno and Minerva. It was consecrated in 509 BC, in the first year of the Roman Republic. The Tinia, Uni, Minerva triad, which would correspond with the Roman triad of Jupiter, Juno and Minerva, was never mentioned in Etruscan epigraphic texts, although these names frequently appear in isolation, as well as in other groups. This temple became the model for all main cult-related temples – temples devoted to the Jupiter, Juno and Minerva triad in all larger cities of the Roman Empire, and it also gave its name to the Capitoline temples.

12 Vitruvius 1999: 92-93; Boëthius 1994: 54-58.

Na Akropoli ovoga grada sačuvani su ostaci temelja najvažnijega hrama u ovom gradu, hrama posvećenoga božanstvu kojega su Rimljani identificirali s Junonom, kraljicom (*Iunoni Reginae*), a koje je kultnu statuu u Rim prenio spomenuti Furije Kamil.

Najznačajnije je otkriće bilo izvan gradskih zidina, na lokalitetu *Portonaccio*. Otkriveni su ostaci tzv. Apolonova hrama, ustvari hrama posvećenoga Minervi, etrurskoj *Menrva*. Hram je obuhvaćao jedan veći ograđeni prostor koji je uključivao hram, žrtvenik, jame za žrtvovanje, veliki basen. Nije sigurno je li hram imao tri cele, po Vitruvijevim kanonima, ili je imao jednu celu i dva bočna krila (*alae*). Krajem 6. st. prije Kr. hram je bio ukrašen izuzetnom terakotnom arhitektonskom dekoracijom, s predivnim obložnim pločama, antefiksima u obliku glava gorgone i menada te općepoznatim akroterijalnim grupama – punim skulpturama koje su ukrašavale krunište krova.<sup>13</sup> Visoka kvaliteta izrade ovih skulptura pripisala je izradu jednom nam poznatom etrurskom umjetniku – *Vulca*<sup>14</sup>, a koji je izgleda radio i na hramu Jupitera Kapitolijskoga u Rimu. Najčuvanija je skulptura Apolona (visine 181 cm), remek/djelo etrurske skulpture sa snažnim grčkim utjecajima (jonske i atičke skulpture). Ovaj Apolon nije grčko božanstvo – idealizacija humanosti – već se radi o jednom nesmiljenom i okrutnom božanstvu u borbi s Heraklom, svojim suparnikom u borbi za posjed kerinitske košute. Jednoj drugoj neidentificiranoj grupi pripada lijepa glava Hermesa (visine 41 cm) i božica s djetetom u krilu (možda Leta s malim Apolonom, visine 166 cm). Snažna ekspresivnost ovih skulptura osnažena je živim bojama, a iako je arhajska stilizacija snažna, vidljivo je duboko poznavanje anatomije.<sup>15</sup>

Prvi stupovi hramova, arhajskih hramova, bili su od drva obložena štukom, kasnije od kamena. Osnovne su karakteristike takozvanoga tuskanskoga stupa, koji je vrlo sličan dorskom, kapital sačinjen od okrugloga ehinusa i kvadratnoga abakusa, vrat s astragalom, te ravno stablo stupa sa zadebljanjem (entazis), sve kao i kod dorskoga stupa.<sup>16</sup> Mada nemamo očuvanih građevina sa stupovima, po opisu Vitruvija i po otkrivenim ulomcima, može se zaključiti da je etrurska arhitektura razvila jedan specifični arhitektonski stil.

Više od bilo kojega naroda posvećivali su se prakticiranju kulta, iz toga proizlazi i razrađena zakonitost i rafinirane tehnike okupljene pod zajedničkim imenom *Disciplina etrusca*.<sup>17</sup>

Religiozni Etruščanin imao je potrebu identificirati i interpretirati znakove božanske poruke, a koji se očituju kroz gromove, utrobe žrtvenih životinja, u stvaranju čuda i slično, u proučavanju *sortes* kroz ptičji let.<sup>18</sup> Apolon, etrurski Aplut, predsjedava posebnoj proročkoj tehnici koja se temelji na *sortes*.

decorated terracotta elements. An organized crafting tradition of making complex systems of terracotta decorations existed in Etruria, especially since the 6<sup>th</sup> century BC. Tegulae and roof tiles that covered the roof construction were decorated with painted cornices – antefixes with chamfers in the shape of cat heads. The terracotta plates that were used as the paneling on the beams were decorated with mythical animals. The architrave was decorated with vegetative motifs. The decorations were mostly of eastern origin: the palmetto as an acroterium, the bud or flower of a lotus, rosettes, meanders, weaving, etc.. The gable field was not always decorated, and was composed of sculptural groups filled in with acroteria. These were decorated with different mythical figures, sometimes associated with the deity to whom the temple was dedicated. Smaller groups of craftsmen travelled across Etruria and offered their services.

The most beautiful remains of architectural terracotta decorations were discovered at the sites of Veji (*Veii*), Poggio Civitate (Murlo), Santa Severa (*Pyrgi*), Talamone, Orvieto, Tarquinia, Conca (*Satricum*), Volterra, Civitalba, *Falerii*, and the city of Rome.

The city of Veji was situated in the south of Etruria. Until the 5<sup>th</sup> century BC, it was on the right bank of the Tiber River and covered several future neighborhoods of Rome – Janiculum, Vatican, *Monte Mario*, and *Trastevere*. In 396 BC, after 10 years of siege, Veji was conquered by the Roman hero *Furius Camillus*, and the cult of *Iuno Regina* was moved to Rome.

The Acropolis of this city yielded the remains of the foundations of the most important city temple – a temple dedicated to the deity whom the Romans identified as Juno the queen (*Iunoni Reginae*). A statue of her was taken to Rome by the aforementioned *Furius Camillus*.

The most significant discovery was made outside the city walls, at *Portonaccio*. The site yielded the remains of the, so called, temple of Apollo, which is, in reality, a temple of Minerva – the Etruscan *Menrva*. The temple included a larger enclosed area with a temple, an altar, sacrificial pits, and a large basin. It is uncertain if the temple had three *cellae*. According to Vitruvius, it either had three *cellae* or one *cella* and two side wings (*alae*). At the end of the 6<sup>th</sup> century BC, the temple was decorated with exquisite architectural terracotta decorations that included stunning panels, antefixes in the shape of Gorgons and Maenads, and the generally known acroterial groups – full sculptures that decorated the crown of the roof.<sup>13</sup> The high-quality production of these sculptures is ascribed to one known Etruscan artist – *Vulca*,<sup>14</sup> who, it seems, lived and worked in the temple of the Capitoline Zeus in Rome. A sculpture of Apollo (181 cm tall) is the most famous one – a masterpiece of Etruscan sculpture with strong Greek influences (sculpting from Ionia and Attica). This Apollo is

13 Banti 1943: 187 i d.; Pallottino 1950: 122-179; Poulsen 1976: 64-65, 72; Dal Maso - Venditti 1984: 130-134; Bianchi Bandinelli - Giuliano 1985: 157-163, 165, 359, sl. 184-187, 404, 433; Colonna 1985a: 419-446; Baglione 1987: 381-417; Les Etrusques ... 1992: 68-69, 75-77, 140-141, br. 162-169...

14 Pallottino 1945.

15 Spomenute skulpture i ostala arhitektonska dekoracija s hrama u Veji-ma čuvaju se u Museo Nazionale Etrusco di Villa Giulia u Rimu.

16 Polacco 1952: 5 i d.; Boëthius 1994: 50-53.

17 Cristofani-Maggiani 1992: 60-111; Maggiani 1991.

18 Sors, -tis, f. = ždrijeb, kocka; proročanstvo, usud, sudbina itd.

13 Banti 1943: 187 and others; Pallottino 1950: 122-179; Poulsen 1976: 64-65, 72; Dal Maso - Venditti 1984: 130-134; Bianchi Bandinelli - Giuliano 1985: 157-163, 165, 359, fig. 184-187, 404, 433; Colonna 1985a: 419-446; Baglione 1987: 381-417; Les Etrusques ... 1992: 68-69, 75-77, 140-141, no. 162-169.

14 Pallottino 1945.

Jedan od najvažnijih aspekata rimske religije jest njezina spremnost uključivanja stranih elemenata u svoj religijski sustav i činjenica da su u više slučajeva dopustili uvođenje i inozemnih svećenika s njihovim bogovima.<sup>19</sup> Možda je najneobičniji primjer uvođenje ne jednoga svećenika, već cijeloga kolegija, kao što je primjer s haruspicima iz Etrurije.<sup>20</sup>

Pod etrurskim utjecajem stekla su popularnost svakovrsna gatanja.<sup>21</sup> U osobitim slučajevima vojskovođe u ratu i starješine u gradu Rimu obraćali su se haruspicima (*haruspices*), koji su nebeska znamenja tumačili po utrobi žrtvenih životinja (srca, jetra, žuč, pluća), munjama te su brinuli o tome kako umiriti znamenja (*procuratio prodigiorum*).<sup>22</sup> Jedan haruspeks, *Spurinna*, bio je taj koji je Julija Cezara upozorio da se čuva Martovskih ida. Porijeklo riječi antički izvori povezivali s izrazom *haruga*, u značenju žrtvene životinje ili kaldejske riječi *har* u značenju jetra.<sup>23</sup>

U carsko je doba u Rimu djelovao zbor od čak 60 haruspika (*ordo LX haruspicum*). Na čelu im se nalazio *magister publicus haruspicum*. Izgleda da im je sjedište bilo u Tarkviniji, gdje je po tradiciji došao bog Tagete i obznanio svoju doktrinu, ali imali su svoj ured i u Rimu. Car Klaudije bio je učenik etrurskoga jezika i kulture te je formirao ovo udruženje koje se sastojalo od 60 članova, ne kolegij u pravom smislu riječi, i tako je to bilo do vladavine cara Teodozija I. Ovaj 384. god. zabranjuje djelovanje haruspika po cijeni smrtne kazne.<sup>24</sup> Djelovanje haruspika bilo je zabranjeno još 319. god., u vrijeme cara Konstantina, te je bilo dopušteno samo u iznimnim slučajevima kao što su udar groma, traženje iscjeljenja ili obilnijega uroda. Bilo je i drugih iznimaka. Godine 408. haruspici su ponudili svoju pomoć kada su Goti predvođeni Alarikom zaprijetili Rimu. Papa Inocent I. nevoljko je pristao na to, pod uvjetom da obred ostane tajan. Djelovali su i privatni haruspici, posebni carski haruspici, a svoje su haruspikice imale i legije, odnosno njihovi zapovjednici.

Etrušćani su uživali glas da su nadasve pobožni (*religiosissimi*), a Arnobije proglašava Etruriju roditeljicom i majkom praznovjerna (*superstitio*).<sup>25</sup> Religija je aspekt etrušćanske civilizacije koji je Rim prihvatio s najmanjim rezervama i zato što se najčvršće opirao plimi grčkih kulturnih utjecaja. Za etrušćansku religiju karakteristični su minucioznost bogoštovlja i sitničav posluš ljudi prema božjoj volji, koja se istražuje i tumači, te stalni pritisak nadmoćnih i mračnih sila. Područje gdje se etrušćanska religioznost iskazuje na najsvojstveniji način jest takozvana *disciplina Etrusca*, tj. splet pravila koji uređuje odnose između bogova i ljudi. Polazište je u istraživanju božje volje svim sredstvima, a najznačajniji i najtradicionalniji među njima jesu čitanje i tumačenje životinjske iznutrice (*haruspicina*) i tumačenje munja (*manu-*

not a Greek deity – an idealization of humanity, but is a merciless and cruel deity who is battling his opponent, Hercules, in a fight to obtain the Ceryneian hind. Another unidentified group includes the beautiful head of Hermes (41 cm tall) and a goddess with a baby in her lap (possibly Leto with baby Apollo, 166 cm tall). The strong expressivity of these sculptures is made stronger by vivid colors and, even though archaic stylization is strong, a deep understanding of anatomy is still visible.<sup>25</sup>

The first columns of archaic temples were made of wood covered by plaster, and later ones were made of stone. The basic characteristic of the, so called, Tuscan pillar, which is very similar to the Doric one, is a capital composed of a round echinus and a square abacus, an astragal neck, and a straight column with a thickening (*entasis*), just like in Doric columns.<sup>26</sup> Although there are no preserved buildings with columns, based on Vitruvius' description and the discovered fragments, it can be concluded that Etruscan architecture developed a specific architectural style.

They devoted themselves to practicing their cult more so than any other peoples, which is why the well-developed regulations and refined techniques came to be known under the common term *Disciplina etrusca*.<sup>27</sup>

The religious Etruscans felt the need to identify and interpret the signs from the divine message that manifested themselves through thunder, the innards of sacrificial animals, the creation of miracles and the like, and in the study of *sortes* through the flight of birds.<sup>28</sup> Apollo, the Etruscan Aplut, was at the top of a specific technique of divination that was based on the *sortes*.

One of the most important aspects of Roman religion was the willingness to incorporate foreign elements into its religious system, and the fact that the Roman allowed foreign priests to come and introduce their deities.<sup>29</sup> Perhaps the most unusual example of this is the introduction of not a single priest, but an entire collegium – the *haruspices* from Etruria.<sup>20</sup>

Different types of divination became extremely popular under Etruscan influences.<sup>21</sup> In exceptional cases, the commanders at war and elders in the city of Rome turned to *haruspices*, who interpreted heavenly signs from the innards of sacrificed animals (hearts, livers, bile, lungs) and lightning, and who were in charge of appeasing the omens (*procuratio prodigiorum*).<sup>22</sup> A haruspex, *Spurinna*, was the one to warn Julius Cesar that he had to be wary of the Ides of March. Ancient sources connect the origin of the word with the expression *haruga*, meaning sacrificial animal, or the Chaldean word *har*, meaning liver.<sup>23</sup>

19 MacBain 1982: 43; Orlin 2010: 86-110.

20 MacBain 1982: 42-59.

21 Chini 1990: 53-59, 68-69.

22 Bouché-Leclercq 1873-1919:17-32; Marquardt 1963: 410-415; Heurgon 1978: 101-104; Haack 2006: 9-14; Beard – North – Price 2005: 175-178; Orlin 2010: 111-136.

23 Maggiani 2000: 27-29.

24 Beard – North – Price 2006: 101-102; Haack 2006: 15-76.

25 Arnobije, *Adv. Gentes*, VII, 26: *genetrix et mater superstitionum*.

15 The mentioned sculptures and other architectural decorations from the temple in Veji are kept at the Museo Nazionale Etrusco di Villa Giulia in Rome.

16 Polacco 1952: 5 and others; Boëthius 1994: 50-53.

17 Cristofani-Maggiani 1992: 60-111; Maggiani 1991.

18 *Sors, -tis*, f. = draw, dice; prophecy, fate, destiny, etc.

19 MacBain 1982: 43; Orlin 2010: 86-110.

20 MacBain 1982: 42-59.

21 Chini 1990: 53-59, 68-69.

22 Bouché-Leclercq 1873-1919:17-32; Marquardt 1963: 410-415; Heurgon 1978: 101-104; Haack 2006: 9-14; Beard – North – Price 2005: 175-178; Orlin 2010: 111-136.

23 Maggiani 2000: 27-29.





Uljanica s plosnatom drškom ukrašena plastično oblikovanim biljnim i zoomorfnim motivima; 6. st. stare ere (AMZ).

An oil lamp with flat handle decorated in graphical vegetative and zoomorphic motifs; 6<sup>th</sup> c. BC (AMZ).

*bia*). *Manubia* je tehnički izraz etruske discipline i odnosi se na snagu božanstva da barata munjama, u ikonografiji prikazanoga s munjom u ruci.<sup>26</sup> Seneka rabi termin u svojoj proširenoj raspravi o munjama.<sup>27</sup> Navodi kako je Jupiter, poistovjećen s etruskim Tinijom, imao tri različite vrste munja, slane iz triju različitih nebeskih regija. Razlikuju se blage ili “munje koje buše”, štetne ili “munje koje drobe”, koje se šalju kao savjet dvanaest *Di Consentes* i povremeno donose neko dobro, treće su razarajuće ili “goruće” munje, koje šalje *Di superiores et involuti* (skriveni bogovi više sfere) i koje mijenjaju stanje javnih i privatnih poslova.

Oba umijeća imaju prethodnike na istoku, posebice u Mezopotamiji.<sup>28</sup> Nasuprot tomu u Rimu, kao već i kod Umbra, prevladat će proricanje iz promatranja ptičjega leta (*auspicium*), ali vjerovatno je i ono ulazilo u opseg etruščanskoga umijeća, u ogranak koji se ticao iščitavanja božjih znakova ili čuda (*coniectura*), tzv. *ostenta et portenta*.<sup>29</sup> Disciplini su pripadala obredna pravila za žrtvovanja i ceremonije, učenje o rokovima koji su preodređeni za ljude i za države te vjerovanja i propisi za nezemaljski život.

During the Empire, a group of 60 haruspices were active in Rome (*ordo LX haruspicum*). They were led by the *magister publicus haruspicum*. It seems that their headquarters was in Tarquinia, where the god Tages came to make his doctrine known, but they also had their office in Rome. Emperor Claudius studied the Etruscan language and culture and formed this association, not a collegium in the real sense of the word, which had 60 members and functioned until the rule of Emperor Theodosius I. In 384, this ruler forbade the haruspices to practice under threats of the death sentence.<sup>24</sup> The practices of the haruspices had been forbidden back in 319, during the rule of Emperor Constantine, and were only allowed in special situations such as being struck by lightning, asking for healing or a better harvest. There were other exceptions. In 408, the haruspices offered their help when the Goths, led by Alaric, threatened Rome. Pope Innocent I unwillingly agreed under the condition to keep the ritual a secret. Private and imperial haruspices also existed, and some legions, i.e. the commanders, also had their haruspices.

The Etruscans were known as being very religious (*religiosissimi*), and Arnobius called Etruria the mother of superstition (*superstitio*).<sup>25</sup> Religion is an aspect of Etruscan culture that the Romans accepted with the least resistance, because it presented the strongest opposition to the wave of Greek cultural influences. Etruscan religion was characterized by meticulous worship and the complete obedience of man to god’s will that is constantly studied and interpreted, as well as by the constant pressure from more powerful and dark forces. The area where Etruscan religion was expressed in the most characteristic way was the, so called, *disciplina Etrusca*, i.e. a set of rules establishing the relations between gods and men. The starting point was the study of god’s will through all possible devices. The most significant and most traditional ways were the study and interpretation of animal innards (*haruspicina*) and the interpretation of lightning (*manubia*). *Manubia* is a technical expression of Etruscan discipline and refers to the power of a deity, depicted with a lightning in his hand in the iconography, to wield lightning.<sup>26</sup> Seneca used this term in his expanded discussion on lightning.<sup>27</sup> He stated that Jupiter, identified as Etruscan Tinia, had three different kinds of lightning that were sent from three different heavenly regions. These were the mild or “piercing lightning”, the harmful or “crushing lightning”, sent as advice by the twelve *Di Consentes* that occasionally brought good news, and the destructive or “burning” lightning, sent by *Di superiores et involuti* (the hidden gods of the higher sphere) that changed the relations between public and private businesses.

Both skills have predecessors in the east, especially Mesopotamia.<sup>28</sup> In Rome, however, already the Umbri, would focus on telling the future from the flight of birds (*auspicium*). This practice probably also entered the scope of Etruscan divination, the branch that tackled the interpretation of god’s signs or miracles

26 Od *manus* = ruka i habere = imati, držati. Treba je razlikovati od riječi *manubiae* u značenju ratni plijen.

27 Seneka, *Naturales questiones*, 2.41.1; Weinstock 1951: 125; Pallottino 1992: 44.

28 Wallis Budge 1988: 424-430.

29 Bloch 1963: 43-76.

24 Beard –North – Price 2006: 101-102; Haack 2006: 15-76.

25 Arnobius, *Adv. Gentes*, VII, 26: *genetrix et mater superstitionum*.

26 From *manus* = hand and habere = to have, to hold. It should be differentiated from the word *manubiae*, in the sense of war acquisition.

27 Seneka, *Naturales questiones*, 2.41.1; Weinstock 1951: 125; Pallottino 1992: 44.

28 Wallis Budge 1988: 424-430.

Po shvaćanju Etruščana uspostavljen je čvrst i konkretan odnos između neba i zemlje, između svijeta bogova i svijeta ljudi. Ori-jentirani i podijeljeni "sveti" prostor odgovara zamisli koja se na latinskom izražava riječju *templum*. On obuhvaća nebo ili po-svećeni zemaljski prostor (recinko nekoga svetišta, grada, itd.) ili također mnogo manju površinu, na primjer jetra neke životinje koja je upotrijebljena za proricanje, samo moraju biti ispunjeni uvjeti da je orijentiran i da je podijeljen prema nebeskome pred-lošku. Orijentacija se određuje četirima glavnim točkama, koje su povezane dvama ukrštenim pravcima. Ono što danas o toj temi znamo nastalo je usporedbom imena božanstava upisana u različite kućice na koje je podijeljena površina brončanih jetara nađenih u Gottolengu kod Piacenze (pomagalo – vodič haruspici-ma za proricanje) s podjelom neba i njegovih božanskih žitelja prema Pliniju i Marcijanu Kapeli.<sup>30</sup>

Vijesti nam govore da su postojale etruščanske knjige vjerskoga sadržaja, koje su u prijevodima ili sažecima poznavali u rimskim svećeničkim i učenim krugovima. Razvrstavale su se u tri temelj-ne grupe: *Libri haruspici*, *Libri fulgurales* i *Libri rituales*.<sup>31</sup> Prve su obrađivale proricanje pregledom životinjskih iznutrice, druge su obuhvaćale učenje o munjama. Izgleda da su Obredne knjige (*Libri rituales*) obuhvaćale daleko opsežnije i zapletenije gradivo koje se ticalo pravila bogoštovlja, načina kako se posvećuju sve-tišta, utemeljuju gradovi, dijele polja, građanske i vojne uredbe itd. Osim toga obuhvaćale su posebne spise o podjeli vremena i o granicama života ljudi i naroda (*Libri fatales*), o zagrobnome svijetu i o obredima spasenja (*Libri Acherontici*), naposljetku i o tumačenju čudesa (*Ostentaria*). Etruščansko-rimska predaja pridaje im božansko nadahnuće, dio njih pripisivao se pouka-ma maloga genija Tageta (*Libri Tagetici* – *Libri haruspici* i *Libri Acherontici*) ili poukama nimfe Vego(ni)je ili Begoe (*Libri fulgura-les* i spisi o mjerništvu u *Libri rituales*). *Ostentaria* su vrsta taj-ne, tajanstvene književnosti, svojevrsna pisana kolekcija opisa i interpretacija znamenja (*ostenta*).<sup>32</sup> *Tarquitius Priscus* napisao je djelo *Ostentarium arborarium*, knjigu znamenja iz stabala, te *Ostentarium Tuscum*, vrlo vjerojatno prijepis etrurskih djela.<sup>33</sup> Plinije navodi kako je njegov suvremenik *Umbricius Melior* na-pisao djelo *Ostentarium aviarum*, koje se ticalo znamenja u vezi s pticama,<sup>34</sup> ali uglavnom su nam *ostentaria* sačuvana samo u ulomcima kod raznih rimskih autora.

(*coniectura*), the, so called, *ostenta et portenta*.<sup>29</sup> The discipline was marked by ritualistic rules about sacrifice and ceremonies, the study of deadlines predestined for people and states, and the beliefs and regulations for the afterlife. According to the Etruscans, the relations between heaven and earth, the world of the gods and the world of men, were firm and clear. They orientated and divided "holy" spaces to match the idea behind the Latin term *templum*, which encompasses the sky or the consecrated earthly space (the sanctified area within a shrine, city, etc.), or a significantly smaller area, for example, the liver of an animal that was used in divination; the only requirement was that certain conditions be met – the orientation and the division of space according to the heavenly template. The orientation was determined based on four main points that were connected by crossed lines. What we know today about this topic stems from the comparisons of the names of deities inscribed into different frames found on the surface of bronze livers discovered at Got-tolengo near Piacenza (a tool – a guide to divination for haruspici-es). These depicted the division of the heavens and the heavenly inhabitants according to Pliny and Martianus Capella.<sup>30</sup>

The news tells us that some Etruscan books of religious charac-ter were translated and known among the Roman priesthood and educated circles. They were divided into three major groups: *Libri haruspici*, *Libri fulgurales* and *Libri rituales*.<sup>31</sup> The first ones focused on fortune telling from animal innards, and the second one on the study of lightning. It seems that the Ritual books (*Libri rituales*) contained far more all-encompassing and complex material about the rules of worship, the ways of conse-crating sanctuaries, founding cities, dividing the fields, civil and military service, and more. Additionally, they included special records about the division of time and about the limitations of the lives of individuals and peoples (*Libri fatales*), about the af-terlife and salvation rituals (*Libri Acherontici*), and, finally, about the interpretation of miracles (*Ostentaria*). The Etruscan-Roman heritage describes them as being inspired by the divine. Some of them were described as lessons from the small genius Tage-tes (*Libri Tagetici* - *Libri haruspici* and *Libri Acherontici*), or as teachings of the nymph Vego(ni)a or Begoe (the *Libri fulgurales* and records on measurement in the *Libri rituales*). *Ostentaria* present a type of secret, mysterious literature, a kind of collec-tion of omen (*ostenta*) descriptions and interpretations.<sup>32</sup> *Tarqui-tius Priscus* wrote the *Ostentarium arborarium*, a book of read-ing omens from trees, and the *Ostentarium Tuscum*, most likely a transcription of other Etruscan works.<sup>33</sup> Pliny stated that his contemporary, *Umbricius Melior* wrote the *Ostentarium aviarum*, which studied omens related to birds,<sup>34</sup> but the *ostentaria* are mostly preserved in paragraphs written by different Roman au-thors.

30 Plinije, *Nat. hist.*, II, 54, 143; Mart. Capella, *De nuptiis*, I, 45 i d.; Thulin 1906a: 60 i d.; Weinstock: 1946, 101-129; Pallottino 2008: 311-314.

31 Thulin 1906: 9-15; Weinstock 1950: 44-49; Piganiol 1951: 79-87; Weinstock 1951: 122-153; Heurgon 1959: 41-45; Pfiffig 1961: 55-64; Weinstock 1971: 1 i d.; Du-mézil 1974: 611-680; Pfiffig 1975: 36-43; Thomson De Grummond 2006: 27-44; Pallottino 2008: 323-326.

32 Linderski 1985: 231-232.

33 Makrobije, *Sat.*, 3.20.3; Amijan Marcellin, *Res Gestae*, XXV, 27; Thomson De Grummond 2006: 2. *Tarquitius Priscus* rimski je pisac o kojem nemamo mno-go saznanja.

34 Plinije Stariji, *Nat. hist.*, X, 6-42.

29 Bloch 1963: 43-76.

30 Pliny, *Nat. hist.*, II, 54, 143; Mart. Capella, *De nuptiis*, I, 45 and others; Thu-lin 1906a: 60 and others; Weinstock: 1946, 101-129; Pallottino 2008: 311-314.

31 Thulin 1906: 9-15; Weinstock 1950: 44-49; Piganiol 1951: 79-87; Weinstock 1951: 122-153; Heurgon 1959: 41-45; Pfiffig 1961: 55-64; Weinstock 1971: 1 and others; Dumézil 1974: 611-680; Pfiffig 1975: 36-43; Thomson De Grummond 2006: 27-44; Pallottino 2008: 323-326.

32 Linderski 1985: 231-232.

33 Macrobius, *Sat.*, 3.20.3; Ammianus Marcellinus, *Res Gestae*, XXV, 27; Thomson De Grummond 2006: 2. *Tarquitius Priscus* is a Roman author that we do not know much about.

34 Pliny the Elder, *Nat. hist.*, X, 6-42.

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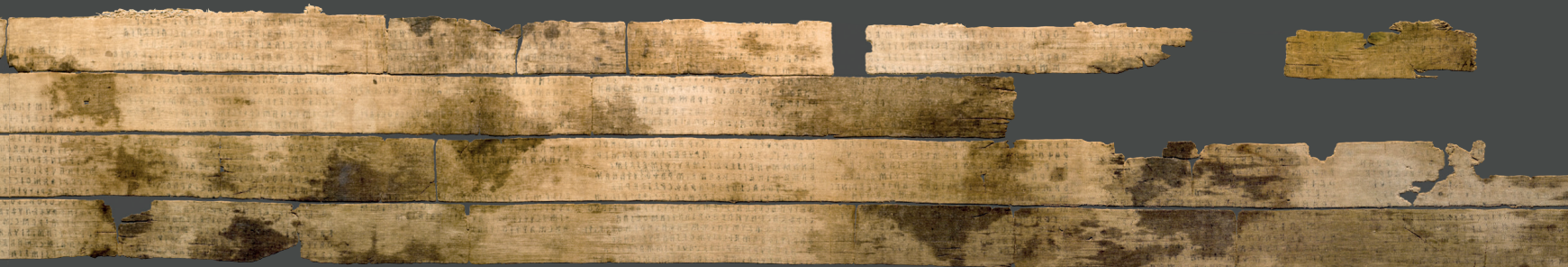
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## II. ETRURSKI JEZIK

## II. THE ETRUSCAN LANGUAGE





# HIPOTEZE O PODRIJETLU ETRURSKOGA JEZIKA

## HYPOTHESE ON THE ORIGIN OF THE ETRUSCAN LANGUAGE

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Ante Petrović

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Podrijetlo etrurskoga jezika predstavlja zagonetku još od antike. Od početaka poredbene lingvistike u 19. stoljeću do danas izneseno je nekoliko prijedloga za njegovu genetsku klasifikaciju, koji se međusobno razlikuju po ozbiljnosti argumentacije, ali nijedan nije uspio pronaći argumente dovoljno uvjerljive da bi se genetska pripadnost etrurskoga mogla smatrati pouzdano utvrđenom.

### Najranije ideje

Hipoteza o srodnosti etrurskoga s drugim jezicima bilo je već u predlingvističkom razdoblju. Tako su ga u 16. stoljeću Annio da Viterbo i Pier Francesco Giambulari pokušavali povezati s hebrejskim, a Luigi Lanzi u djelu *Saggio di lingua etrusca* iz 1789. dovodi ga u vezu s italjskim jezicima,<sup>1</sup> u vrijeme kad postojanje indoeuropske jezične porodice, kojoj pripada i italjska skupina, još nije bilo široko poznato.

Nakon uzleta poredbene lingvistike tijekom 19. stoljeća nastaje lingvistika kao znanost i razvija se poredbena metoda kao znanstveni način za provjeravanje hipoteza o srodnosti među jezicima. Srodnost se, naime, može potvrditi ako među jezicima postoje sustavne glasovne podudarnosti u riječima iz temeljnoga leksika i podudarnosti u morfološkim paradigmama.<sup>2</sup>

U spomenutom se razdoblju poredbena lingvistika u prvom redu bavila indoeuropskom jezičnom porodicom te su na tom tragu mnogi autori zastupali tezu o srodnosti etrurskoga s indoeuropskim jezicima na neki način, pokušavajući za nju iznaći argumente kakvi su uobičajeni u disciplini. Corssen,<sup>3</sup> primjerice, nastoji dokazati da etrurski spada pod italjsku granu indoeuropske jezič-

The origin of the Etruscan language has been a mystery ever since the Antiquity. From the beginnings of comparative linguistics in the 19<sup>th</sup> century to this day, several suggestions have been made about its genetic classification. The seriousness of argumentation varies in these propositions, but none have provided arguments that are convincing enough to definitively confirm the genetic affiliation of Etruscan.

### Earliest ideas

Hypotheses about the similarities of Etruscan and other languages existed already in the pre-linguistic period. In the 16<sup>th</sup> century, Annio da Viterbo and Pier Francesco Giambulari tried to connect it to Hebrew, and, in his 1789 book, *Saggio di lingua etrusca*, Luigi Lanzi connects it to Italic languages,<sup>1</sup> at a time when the existence of the Indo-European language family, which includes Italic languages, was not widely known.

After the rise of comparative linguistics in the 19<sup>th</sup> century, linguistics was established as a science and the comparative method was developed as a scientific way of testing hypotheses about the relatedness of languages. This relatedness can, namely, be confirmed if the languages display systematic sound correspondences in words from the basic vocabulary and matches in morphological paradigms.<sup>2</sup>

In the said period, comparative linguistics primarily focused on the Indo-European language family. Hence, many authors supported the hypothesis that Etruscan was in some way related to Indo-European languages, and were trying to find the usual sort of arguments to support their ideas. Corssen,<sup>3</sup> for exam-

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1 Pfiffig 1969: 9

2 v. Matasović 2001: 34-41

3 Corssen 1875

1 Pfiffig 1969: 9.

2 s. Matasović 2001: 34-41.

3 Corssen 1875.

ne porodice uspostavljajući navodne glasovne i morfološke podudarnosti između njega te italjskih i određenih drugih indoeuropskih jezika te izvodeći flektivne tipove i oblike u etruskom i italjskim jezicima iz rekonstruiranih praindoeuropskih. Međutim, kao primjere za glasovne podudarnosti vrlo često navodi osobna i božanska imena, koja očito imaju podudarne oblike jer su posuđivana među jezicima, a ne jer su naslijeđena iz zajedničkoga jezika pretka, a za slučajeve u kojima etruski flektivni oblici jasno odudaraju od onih u italjskim jezicima ne nudi zadovoljavajuća objašnjenja. Stoga je Corssenova teza prilično slabo utemeljena. Brugge<sup>4</sup> pak pokušava etruski svrstati u indoeuropsku porodicu predlažući bliže srodstvo s armenskim. Pritom navodi pojedine usporedive glasovne promjene, gramatičke oblike, morfosintaktička obilježja te lekseme sličnoga izraza i značenja u etruskom i armenskom, ali ni on ne uspijeva pokazati sustavno podudarnije između tih dvaju jezika. Znatno kasnije, 1962. godine, Mayani dovodi etruski u vezu s indoeuropskom porodicom preko albanskoga, u djelu koje prema Pffiffgu<sup>5</sup> počiva na površnoj i nekritičkoj usporedbi riječi slična oblika.

Osim s indoeuropskima, neki su autori povezivali etruski s baskijskim, egipatskim, dravidskim i uralskim jezicima, uglavnom bez ozbiljnog lingvističkog utemeljenja.<sup>6</sup>

### Tirsenski jezici: lemnjski i retski

Na otoku Lemnu u Egejskom moru 1885. godine pronađena je stela s dvama natpisima na alfabetu sličnom arhajskom etruskomu na dotad nepoznatom jeziku, kojemu je također ubrzo utvrđena strukturna sličnost s etruskim. Već Brugge<sup>7</sup> na temelju, između ostaloga, podudarnog nepostojanja zvučnih okluziva, oblika genitiva na *-l* i *-s*, oblika, koji također naziva genitivom, na *-ale* i *-si*, oblika lokativa (tj. postpozicije) na *-θ* odnosno *-θi* te nekoliko leksičkih podudarnosti poput retskoga *oialχvei:s* i etruskoga *śealχls* „četrdeset“ ili „šezdeset“, lemnjskoga *mav* i etruskoga *malχ* „pet“ i lemnjskoga *avi:s* naspram etruskoga *avils* „godina“ zaključuje da su etruski i lemnjski „u biti isti jezik“. Popisu podudarnosti mogli bi se dodati i sličan četverovokalski sustav, s razlikom što uz <a>, <e> i <i> etruski upotrebljava još vokalski grafem <u>, a lemnjski <o><sup>8</sup> te sintagme u genitivu kao priložne oznake vremena.<sup>9</sup> Brugge nadalje tvrdi da lemnjski natpisi predstavljaju arhaičniji oblik jezika od onoga posvjedočenog u većini etruskih zapisa, što argumentira nedostatkom konsonantskih skupova u lemnjskom, zbog čega pretpostavlja da u njemu još nije došlo do sinkope vokala kao u etruskom, i očuvanjem diftonga *ai*, koji je u etruskom monoftongiziran. Doduše, kako je već spomenuto, autor etrus-

ple, tried to prove that Etruscan is a part of the Italic branch of the Indo-European language family by establishing supposed phonetic and morphological matches between Etruscan, Italic, and certain other Indo-European languages, as well as by deriving inflectional types and forms in Etruscan and the Italic languages from reconstructed Proto-Indo-European ones. However, he often lists personal names and deities as examples of sound correspondences, which obviously have matching forms because they were borrowed across languages, and not because they were inherited from a common ancestral language. In cases where Etruscan inflectional forms clearly differ from those found in Italic languages, the author does not provide satisfactory explanations. Brugge,<sup>4</sup> on the other hand, tries to place Etruscan into the Indo-European family by suggesting closer relatedness to Armenian. Thereby, he lists individual sound changes, grammatical forms, morphosyntactic features and lexemes that have similar expressions and meaning in Etruscan and Armenian. However, he too fails to establish systematic correspondences between the two languages. Significantly later, in 1962, Mayani connected Etruscan with the Indo-European family through Albanian, in a work that, according to Pffiffgu,<sup>5</sup> was based on a superficial and non-critical comparison of words that have a similar form.

Other than with the Indo-European, some authors connected Etruscan with Basque, Egyptian, Dravidian and Uralic languages, mostly without serious linguistic foundations.<sup>6</sup>

### Tyrsenian languages: Lemnian and Rhaetian

In 1885, the island of Lemnos in the Aegean Sea yielded a tombstone with two inscriptions written in an alphabet that resembled archaic Etruscan in a, thus far, unknown language that was, very soon, also established to be structurally similar to Etruscan. It was already Brugge<sup>7</sup> who suggested that Etruscan and Lemnian are, in fact, the “same language”, based on, among other things, the matching lack of voiced stops, the genitive forms ending in *-l* and *-s*, forms, which he also calls genitive, ending in *-ale* and *-si*, locative forms (i.e. postposition) ending in *-θ* or *-θi*, as well as several lexical matches, such as the Rhaetian *oialχvei:s* and the Etruscan *śealχls* – “forty” or “sixty”, the Lemnian *mav* and the Etruscan *malχ* – “five”, and the Lemnian *avi:s* versus the Etruscan *avils* – “year”. The list of matches could be expanded with a similar four-vowel system, noting the difference that, along with <a>, <e> and <i>, Etruscan includes the grapheme <u>, and Lemnian <o><sup>8</sup> as well as genitive phrases used as adverbials of time.<sup>9</sup> Brugge goes on to claim that Lemnian inscriptions display a more archaic form of language than the one attested on most Etruscan inscriptions – a fact he supports through the lack of consonant clusters in Lemnian that made him suppose the vowel syncope had not occurred yet as

4 Brugge 1890

5 Pffiffgu 1969: 11

6 Ibid.

7 Brugge 1886: 8, 48-50

8 Steinbauer 1999: 363

9 Wallace 2008: 221

4 Brugge 1890.

5 Pffiffgu 1969: 11.

6 Ibid.

7 Brugge 1886: 8, 48-50.

8 Steinbauer 1999: 363.

9 Wallace 2008: 221.





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Brončano ogledalo sa stražnjom stranom ukrašenom urezanim likom žene sa krilima (krilati ženski genij ili Nike) 4.-3. stoljeće stare ere (AMZ).

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A bronze mirror incised with a figure of winged female (winged female genius or Nike) on the back side; 4<sup>th</sup> - 3<sup>rd</sup> century BC (AMZ).



*Tabula Cortonensis* - jedan od najdužih etruskih tekstova napisan na brončanoj ploči iz Cortone, Museo dell'Accademia Etrusca

*Tabula Cortonensis* - one of the longest Etruscan texts written on a bronze plaque from Cortona, Museo dell'Accademia Etrusca

ski smatra jednim od indoeuropskih jezika te lemnijski i etruski zajedno svodi pod *tirensku* granu indoeuropske porodice. U današnje se doba srodnost etruskoga i lemnijskoga uglavnom smatra neupitnom te se pitanje o genetskoj pripadnosti jednog ujedno odnosi i na drugi jezik, kako navodi primjerice Steinbauer,<sup>30</sup> ističući pritom da su lemnijski tekstovi protumačeni samo zahvaljujući etruskomu. Valja naglasiti da je veza između lemnijskoga i etruskoga dodatno privlačna i zbog Herodotove tvrdnje da su se Etruščani u Italiju doselili iz Lidije, drevne kraljevine u zapadnoj Maloj Aziji geografski bliske Lemnu. U današnje vrijeme neki autori na sličnom tragu zastupaju stajalište da je lemnijski prežetak jezika iz sjeveroistočnog Sredozemlja čiji se dio govornikā naselio u Etruriju, no drugi smatraju da su lemnijski i etruski izdanci zajedničkog jezika pretka koji se možda izvorno govorio na nekom trećem području ili čak da je lemnijski jezik koji su Etruščani iz Italije donijeli na Lemn u trgovačkim ekspedicijama.<sup>31</sup>

Još je jedan jezik koji je utemeljeno dovođen u vezu s etruskim retski, posvjedočen u nešto više od sto predrimskih natpisa pronađenih u alpskom i predalpskom području koji otprilike odgovara kasnijoj rimskoj provinciji Reciji.<sup>32</sup> Već Tit Livije (*Ab urbe cond.* 5.33) piše da Reti potječu od Etruščana, koji su se bili naselili sve do Alpa, ali ih je *to područje nagnalo da od starine ne zadrže ništa osim zvuka jezika, a ni njega ne neiskvarenog*. Kasnije se na srodnost etruskoga i retskoga sumnjalo zbog nekolicine leksičkih sličnosti,<sup>33</sup> a u novije vrijeme Rix<sup>34</sup> pronalazi gramatičke podudarnosti koje su uvjerljivi argumenti za genetsku vezu između tih dvaju jezika. Rix,<sup>35</sup> naime, zamjećuje da se konstrukcija s oblikom na *-ku* uz koji stoji oblik na *-le* ili *-si*, koju su raniji istraživači uočili u retskim votivnim natpisima, pojavljuje i u etruskom, primjerice:

*ϕelipuriesi eluku slepile* (retski)

*mi zinaku larθuzale kuleniieši* (etruski)

Oblik na *-ku* tumači kao pasivni particip, a oblike s alomorfnim nastavcima *-le* ili *-si* kao imenice u padežu koji naziva *pertinentiv*, a koji u etruskom primjerice Pfiffig<sup>36</sup> zove emfatičkim genitivom, a Bonfante i Bonfante<sup>37</sup> dativom. Rix<sup>38</sup> tvrdi da je retsko-etruski *pertinentiv* po morfološkoj strukturi zapravo lokativ genitiva, što potkrepljuje činjenicom da etruski pokazuje mnoga obilježja aglutinativnih jezika, u kojima se afiksi često nižu jedan za drugim. Fenomen dvostrukih padeža zaista je poznat u jezičnoj tipologiji, naročito kad je riječ o dodavanju afiksa za padež koji označava rečeničnu ulogu, poput lokativa, na oblik padeža koji naznačuje ulogu u sintagmi, poput genitiva.<sup>39</sup> Poznati su nastavci za genitiv u etruskom alomorfnim *-s* i *-l*, a za lokativ *-i* te Rix, napominjući da su očito u nekoj fazi pretpovijesti etruskoga završni vokali apokopirani, predlaže

it did in Etruscan, as well as through the preservation of the diphthong *ai*, which became a monophthong in Etruscan. Admittedly, as mentioned above, the author considered Etruscan to be one of the Indo-European languages, and placed both Etruscan and Lemnian into the Tyrsenian branch of the Indo-European family. Today, the relatedness of Etruscan and Lemnian is mostly undisputed, and the question of the genetic affiliation of one also refers to the other language, as mentioned, for example, Steinbauer,<sup>30</sup> thereby noting that Lemnian texts were understood only with the help of Etruscan. It should be noted that the connection between Lemnian and Etruscan is additionally attractive due to Herodotus' claim that the Etruscans moved to Italy from Lydia, an ancient kingdom in western Asia Minor, geographically closer to Lemnos. Today, following the same logic, some authors support the opinion that Lemnian is a remnant of languages originating from the northeastern Mediterranean and that some of its speakers of it moved to Europe. Others, however, feel that Lemnian and Etruscan stem from a common ancestor language that might have been spoken in a third region, or even that that Lemnian is a language was brought by the Etruscans from Italy to Lemnos through trade expeditions.<sup>31</sup>

Another language that was justifiably connected to Etruscan is Rhaetian, attested to in somewhat more than a hundred pre-Roman inscriptions discovered in the Alpine and pre-Alpine area that, more or less, matches the later Roman province of Rhaetia.<sup>32</sup> Titus Livius (*Ab urbe cond.* 5.33) wrote that the Rhaetians originated from the Etruscans, who had settled the area up to the Alps, but that *the area made them discard their tradition in all things other than the sound of the language, and not even that in unchanged form*. The relatedness of Etruscan and Rhaetian was later seen as plausible due to several lexical similarities.<sup>33</sup> In recent times, Rix<sup>34</sup> showed grammatical similarities that can be used as convincing arguments in support of the genetic connection between the two languages. Namely, Rix<sup>35</sup> noticed that the construction with the form ending in *-ku*, followed by the form ending in *-le* or *-si*, which many earlier authors noticed on Rhaetian votive inscriptions, also appears in Etruscan. For example:

*ϕelipuriesi eluku slepile* (Rhaetian)

*mi zinaku larθuzale kuleniieši* (Etruscan)

The form ending in *-ku* is interpreted as a passive participle, and forms with allomorphic suffixes of *-le* or *-si* as nouns in a case he calls the *pertinentive*, and that is, in Etruscan, called emphatic genitive by Pfiffig,<sup>36</sup> dative by Bonfante and Bonfante.<sup>37</sup> Based on its morphological structure, Rix<sup>38</sup> claims that the Rhaetian-Etruscan *pertinentive* is actually the locative of the

10 Steinbauer 1999: 366

11 Wallace 2008: 218, 222

12 Rix 1998: 7

13 Wallace 2008: 222

14 Rix (1998)

15 ibid. 22-24

16 Pfiffig 1969: 87

17 Bonafante i Bonfante 2002: 83

18 Rix 1998: 24-29

19 v. Marković 2013: 16.

10 Steinbauer 1999: 366.

11 Wallace 2008: 218, 222.

12 Rix 1998: 7.

13 Wallace 2008: 222.

14 Rix (1998).

15 ibid. 22-24.

16 Pfiffig 1969: 87.

17 Bonafante and Bonfante 2002: 83.

18 Rix 1998: 24-29.

da su stariji genitivni nastavci bili \*-si i \*-la, a da pertinentivni -si i -le potječu od \*-si-i i \*-la-i uz kontrakciju vokalā odnosno očekivanu monoftongizaciju diftonga. U retskom je zaseban lokativ na -i možda posvjedočen u sintagmi *ipi perisnati*. Lokativi s nekim drugim nastavkom nisu zabilježeni, budući da je vrlo malo retskih tekstova u kojima bi uopće postojao morfosintaktički kontekst za lokativ. Zasebni oblici genitiva na -s, s druge strane, dobro su zastupljeni i u retskom. Oblikā genitiva na -l, međutim, u retskom uopće nema, no Rix nudi objašnjenje za to. Oblici u kojima bi se očekivalo genitivno -l, naime, redovito su zapisivani bez završnog -l i u arhajskom etruskom – primjerice, pertinentivu *larisale* odgovara genitiv *larisa* – a oblici sa završnim -l počinju se pojavljivati tek oko prijelaza iz 6. u 5. stoljeće pr. Kr.. Agostiniani<sup>20</sup> objašnjava ovu pojavu hipotezom prema kojoj je slovo <a> u arhajskom etruskom označavalo otvoreni stražnji zaobljeni vokal [o], iza kojeg je velarno [ʔ] na kraju riječi bilo toliko slabo artikulirano da se nije zapisivalo. Krajem 6. stoljeća pr. Kr., paralelno s posvjedočenim djelomičnim otvaranjem vokala [i] > [e] i u latinskim zapisima etruskih imena odraženim [u] > [o], a u sklopu općenite promjene vokalskog sustava iz kvadratnog u trokutasti oblik u dijagramu, /a/ je postalo otvoreni srednji nezaobljeni vokal [ä], iza kojeg se [ʔ] na kraju riječi jasnije čulo te se počelo zapisivati. Rix pretpostavlja da je stanje kao u arhajskom etruskom moglo biti i u retskom te utvrđuje da su retski oblici na -a genitivi koji su zajedno u paradigmi s pertinentivima na -ale, npr. *esstua* prema *etsuale*, i formalno odgovaraju etruskim genitivima na -al. Nadalje, autor<sup>21</sup> argumentira da pertinentiv u retskom i etruskom ima i barem djelomice iste sintaktičke funkcije i značenja. Riječ je o dvjema funkcijama koje su otprije poznate za etruski pertinentiv, a Rix pokazuje da vrijede i za retski. Jedna je od njih agens, tj. vršitelj radnje, u pasivnoj rečenici, primjerice:

<i>mi</i>	<i>spurieisi teiθurnasi</i>	<i>aliqu</i>
1SG.NOM	Spurie.PERT Teiθurna.PERT	dati.PTCP.PASS

„Ja sam dana od Spuriea Teiθurne.“  
(etruski)

<i>laspasi</i>	<i>eluku</i>	<i>pitamnuale</i>
Laspa.PERT	posvetiti.PTCP.PASS	Pitamović.PTCP.PASS

„posvećeno od Laspe Pitamovića“  
(retski)

Druga je funkcija retsko-etruskog pertinentiva uloga recipijensa ili benefaktiva, koja je u indoeuropskim jezicima tipično izražena dativom. Na temelju ove funkcije neki autori, poput već spomenutih Bonfantea i Bonfante<sup>22</sup>, taj padež u etruskom i zovu dativom, a Rix pronalazi barem dva retska votivna teksta u kojima su u pertinentivu imena božanstava te im stoga treba pripisati ovu ulogu, npr.:

<i>mi(ni)</i>	<i>aranth</i>	<i>ramuthaši</i>	<i>vestiricinala</i>
1SG.ACC	Aranth.NOM	Ramutha.PERT	Vestiricina.PERT
	darovati.PST		

„Aranth me darovao Ramuthi Vestiricini.“  
(etruski, Bonfante i Bonfante 2002: 106)

genitive case, and supports this with the fact that Etruscan displays many characteristics of agglutinative languages, which often display affixes following one another. The phenomenon of double cases is, in fact, known in language typology, especially when it comes to the attaching of affixes for a case that denotes a clausal role, such as the locative, onto the case form that denotes a phrasal role, such as the genitive.<sup>19</sup> The known genitive endings in Etruscan are the allomorphic -s and -l, and -i is the locative ending. Noting that, the final vowels underwent apocope in some phase of the prehistory of Etruscan, Rix suggests that the older genitive endings were \*-si and \*-la, and that the pertinentive -si and -le derived from \*-si-i and \*-la-i with the vowel contraction, i.e. the expected monophthongization of the diphthong. In Rhaetian, a separate locative form ending in -i is possibly attested in the phrase *ipi perisnati*. Locatives with other endings are not recorded, seeing as there are very few texts in Rhaetian that would even allow for the morphosyntactic contexts for the locative case. Separate genitive forms ending in -s, on the other hand, are well attested in Rhaetian. The genitive form ending in -l, however, does not appear in Rhaetian, but Rix suggests an explanation. Forms in which the genitive -l could be expected, namely, were commonly noted down without the final -l in archaic Etruscan – for example, the pertinentive *larisale* matches the genitive *larisa* – and forms with the final -l started to appear only around the transition from the 6<sup>th</sup> to the 5<sup>th</sup> century BC. Agostiniani<sup>20</sup> explains this by suggesting that the letter <a> in archaic Etruscan was used to denote the open back rounded vowel [o], followed by the velar [ʔ] at the end of the word, and that it was so weakly articulated that it was not written down. At the end of the 6<sup>th</sup> century BC, parallel to the attested partial opening of the vowel [i] > [e], and to the opening [u] > [o] attested in the Latin records of Etruscan names, /a/ became an open back unrounded vowel [ä], making the [ʔ] at the end of the word more audible, and causing it to be written down. All these vowel changes were part of the shift from a quadrilateral to a triangular vowel system. Rix assumes that the Rhaetian could have had the same feature concerning [ʔ] as archaic Etruscan, and establishes that Rhaetian forms ending in -a were genitives that appeared in paradigms alongside pertinentives ending in -ale, e.g. *esstua* versus *etsuale*, and that they formally matched Etruscan genitives ending in -al. Furthermore, the author<sup>21</sup> states that the pertinentive in both Rhaetian and Etruscan had at least partially equivalent syntactic functions and meanings. Rix refers to two previously known functions of the Etruscan pertinentive, and shows that the same is true in Rhaetian. One of them is the agent, i.e. the doer of the action in a passive clause, for example:

<i>mi</i>	<i>spurieisi teiθurnasi</i>	<i>aliqu</i>
1SG.NOM	Spurie.PERT Teiθurna.PERT	give.PTCP.PASS

“I was given by Spurie Teiθurna.”  
(Etruscan)

<i>laspasi</i>	<i>eluku</i>	<i>pitamnuale</i>
Laspa.PERT	dedicate.PTCP.PASS	son of Pitam.PTCP.PASS

“Dedicated by Laspa son of Pitam.”  
(Rhaetian)

20 Agostiniani 2003 [1993]: 166-168.

21 Rix 1998: 30-35.

22 Bonfantea i Bonfante 2001

19 s. Marković 2013: 16.

20 Agostiniani 2003 [1993]: 166-168.

21 Rix 1998: 30-35.

*etsuale utiku kaian nakin(a) ataris akvil*  
 Etsu.PERT dati?.PTCP.PASS ?.NOM ?.NOM  
 Atare.GEN dar?.NOM

„[Ovo je?] Atareov dar dan Etsuu.“  
 (retski, Rix 1998: 32)

Zaključujući raspravu o pertinentivu, Rix napominje da je i pojava istog oblika u lemnijskome bila odlučujući argument za srodnost toga jezika s etruskim. Pritom daje primjer sintagme s pertinentivom s funkcijom priložne oznake koja označava vrijeme kad je određena osoba bila u izvjesnoj službi:

*holaiesi:            φokiaiaiale:            seronaiθ*  
 Holaie.PERT       φokiaiai.PERT       serona.LOC

„u vrijeme kad je Holaie φokiaiai bio serona“

Napominje da se ista konstrukcija datiranja javlja i u etruskom te da se značenje pertinentiva u njoj jasno može shvatiti kao lokativ genitiva:

*zilci                    velusi                    hulχniesi*  
 pretor.LOC        Vel.PERT               Hulχnie.PERT

„za preture Vela Hulχiea“

Osim oblika i funkcije pertinentiva te pasivnoga participa na *-ku*, Rix navodi još podudarni preteritni nastavak *-ce* odnosno *-ke*, u etruskom dobro poznat, a u retskom sa sigurnošću posvjedočen u obliku *zinake*, pridjevski sufiks *-na* i nekoliko leksičkih podudarnosti: enklitički veznik *-c* odnosno *-k / -χ* „i“, retski *akvil / aχvil* „dar“ i etruski *-aχvil* u složenicama poput imena *θan-aχvil*, možda i etruski *ilu-cu* i retski *elu-ku* „žrtvovan“ ili slično, etruski *utin-ce* i retski *uti-ku* „dati“ ili slično. Ako se retski *zal φuper* protumači kao „dva *φupa*“, popisu podudarnosti mogu se dodati i množinski sufiks *-er* te broj *zal* „dva“, koji bi također bili solidni argumenti u prilog srodnosti dvaju jezika. S druge strane, autor napominje da je između retskoga i etruskoga posvjedočen i znatan broj razlika, kao što su nepodudarne oznake spola kod patronimā i većinom različit leksik, pogotovo osobna imena. Naposljetku utvrđuje da su se retski, etruski i lemnijski razvili iz zajedničkoga prajezika koji se može nazvati *pratirsenski*. S obzirom na razlike između etruskoga i retskoga, zaključuje da su se dva jezika odvojeno razvijala vjerojatno više stoljećā, ali sigurno manje od tisućljeća, a smatra da slično vrijedi i za odnos etruskoga i lemnijskoga. Stoga *pratirsenski* vremenski smješta oko prijelaza iz 2. u 1. tisućljeće pr. Kr.. Premda Rix zbog oskudnosti retskih tekstova nije mogao pokazati podudarnosti u velikom dijelu gramatičkih sustava istraživanih jezika, predstavljenu istovjetnost u morfološkoj strukturi i funkciji tzv. pertinentiva teško bi bilo pripisati slučajnosti ili posuđivanju te je stoga uspio ponuditi snažan argument za tezu o srodnosti etruskoga, retskoga i lemnijskoga. Wallace<sup>23</sup> pozitivno vrednuje Rixovu argumentaciju ocijenivši da njegovi argumenti svakako govore u prilog ideji o srodnosti tih jezika, iako je drugo pitanje jesu li dostatni za *dokaz* takve veze. Marchesini<sup>24</sup> također podupire Rixov rad, napominjući da se morfološke i sintaktičke podudarnosti u ovom slučaju ne mogu objasniti posuđivanjem unutar jezičnog saveza zbog geografske uda-

The other function of the Rhaetian-Etruscan pertinentive is marking the recipient, or benefactive, in Indo-European languages, typically expressed by the dative case. Based on this function, some authors, such as Bonfante and Bonfante<sup>22</sup>, refer to this case as the dative in Etruscan. Rix found at least two Rhaetian votive texts where names of deities appear in the pertinentive, proving that they should be ascribed this role, e.g.:

*mi(ni) aranth ramuthaši vestiricinala muluvanice*  
 1SG.ACC Aranth.NOM Ramutha.PERT Vestiricin.  
 PERT to give.PST

“Aranth gave me to Ramutha Vestiricina.”  
 (Etruscan, Bonfante and Bonfante 2002: 106)

*etsuale utiku kaian nakin(a) ataris akvil*  
 Etsu.PERT give.PTCP.PASS ?.NOM ?.NOM  
 Atare.GEN gift?.NOM

“[This is] Atare’s gift given to Etsu.”  
 (Rhaetian, Rix 1998: 32)

At the end of his discussion on the pertinentive, Rix mentions that the appearance of the same form in Lemnian was the deciding argument for the relatedness of that language and Etruscan. He provides an example of a pertinentive phrase used as an adverbial of time when a certain person performed a certain function:

*holaiesi:            φokiaiaiale:            seronaiθ*  
 Holaie.PERT φokiaiai.PERT       serona.LOC

“At a time when Holaie φokiaiai was the serona”

He mentions that the same datation formula also appears in Etruscan, and that the meaning of the pertinentive in it can clearly be understood as a genitive locative:

*zilci                    velusi                    hulχniesi*  
 pretor.LOC        Vel.PERT               Hulχnie.PERT

“when Vel Hulχie was praetor”

In addition to the form and function of the passive participle ending in *-ku*, Rix lists the matching preterite affix *-ce*, i.e. *-ke*, that was well known in Etruscan, and definitively confirmed in Rhaetian the form *zinake*, the adjectival suffix *-na* and several lexical matches: the enclitic conjunction *-c*, i.e. *-k / -χ* and, the Rhaetian *akvil / aχvil* – “gift”, and the Etruscan *-aχvil* in compounds such as the name *θan-aχvil*, possibly also the Etruscan *ilu-cu*, and the Rhaetian *elu-ku* – “sacrificed”, or the like, the Etruscan *utin-ce*, and the Rhaetian *uti-ku* – “to give”, or the like. If the Rhaetian *zal φuper* is interpreted as “two *φups*”, the list of matches can be expanded to include the plural suffix *-er* and the number *zal* – “two”, both of which could be solid arguments in favor of the two languages being related. On the other hand, the author notes that a significant number of differences exist between Rhaetian and Etruscan, such as the mismatch between the sex markers in patronymics and the largely different lexis, especially personal names. He finally goes on to say that Rhaetian, Etruscan and Lemnian developed from a common proto-language that can be named *Proto-Tyrsenian*. Consider-

23 Wallace 2008: 225

24 Marchesini 2013: 79-85

22 Bonfante and Bonfante 2001.

ljenosti triju jezika, te predlaže model prema kojem se retski ranije odvojio od jezika koji će se kasnije ponovo razdvojiti na etrurski i retski. Valja pripomenuti da iz prihvaćanja etrurskoga, lemnijskoga i retskoga kao skupine srodnih *tirsenskih* jezika ne proizlazi nužno da sama tirsenska skupina nije dio neke veće jezične porodice – no za sada takva pripadnost nije uvjerljivo argumentirana.

## Anatolijski jezici i etrurski

Nakon otkrića indoeuropskih anatolijskih jezika u prvoj polovici 20. stoljeća, koje je znatno promijenilo određene postavke indoeuropeistike, neki su autori pokušavali svrstati etrurski u indoeuropsku porodicu kao jedan od anatolijskih jezika. Zamisao o ovakvoj vezi mogla je biti privlačna iz dvaju razloga. Kao prvo, anatolijski jezici određenim gramatičkim obilježjima jasno odudaraju od drugih grana indoeuropske porodice, a pokazalo se da je razlog najvećemu broju tih razlika arhaičnost anatolijskih jezika, odnosno njihovo odcjepljenje od prajezika prije nego što su se određene kategorije u njemu razvile. Stoga se zagovornicima indoeuroljanstva etrurskoga ponudila mogućnost da i nepodudarnosti između etrurskoga i indoeuropskih jezika objasne na sličan način. Kao drugo, anatolijski su se jezici govorili na području geografski bliskom lemnijskomu, za koji je srodnost s etrurskim općeprihvaćena, i što se može nadovezati na Herodotovu priču o maloazijskom podrijetlu Etruščana. Georgiev<sup>25</sup> tako brani hipotezu da je etrurski nastavak hetitskoga navodeći pojedine slične gramatičke morfeme i lekseme, no ni on ne uspijeva pokazati da etrurski oblici sustavno odgovaraju hetitskima niti ponuditi objašnjenje za razlike. Adrados<sup>26</sup> pak tvrdi da je etrurski zaseban indoeuropski anatolijski jezik na temelju nekoliko gramatičkih argumenata, koji bi zajedno upućivali na to da je etrurski, poput anatolijskih jezika, u ranoj fazi razvoja fleksije nego drugi posvjedočeni indoeuropski jezici. Među njih spadaju: genitivni nastavak na –s i lokativni na –i, dobro poznati u indoeuropskim jezicima, genitivni nastavak

ing the differences between Etruscan and Rhaetian, he concludes that the two languages developed separately probably several centuries, but certainly less than a millennium. He feels that the same can be said of Etruscan and Lemnian. He, therefore, roughly dates Proto-Tyrsenian to the transition from the 2<sup>nd</sup> to the 1<sup>st</sup> millennium BC. Even though Rix could not show correspondences in a large part of the studied languages grammatical systems due to the scarcity of Rhaetian texts, it would be difficult to ascribe the presented similarities in the morphological structure and the function of the, so called, pertinentive, to chance or borrowing. Therefore, he did managed to propose strong arguments in favor of the hypothesis about the relatedness of Etruscan, Rhaetian and Lemnian.. Wallace<sup>23</sup> gives a positive assessment of Rix's argumentation, realizing that his arguments certainly speak in favor of the idea about the languages being related, but questions whether they are enough to *prove* such relations. Marchesini<sup>24</sup> also supports Rix's work, noting that the morphological and syntactic correspondences could not be explained through borrowing due to the physical distance between the three languages, so he proposes a model in which Rhaetian was the first to diverge from the language that would later separate into Etruscan and Rhaetian. It should be noted that accepting Etruscan, Lemnian and Rhaetian as a group of related *Tyrsenian* languages does not necessarily mean that the Tyrsenian group is not a part of some larger language family – however, so far, no such connections have been sufficiently proven.

## Anatolian languages and Etruscan

After the discovery of the Indo-European Anatolian languages in the first half of the 20<sup>th</sup> century, which significantly changed certain baselines of Indo-European studies, some authors tried to fit Etruscan into the Indo-European family as one of the Anatolian languages. The idea about such a connection might have been attractive for two reasons. Firstly, Anatolian languages clearly diverge from other branches of the Indo-European family in the sense of certain grammatical features. It has been shown that the reason for the majority of these differences is the archaic nature of Anatolian languages, i.e. the fact that they diverged from the proto-language before certain categories of it had developed. Therefore, the supporters of the Indo-European affiliation of Etruscan were given the chance to explain the mismatch between Etruscan and Indo-European languages in a similar way. Secondly, Anatolian languages were spoken in a geographical area close to Lemnian, which is, as generally accepted, related to Etruscan, and which can be connected to Herodotus' story about the Etruscans originating from Asia Minor. Georgiev<sup>25</sup> defends the hypothesis that Etruscan is a continuation of the Hittite language by listing certain similar grammatical morphemes and lexemes, but he too fails to prove that Etruscan forms systematically match Hittite ones, nor does he manage to explain the differences. Adrados<sup>26</sup> claims that Etruscan is a separate Indo-European Anatolian language based on several grammatical arguments that indicate that Etruscan was, like other Anatolian languages, an earlier phase of flexion

25 Georgiev 1962

26 Adrados (1989, 1994)

23 Wallace 2008: 225.

24 Marchesini 2013: 79-85.

25 Georgiev 1962.

26 Adrados 1989, 1994.

na *-l*, koji povezuje s lidijskim pridjevskim sufiksom na *-l* koji je preuzeo funkciju genitiva, nepotpuno razlikovanje množinskih od jedninskih padežnih oblika usporedivo s onim u anatolijskim jezicima, nastavak *-n* za akuzativ zamjenica i tzv. *određeni* ili *emfatički akuzativ* u imenica, koji bi odgovarao općeindoeuropskom nastavku *-m*, proširak imeničkih osnova *-s*, koji bi bio arhaizam u odnosu na indoeuropske jezike, koji su iz toga navodnog morfema razvili nominativni nastavak *-s*, navodne heteroklitate, tj. imenice kojima se unutar paradigme mijenja završni sonant osnove, koje su posvjedočene u starim indoeuropskim jezicima, a posebno su produktivne u hetitskom, lična zamjenica za 1. lice jednine *mi*, koja je oblikom slična odgovarajućoj osnovi u indoeuropskim jezicima (usp. hrvatski *mene*), a navodno poput anatolijskih i za razliku od drugih indoeuropskih jezika u nominativu nema osnovu drukčiju nego u drugim padežima (naspram hrvatskoga *ja ~ mene*), pokazne zamjenice *ica*, *eca*, *ca*, *eta*, *ta*, koje oblikom podsjećaju na neke indoeuropske i k tome u nominativu dobivaju množinski nastavak *-i*, kao i u indeuropskoj zamjeničkoj deklinaciji, opreka živoga i neživoga u ličnih zamjenica 3. lica, *an* i *in*, koju uspoređuje s potpuno razvijenim sustavom sa živim i neživim rodovima u anatolijskom – po čemu se anatolijski razlikuje od drugih indoeuropskih grana, u kojima se živi rod razdvojio na muški i ženski.

Od toga su primjerice genitivni oblici na *-s*, lokativni na *-i* i zamjenički u nominativu množine na *-i* zaista podudarni s indoeuropskim jezicima. Međutim, Aldradosova teza o proširku osnove *-s* iz kojega se u indoeuropskim jezicima naknadno razvio nominativni nastavak u najmanju je ruku vrlo spekulativna, heterotlitski obrazac u etrurskom formalno se ne poklapa s onim u indoeuropskim jezicima, a nepotpuno razlikovanje množinskih od jedninskih oblika u etrurskom i anatolijskim jezicima vrlo lako može biti slučajnost. Nadalje, formalna opreka živoga i neživoga u etrurskim zamjenicama *an : in* ne nalikuje ničemu u indoeuropskim jezicima i ne mora se shvatiti kao starija faza razvoja anatolijskoga dvorodnog sustava, pogotovo stoga što su poznati i drugi slučajevi jezika koji rodnu opreku poznaju samo u zamjenica.<sup>27</sup> Oblik zamjenice za 1. lice jednine *mi* zaista podsjeća na takvu osnovu u indoeuropskim jezicima; međutim, zamjenice 1. lica na *m-* nisu karakteristične samo za indoeuropsku porodicu, nego za većinu jezičnih porodica u najvećem dijelu Eurazije (primjerice i za uralsku, turkijsku i kartvelsku porodicu te ketski i jukagirski jezik u Sibiru), a često se javljaju i u supsaharskoj Africi i na Novoj Gvineji.<sup>28</sup> Ova podudarnost može proizlaziti iz vrlo duboke srodnosti među nekim porodicama pa tako i one između etrurskoga i indoeuropskih jezika, ali dokaz takve srodnosti daleko je izvan dosega današnje poredbene lingvistike. Osim toga, nije točno, kako Adrados tvrdi, da anatolijski jezici nemaju različite osnove unutar paradigme zamjenice za 1. lice jednine. Starohetitski, naime, ima *ūk* u nominativu, a tek se u kasnijem razdoblju oblik iz kosih padeža *ammuk* počnje rabiti i za nominativ<sup>29</sup> te stoga jedna osnova u paradigmatički zamjenice u hetitskom ne može biti naslijeden arhaizam. Povrh svega, Adrados ne objašnjava činjenicu da se brojevi u etrurskom nikakvim glasovnim zakonima ne mogu povezati s indoeuropskima.<sup>30</sup> Također valjda napomenuti da morfološke podudarnosti među jezicima ipak mogu biti i slučajne; primje-

than other Indo-European languages. These features include: the genitive suffix ending in *-s* and the locative *-i*, both well known in Indo-European languages, the genitive suffix *-l*, which he connects with the adjectival suffix ending in *-l* that took the function of genitive from Lidia, the incomplete differentiation between plural and singular case forms in comparison to those in Anatolian languages, the suffix ending in *-n* in the accusative form of pronouns, and the, so called, *determinative* or *emphatic accusative* form of nouns, which would match the general Indo-European affix *-m*, the extension of a noun base *-s*, which would be an archaism in relation to Indo-European languages that developed the nominative affix *-s* from that supposed morpheme, the supposed heteroklites, nouns that change the sonant of their base within a paradigm, and which are recorded in old Indo-European languages and are especially productive in Hittite, the personal pronoun for the 1<sup>st</sup> person singular *mi*, the form of which is very similar to the corresponding basis in Indo-European languages (comp. Croatian *mene*), and which, supposedly, like Anatolian, but unlike other Indo-European languages, does not have a different nominative base than in other cases (versus the Croatian *ja ~ mene*), the demonstrative pronouns *ica*, *eca*, *ca*, *eta*, *ta*, the form of which is reminiscent of some Indo-European ones and, in addition, obtain the plural affix *-l* in the nominative, just like in the declination of Indo-European pronouns, the opposition between the animate and inanimate in 3<sup>rd</sup> person personal pronouns *an* and *in*, which he compares to the completely developed system of animate and inanimate genders in Anatolian – a feature that distinguishes Anatolian from other Indo-European branches wherein the animate gender is divided into masculine and feminine.

Some of these, for example the genitive forms ending in *-s*, the locative ones ending in *-i*, and the pronoun nominative plural ending in *-l*, actually do match Indo-European languages. However, Aldrados' thesis about the base extension *-s*, which, in Indo-European languages, subsequently developed into the nominative affix, is, to say the least, speculative. The heterolytic pattern in Etruscan does formally not match that of Indo-European languages, and the incomplete differentiation of plural and singular forms in Etruscan and Anatolian languages can very easily be a coincidence. Furthermore, the formal opposition of animate and inanimate in the Etruscan pronouns *an : in* does not resemble anything in Indo-European languages and must be seen as an older phase in the development of the Anatolian two-gender system, especially because other languages have been recorded that only display the differentiation through pronouns.<sup>27</sup> The form of the 1<sup>st</sup> person singular pronoun *mi* indeed resembles such a base in Indo-European languages, but 1<sup>st</sup> person pronouns starting with *m-* are not characteristic only of the Indo-European family, but of most language families in the largest part of Eurasia (for example, for the Uralic, Turkic and the Kartvelian families, and the Ket and Yukaghir languages in Siberia), and they also appear in sub-Saharan Africa and New Guinea.<sup>28</sup> This correspondence can be a consequence of very ancient relations between some of these families, including the one between Etruscan and Indo-European languages, but

27 v. Matasović 2001: 107, 110

28 Nichols i Peterson 2013

29 Hoffner i Melchert 2008: 134

27 s. Matasović 2001: 107, 110.

rice, glagolski sufiksi za 1., 2. i 3. lice jednine u domorodačkom američkom jeziku mivoku glase *-m*, *-š* i *-∅*<sup>32</sup> – isto kao u hrvatskom prezentu! S obzirom na izneseno, smatramo da Adradosova argumentacija nije dovoljno uvjerljiva da bi se prihvatila pripadnost etrurskoga indoeuropskoj jezičnoj porodici, a metodološke nedostatke zamjera mu i Wallace.<sup>32</sup> Na sličnom tragu, Woudhuizen<sup>33</sup> na temelju nekoliko sličnih gramatičkih morfeema i leksičkih podudarnosti tvrdi da je etrurski usko srodan s anatolijskim jezikom luvijskim, što ponovo nisu dovoljno jaki argumenti za takvu tezu. Steinbauer<sup>34</sup> pobrojajući i analizirajući etrursko-anatolijske podudarnosti zaključuje da je morfoloških podudarnosti premalo da bi dokazale zajedničko podrijetlo, ali da je leksičkih previše da bi se mogle pripisati slučajnosti. Stoga kao alternativno rješenje predlaže da je Anatolija pradomovina etrurskoga, gdje je u dodiru s indoeuropskim anatolijskim jezicima preuzeo neke lekseme, a možda i gramatičke elemente.

evidence of such relatedness is far beyond reach of today's comparative linguistics. Additionally, it is not true, as Adrados claims, that Anatolian languages do not have different stems within the 1<sup>st</sup> person singular pronoun paradigm. Namely, Old Hittite has *ūk* in the nominative, and it was only later that the oblique case form *ammuk* came to be used to mark the nominative as well,<sup>29</sup> which means that the only stem in the paradigm of that pronoun in later Hittite cannot be an inherited archaism. Additionally, Adrados does not explain the fact that numerals in Etruscan by no sound laws can be connected to Indo-European ones.<sup>30</sup> It should also be noted that morphological similarities between languages can indeed be accidental; for example, the verbal suffixes used in the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> person singular in the native American Miwok language is *-m*, *-š* and *-∅*<sup>32</sup> – just like in the Croatian present tense! Considering all of the above, we feel that Adrados' argumentation is not convincing enough to accept the ascription of Etruscan to the Indo-European language family. His methodological fallacies were also noted by Wallace.<sup>32</sup> Similarly, Woudhuizen,<sup>33</sup> based on several similar grammatical morphemes and lexical matches, claims that Etruscan is closely related to the Anatolian Luwian language, which, again, is not enough to support such a claim. Steinbauer,<sup>34</sup> having listed and analyzed Etruscan-Anatolian matches, concludes that there are not enough morphological matches to prove a common origin, but that there are too many lexical ones to ascribe them to chance. Therefore, as an alternative solution, he suggests that Anatolia was where Etruscan originated from, and where its contacts with Indo-European Anatolian languages led to borrowing of some lexemes, possibly even of some grammatical elements.

## Ostale recentnije hipoteze

Orël i Starostin<sup>35</sup> u vrlo kratkom članku tvrde da su uspostavili glasovne podudarnosti između etrurskoga i rekonstruiranog praistočnokavkaskog te navode 59 etrurskih leksema kojima u skladu s tim podudarnostima pripisuju praistočnokavkasku etimologiju kao dokaz da je etrurski još jedna grana istočnokavkasko jezične porodice (poznate još kao sjeveroistočnokavkaska i nahsko-dagestanska), u koju spadaju primjerice čečenski, avarski i lezginjski jezik. Autori napominju da se analizom morfologije ne bave zbog loših i kontradiktornih opisa etrurske gramatike. Premda upućuju na zanimljiv smjer za daljnja istraživanja, same moguće zajedničke etimologije ne mogu biti pouzdan dokaz jezične srodnosti te stoga ova teza nije naišla na široko prihvaćanje.

## Other recent hypotheses

In a very brief paper, Orël and Starostin<sup>35</sup> claim that they have found sound correspondences between Etruscan and the reconstructed Proto-East Caucasian language, and go on to list 59 Etruscan lexemes that they, based on those correspondences, describe as having Proto-East Caucasian etymology. They use this as evidence that Etruscan is another branch of the East Caucasian language family (also known as the Northeast Caucasian and Nakho-Dagestanian), that includes, for example, the Chechen, the Avar, and the Lezgian languages. The authors note that they did not tackle the analysis of morphology due to the poor and contradictory descriptions of Etruscan grammar. Although they suggest an interesting direction for future research, the possible common etymologies cannot be seen as reliable evidence of language relatedness. Therefore, this hypothesis is not widely accepted.

30 v. Wallace 2008: 217, Bonfante i Bonfante 2002: 226

31 Sihler 2000: 138

32 Wallace 2008: 218

33 Woudhuizen 2006: 85-86, 135-137, 139-140

34 Steinbauer 1999: 389

35 Orël i Starostin 2007 [1990]

28 Nichols and Peterson 2013.

29 Hoffner and Melchert 2008: 134.

30 s. Wallace 2008: 217, Bonfante and Bonfante 2002: 226.

31 Sihler 2000: 138.

32 Wallace 2008: 218.

33 Woudhuizen 2006: 85-86, 135-137, 139-140.

34 Steinbauer 1999: 389.

35 Orël and Starostin 2007 [1990].



Facchetti<sup>36</sup> određene oblike u slabo poznatom minojskom, jeziku lineara A, tumači uz pomoć etruskoga te sugerira među ostalim da bi mogla postojati poveznica između minojskog elementa *-ja* i arhajskog etruskoga genitivnog nastavka *-ia*, minojskoga *-si* i prema Rixu pretpovijesnog etruskoga genitivnog nastavka *\*-si* (> *-s* u posvjedočenom etruskom), minojskoga *-ti* i etruske postpozicije *-θi* te upućuje na nekoliko mogućih leksičkih podudarnosti i paralela u libacijskim formulama. Predlaže da je minojski jezik od kojega su se oko 12. stoljeća pr. Kr. odvojili pratirenski, iz kojega su naknadno nastali etruski, retski i lemnijski, i filistejski, a koji je u kasnijoj razvojnoj fazi posvjedočen kao jezik koji se uobičajeno zove eteokretski. Iako Facchetti otvara područje koje bi moglo biti zanimljivo za daljnja istraživanja, minojski je preslabo poznat da bi podudarnosti bile pouzdane, a k tome je podudarnosti i premalo da bi poslužile kao dokaz srodnosti.

### Završne napomene

Nakon pregleda raznih hipoteza, čini se da su jezici za koje je srodnost s etruskim najbolje argumentirana lemnijski i retski. Međutim, ipak ne treba smetnuti s uma da su ta dva jezika vrlo fragmentarno posvjedočena i nepotpuno poznata te se stoga ne može pokazati podudarnost u velikom dijelu njihovih gramatičkih sustava. Osim toga, nije jasno bi li etruski, lemnijski i retski činili *tirsensku* ili *tirensku jezičnu porodicu* ili *tirsensku granu* neke veće porodice, no teško je prihvatiti ijedan od dosad iznesenih prijedloga koji bi ih svrstao u veću porodicu. Morfološke podudarnosti između etruskoga i indoeuropskih jezika zaista postoje, ali daleko ih je premalo da bi poslužile kao dokaz srodnosti, a treba imati na pameti i upadljive nepodudarnosti koje bi u slučaju zajedničkog podrijetla teško bile objašnjive. Zamislivo je eventualno da su etruski i drugi tirsenski jezici s indoeuropskima srodni na razini dubljoj od one do koje lingvistika može doprijeti, ali isto tako i da su podudarnosti slučajne. U konačnici, slučaj etruskoga pokazuje frustraciju koju poredbeni lingvisti doživljavaju kad pokušavaju primijeniti svoju metodologiju na oskudni jezični materijal. Hipotetski nije nemoguće da će se u budućnosti pronaći novi pisani spomenici koji će bolje razjasniti položaj etruskoga – te onima koje zanima genetska pripadnost etruskoga preostaje nadati se takvu otkriću.

Adrados, Francisco R. (1994) More on Etruscan as an IE-Anatolian Language.

Facchetti<sup>36</sup> interprete some forms in the poorly-known Minoan, the language of Linear A, through Etruscan, suggesting that there could be a link between the Minoan element *-ja* and the archaic Etruscan genitive affix *-ia*, the Minoan *-si* and what Rix describes as the prehistoric Etruscan genitive affix *\*-si* (> *-s* in attested Etruscan), the Minoan *-ti* and the Etruscan postposition *-θi*, and indicating several possible lexical matches and parallels in libation formulas. He suggests that Minoan is the language from which Proto-Tyrsenian separated around the 12<sup>th</sup> century BC, and from which Etruscan, Rhaetian and Lemnian, as well as Philistine, later developed, and which was attested as the Eteocretan language at a later stage. Although Facchetti opens up a new area that could be interesting for future research, Minoan is not yet sufficiently known in order for the matches to be reliable. Additionally, there are too few matches to be used as evidence of relatedness.

### Concluding remarks

After studying the different hypotheses, it seems that Lemnian and Rhaetian are the languages that provide the best argumentation in favor of being related to Etruscan. However, one should remember that the records in the two languages are very fragmentary and that they are not fully known, meaning that matches in the majority of their grammatical systems cannot be proven. Other than that, it is unclear whether Etruscan, Lemnian and Rhaetian would make up the *Tyrsenian language family*, or the *Tyrsenian branch* of some other family. However, it is difficult to accept any of the evidence that would place them into a larger family. The morphological matches between Etruscan and Indo-European languages certainly do exist, but there are far too few of them to be used as evidence of relatedness. The noticeable mismatches should also be considered, seeing as, if the languages were related, these would be difficult to explain. It is possible that Etruscan and other Tyrsenian languages are related to Indo-European ones on a level deeper than the one seen through linguistics, but also that the matches are accidental. Finally, the case of Etruscan exemplifies the frustration comparative linguists face when trying to apply their methodology onto sparse linguistic material. Hypothetically, it is not impossible that new written texts will be discovered in the future that will clarify the position of Etruscan – those interested in the genetic affiliation of Etruscan are left with the hope that such discoveries will be made..

36 Facchetti 2002: 111-150

36 Facchetti 2002: 111-150.

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# LINGVISTIČKI OPIS ETRURSKOGA JEZIKA

## A LINGUISTIC DESCRIPTION OF THE ETRUSCAN LANGUAGE

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Kristina Šekrst

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### Uvod

Etrurski jezik, posvjedočen od 7. stoljeća p. n. e. do 1. stoljeća nove ere, još je uvijek lingvistička tajna. Njime su govorili Etruščani u pokrajini Etruriji (moderna Toskana, zapadna Umbrija i sjeverni Lacij), a očuvano je više od 10 000 zapisa, od čega je *Liber linteus* jedina knjiga koja je preživjela. Posljednjim govornikom smatra se car Klaudije (10 p. n. e. – 54. n. e.), koji je bio autor traktata *Tyrrhenica*, sastavljenoga od 20 svezaka, zajedno s rječnikom, koji je kompilirao razgovarajući sa starijima koji su još govorili etrurskim jezikom. Sve što znamo o etrurskom znamo na temelju rekonstrukcije kroz tumačenje različitih natpisa, a s obzirom na to da je etrurski genealoški izoliran, etimološka metoda podudarnosti sa srodnicima nije opcija te se oslanjamo na koherentne natpise, posebice dvojezične, potom na pisanje starih autora o etrurskom te na utjecaj na okolne jezike kao što je latinski.

### Natpisi

Od etrurskoga znamo šezdesetak riječi, od čega je većina iz Hesihijeva Leksikona te djela *Liber glossarum*,<sup>1</sup> a ostatak od autora kao što su Varon, Verije Flak, Dioskorid, Strabon i drugi, no često su prenošenja etrurskih riječi bila prenesena u greciziranoj ili latiniziranoj formi,<sup>2</sup> što ih čini nepouzdanim dokazom.<sup>3</sup> Većina su korpusa, dakle, natpisi, koji se datiraju od 7. stoljeća

### Introduction

The Etruscan language, proven to have been in use from the 7<sup>th</sup> century BC to the 1<sup>st</sup> century AD, is still a linguistic secret. It was spoken by Etruscans in Etruria (modern day Tuscany, western Umbria, and northern Lazio). Over 10000 records have been preserved, and the *Liber linteus* is the only book that survived. The last speaker is thought to be Emperor Claudius (10 BC–54 AD), who was the author of the *Tyrrhenica* tractate, composed of 20 volumes, and accompanied by a dictionary that he compiled by talking to elders who still spoke the Etruscan language. All that we know about Etruscan is based on reconstructions and interpretations of different inscriptions and, seeing as Etruscan is genealogically isolated, the etymological method of matching related languages is not an option, so we have to rely on coherent inscriptions, especially bilingual ones, on the writings of old authors about Etruscan, and on its influences on surrounding languages, such as Latin.

### Inscriptions

About sixty words of Etruscan are known, most from Hesychius' Lexicon and the *Liber glossarum*,<sup>1</sup> and the rest from authors such as Varro, Verrius Flaccus, Dioscorides, Strabo and others; however, the Etruscan words were often recorded in their Greek or Latin form,<sup>2</sup> making them unreliable pieces of evidence.<sup>3</sup> Most of the corpus is, therefore, composed of inscrip-

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1 *Liber glossarum* srednjovjekovna je latinska enciklopedija ili glosar, organizirana abecedno po različitim tematikama.

2 Primjerice, Hesihije daje *aisoi*, „bogovi”, s grčkim nastavkom nominativa množine.

3 Agostiniani 2013.

1 The *Liber glossarum* is a medieval Latin encyclopedia or glossary, organized alphabetically by different topics.

2 For example, Hesychius records *aisoi*, “gods”, with the Greek suffix for the plural nominative form.

3 Agostiniani 2013.

pa sve do dvojezičnoga natpisa na pogrebnoj urni iz Arezza iz 1. stoljeća nove ere, povezano sa svjedočanstvom Dionizija iz Halikarna,<sup>4</sup> koji tvrdi da se etruski još govorio u Augustovo doba. Bez obzira na to što druge knjige nisu preživjele, Ciceron govori o bogatoj književnosti Etruščana te dijeli etruske knjige prema sadržaju. Prve su *libri fulgurales*, koje se tiču tumačenja munja, potom *libri haruspicini*, koje se tiču tumačenja i gatanja iz iznutrica, te naposljetku *libri rituales*, koje se tiču različitih ritualnih uputa.<sup>5</sup>

Što se tiče natpisa,<sup>6</sup> geografski se radi o područjima Etrurije te Kampanije, Emilia-Romagne, Lombardije i Korzike. Čini se kako natpisi odražavaju isti jezik, no postoje geografski i vremenski očekivana odstupanja. Na temelju toga smatra se da postoje dvije varijante jezika: arhajski i kasni etruski. Arhajski etruski uključuje natpise od 7. do 5. stoljeća p. n. e., dok kasni etruski ili novoetruski uključuje natpise od 4. stoljeća p. n. e. do 1. stoljeća nove ere.<sup>7</sup> Kasni etruski uključuje slabljenje i nestajanje vokala, vokalske promjene te monoftongizaciju diftonga. Ti natpisi izvorno su pisani grčkim alfabetom, odnosno eubejskom verzijom posuđenom od Grka u Kampaniji, stoga se i u pismu primjećuju dvije razlike te se etruski može podijeliti na dva geografska varijeteta: sjeverni, stabilnijega pisma, i južni, s mnogo promjena i izmjena znakova i zvukova koje ti znakovi predstavljaju. Klasični alfabet ima 26 znakova i utjecao je na stvaranje latinice.

Svakodnevni dokumenti kao što su papirusi ili lanene knjige osim *Zagrebačke lanene knjige*<sup>8</sup> izgubljeni su zbog krhkosti materijala i višestrukoga korištenja. Od bitnijih natpisa tu su *Tabula Capuana* na glini, potom *Cippus Perusinus* na kamenoj ploči, *Tabula Cortonensis* na brončanoj ploči te listovi iz Pyrgija na etruskom i feničkom na trima zlatnim listovima.<sup>9</sup> *Tabula Capuana* natpis je na terakoti, a sumnja se da se radi o ritualnom kalendaru posvećenom nekolicini etruskih bogova. Čitljivo je oko 390 riječi, pisan je u *boustrophedon*-stilu s promjenom smjera. Tekst se povezuje s Uni (Hera, Junona) ili s italskim božanstvima kao što su Fortuna ili Mater Matuta.<sup>10</sup> *Tabula Cortonensis* brončana je ploča s 32 retka i 206 riječi. To je zakonski dokument iz ranoga 3. ili kasnoga 2. stoljeća n. e. te se govori o transakciji zemlje, a većina riječi osobna su imena. Analogan tomu jest drugi zakonski dokument *Cippus* iz Perugie, sa 46 redaka i 128 riječi, a radi se o zemljišnim razmircama između dviju obitelji.<sup>11</sup> Listovi iz Pyrgija tri su zlatne pločice koje pišu o posvećenju kralja božici Aštarti, a pisani su u 16 redaka sa 62 riječi.<sup>12</sup> Dvije su pločice pisane etruskim, a jedna feničkim, pri čemu je lingvistički bitno rabiti fenički za tumačenje etruskoga, analogno tomu kako su se demotski i grčki na Ploči iz Rosette

tions dated to the time between the 7<sup>th</sup> century BC and the bilingual inscription on the urn from Arezzo that is dated to the 1<sup>st</sup> century AD, as recorded by Dionysius of Halicarnassus,<sup>4</sup> who claimed that Etruscan was still spoken during the rule of Augustus. Regardless of the fact that other books did not survive, Cicero spoke about the rich Etruscan literary production, and divided Etruscan books into groups based on their content. The first, *libri fulgurales*, discuss the interpretation of lightning, the *libri haruspicini* discuss the interpretation and fortune telling from innards, and the *libri rituales* discuss different ritualistic instructions.<sup>5</sup>

When it comes to inscriptions,<sup>6</sup> geographically they originate from the territories of Etruria and Campania, Emilia-Romagna, Lombardy and Corsica. It seems that the inscriptions reflect the same language, but, expectedly, there are geographical and temporal deviations. Based on that fact, it is thought that there are two variants of the language: archaic and late Etruscan. Archaic Etruscan includes inscriptions dated to between the 7<sup>th</sup> and the 5<sup>th</sup> century BC, while late Etruscan includes those dated to between the 4<sup>th</sup> century BC and the 1<sup>st</sup> century AD.<sup>7</sup> Late Etruscan includes the weakening and disappearance of vowels, changes in vowels and the monophthongization of diphthongs. These inscriptions were originally written in the Greek alphabet, that is, the Euboean version borrowed from the Greeks in Campania, so there are two noticeable differences in the script, and Etruscan can be divided into two geographical varieties: the northern, with a more stable script, and the southern, with a lot of changes and variations in characters and sounds represented by those characters. The classical alphabet contained 26 characters, and influenced the creation of the Latin script.

Everyday documents such as papyri or linen books, other than the *Linen Book of Zagreb*,<sup>8</sup> have been lost due to the fragility and reuse of the material. More important inscriptions include the *Tabula Capuana* on clay, the *Cippus Perusinus* on a stone tile, the *Tabula Cortonensis* on bronze tin, and the leaves from Pyrgi in Etruscan and Phoenician on three gold leaves.<sup>9</sup> The *Tabula Capuana* is an inscription on terracotta, and is considered to be a ritual-related calendar dedicated to several Etruscan gods. About 390 words are legible; it is written in the *boustrophedon* style, and displays changes in direction. The text is connected to Uni (Hera, Juno) or Italic deities such as Fortuna or Mater Matuta.<sup>10</sup> The *Tabula Cortonensis* is a piece of bronze tin with 32 lines and 206 words. It is a legislative document from the early 3<sup>rd</sup> or the late 2<sup>nd</sup> century AD that discusses the transaction of land and mostly includes personal names. An analogous find is another legislative document – the *Cippus* from Perugia, which

4 Rimske starine, Ῥωμαϊκὴ ἀρχαιολογία, I.30.

5 *De divinatione*. 1.72: *Quorum alia sunt posita in monumentis et disciplina, quod Etruscorum declarant et haruspicini et fulgurales et rituales libri.*

6 University of Massachusetts at Amherst radi na katalogizaciji i geografskoj distribuciji etruskih natpisa u sklopu projekta Etruscan Texts Project.

7 Agostiniani 2013.

8 Za više detalja, komentar i prijevod v. van der Meer 2007, Belfiore 2010 i Woudhuizen 2013.

9 Bonfante 2006.

10 Cuozzo 2013.

11 Agostiniani 2013.

12 Pittau 1996.

4 Rimske starine, Ῥωμαϊκὴ ἀρχαιολογία, I.30.

5 *De divinatione*. 1.72: *Quorum alia sunt posita in monumentis et disciplina, quod Etruscorum declarant et haruspicini et fulgurales et rituales libri.*

6 University of Massachusetts at Amherst is working on the cataloging and the geographical distribution of Etruscan inscriptions within the scope of the Etruscan Texts Project.

7 Agostiniani 2013.

8 For more details, commentary and translation see: v. van der Meer 2007, Belfiore 2010 and Woudhuizen 2013.

9 Bonfante 2006.

10 Cuozzo 2013.

rabili za tumačenje egipatskoga jezika. Većina kratkih natpisa vrlo su spartanski napisana i često sadržavaju samo osobna imena i kratke formule te su vrlo formulaični.<sup>13</sup>

## Pismo

Etrurski alfabet baziran je na grčkom alfabetu, odnosno nje-govoj eubejskoj inačici. Eubejski alfabet rabio se u gradovima Eretriji i Halkidi i u kolonijama južne Italije te je utjecao na sta-roitalske alfabete. *X* predstavlja /ks/, *ψ* /kʰ/, *Ω* nedostaje, a *H* se rabi za /h/, a ne za vokal /ε:/. Rabe se starinski znakovi kao što su digamma *F* za /w/ i qoppa *Ϝ* za /k/.<sup>14</sup> Smjer pisma uglavnom je zdesna nalijevo, dok je na novijim spomenicima obratno zbog latinskoga utjecaja, a na najstarijim spomenicima riječi nisu od-vojene razmacima.<sup>15</sup>

Poznati su nam i znakovi za brojeve, nastali na temelju grčkih atičkih znakova, koji su bili akrofoni brojčani znakovi jer su sim-boli nastali iz prvih slova riječi koje su predstavljali: pet, deset, sto, tisuću i deset tisuća.<sup>16</sup> Pretpostavlja se da su brojevi od 1-10: *θu*, *zal*, *ci*, *huθ*, *μαχ*, *śa*, *semφ*, *cezp*, *nurφ* i *sar/śar*, a diskusije se vode oko brojeva 4 i 6. Naime, pronađena je poznata Toskanska kocka iz helenističkoga perioda, gdje znamo da su ispisani bro-jevi, no nesigurno je koji je koji jer nije sigurno daju li suprotni brojevi zbroj 7 ili ne. Prvi je redosljed brojeva uspostavio Stol-tenberg,<sup>17</sup> a potom su razne alternativne interpretacije dali, primjerice, Pallottino<sup>18</sup> i drugi. Brojevi se obično kombiniraju s pluralnim imenicama (npr. *ci aiser*, “tri boga”, *ais* je bog, *aiser* plural<sup>19</sup>), a malo se zna o rednim brojevima, kao primjerice riječ “prvi”, *θunχ*. Posvjedočeni su brojevi za desetice,<sup>20</sup> ali ne i za sto ili tisuću.<sup>21</sup>

contains 46 lines and 128 words, and discusses the dispute about land between two families.<sup>11</sup> The leaves from Pyrgi are three gold tiles that discuss the king’s devotion to the goddess Astarte, and include 16 lines with 62 words.<sup>12</sup> Two of the tiles were written in Etruscan, and one in Phoenician, whereby it is linguistically important to use Phoenician to interpret Etrus-can, analogous to how Demotic and Greek found on the Rosetta Stone were used to interpret Egyptian. Most short inscriptions are very spartanly written and often only contain personal names and short formulas; they are also very formulaic.<sup>13</sup>

## Script

The Etruscan alphabet is based on the Greek alphabet, that is, its Euboean variant. The Euboean alphabet was used in the cit-ies of Eretria and Chalcidice, as well as in the colonies in south-ern Italy, and it influenced old Italic alphabets. *X* represents / ks/, *ψ* /kʰ/, *Ω* is missing, and *H* is used for /h/, and not the vowel /ε:/. Old characters were used, such as digamma *F* for /w/ and qoppa *Ϝ* for /k/.<sup>14</sup> The direction of writing is mostly from right to left, younger documents display the opposite due to Latin influences and, on the oldest monuments, there are no spaces between the words.<sup>15</sup>

The characters used to denote numbers are also known. They were created based on Greek Attic characters that were acro- phone numeral characters because the symbols were created based on the first letters of the words that they represented: five, ten, a hundred, a thousand, and ten thousand.<sup>16</sup> It is as- sumed that numbers 1-10 went as follows: *θu*, *zal*, *ci*, *huθ*, *μαχ*, *śa*, *semφ*, *cezp*, *nurφ* and *sar/śar*, but there are some debates about the numbers 4 and 6. Namely, the famous dice, discovered in Tuscany and dated to the Hellenistic period, contains numbers, but it is unclear which one is which because it is not known if opposite numbers add up to 7 or not. The first sequence of num- bers was established by Stoltenberg,<sup>17</sup> and subsequent differ- ent alternative interpretations were suggested by, for example, Pallottino,<sup>18</sup> and others. Numbers are usually combined with the plural of nouns (e.g. *ci aiser*, “three gods”, *ais* is a god, *aiser* is the plural<sup>19</sup>), and little is known about ordinal numbers, such as, for example, the word “first”, *θunχ*. Numbers denoting tens have been recorded,<sup>20</sup> but not those denoting a hundred or a thousand.<sup>21</sup>

13 Agostiniani 2013.

14 Jeffery 1961.

15 Bonfante i Bonfante 2002.

16 Odnosno I za 1, Π za 5 (πέντε), Δ za 10 (δέκα), H za 100 (ἑκατόν), X za 1000 (χιλιάς), M za 10000 (μύριον).

17 Stoltenberg 1943.

18 Pallottino 1968.

19 TLE 719.

20 20: zaθrum, nadalje sa sufiksom -alχ: 30: cialχ, 40: sealχ, 50: muvalχ, 60: \*huθalχ, 70: cezpαlχ, 80: semφalχ, 90: nurφal (Agostiniani 2013).

21 Agostiniani 2013.

11 Agostiniani 2013.

12 Pittau 1996.

13 Agostiniani 2013.

14 Jeffery 1961.

15 Bonfante and Bonfante 2002.

16 That is, I for 1, Π for 5 (πέντε), Δ for 10 (δέκα), H for 100 (ἑκατόν), X for 1000 (χιλιάς), M for 10000 (μύριον).

17 Stoltenberg 1943.

18 Pallottino 1968.

19 TLE 719.

20 20: zaθrum, further on with suffix -alχ: 30: cialχ, 40: sealχ, 50: muvalχ, 60: \*huθalχ, 70: cezpαlχ, 80: semφalχ, 90: nurφal (Agostiniani 2013).

21 Agostiniani 2013.

## Fonologija

Fonologija je najbolje poznat dio strukture etruskoga jezika, što je začinjujuće s obzirom na to da se radi o mrtvom jeziku. Naime, fonemi se, osim standardnih tipoloških metoda, rekonstruiraju na temelju vrijednosti grčkoga alfabeta, na temelju kojega je bazirano etrusko pismo, te na temelju toga kako su se u okolnim jezicima, kao što je latinski, posuđivale etruske riječi, uz manju pomoć opisa antičkih autora.

U govoru se pretpostavlja da je postojao naglasak na prvom slogu riječi, što je uzrokovalo sinkopu vokala koji se onda nisu pisali u govoru,<sup>22</sup> primjerice umjesto imena grada Rasena nailazimo *Rasna* ili *Alcsntre* za *Ἀλέξανδρος* (*Aléxandros*), uz moguću anaptiksu vokala u pisara, npr. grč. *Ἡρακλῆς* (*Hēraklēs*) izgovoren kao *Hercle*, a napisan kao *Herecele*, ili pak Artemida, grč. *Ἄρτεμις* (*Ártemis*) kao *Aritimi*. No neki poput Pallottina<sup>23</sup> smatraju da se radi o novijoj fonološkoj pojavi etruskoga jezika i vokalskoj harmoniji.

Vokalski sustav etruskoga sadržava četiri vokala, prednji zatvoreni *i* i *u*, potom srednji prednji *e* te stražnji zatvoreni *a*, za kojega se pretpostavlja da se centralizirao u kasnijem etruskom. Onosno, italsko osobno ime *Loucios* u arhajskim je tekstovima *Laucie* ili *Lavcie*, a u kasnoetruskim tekstovima kao *Luvcie*.<sup>24</sup> Vokal /o/ uvijek je pisan kao /u/, primjerice grčka riječ *Ἀχέρων* (*Akhérōn*) "Aheront" postaje *Achrum*, a *Προμηθεύς* (*Promētheús*), "Prometej" postaje *Prumathe*.<sup>25</sup>

Na ploči *Tabula Cortonensis* pronalazimo i dva različita /e/, jedan označen epsilonom, a drugi obrnutim epsilonom. S obzirom na pravilnu distribuciju smatra se da se radi o različitim zvukovima. U kasnoetruskom arhajsko /i/ prelazi u /e/ u naglašenim slogovima, primjerice *cipen*, "svećenik" u spomeniku *Tabula Capuana* odgovara riječi *cepen* u *Liber linteus*. U kasnoetruskom nailazimo i na monoftongizaciju diftonga /ai/ u /e/,<sup>26</sup> primjerice ime Ajanta – *Aivas* – u kasnijim natpisima postaje *Evas*.<sup>27</sup> Grčko *eu* nekad se čuva, primjerice muza *Εὐτέρπη* (*Eutérpē*) naziva se *Euterpa*, a katkad daje *u*, primjerice ime Kastorova brata Polideuka, grč. *Πολυδεύκης* (*Poludeúkēs*) daje etrusko *Pultuce*. Često se i završni vokali gube zbog jakoga naglaska na prvom slogu, primjerice lokativno *śuθi-θi*, "u grobu" postaje *śuθi-θ*.<sup>28</sup> Konsonantski sustav sastoji se od neaspiriranih i aspiriranih okluziva<sup>29</sup> /p t k p<sup>h</sup> t<sup>h</sup> k<sup>h</sup>/, afrikate /ts/, dva likvida /l r/, dva nazala /m n/, četiri frikativa /f s š h/, dva poluvokala /j w/, što je tipološki vrlo često i plauzibilno. Na kraju riječi česta je deaspiracija /th/, primjerice *Larθial*, ali *Lart* u *Tabula Cortonensis*. Nazali /n m/ i likvidi /l r/ često su vokalski, odnosno konsonanti postaju sonantima te nose slog, primjerice *Atalanta* se piše kao *AtInta*.<sup>30</sup> Etruski je, zanimljivo, imao glas /f/, koji nije toliko čest u jezi-

## Phonology

Phonology is the best-known part of the structure of the Etruscan language – a surprising fact seeing as it is a dead language. Namely, phonemes are, other than through standardized typological methods, reconstructed based on the value of the Greek alphabet, which is the basis of the Etruscan script, and based on how neighboring languages, such as Latin, borrowed Etruscan words, with some help from the descriptions recorded by ancient authors.

When it comes to speech, it is assumed that the accent was on the first syllable of the word, which caused vowel syncope that resulted in vowels not being written down.<sup>22</sup> For example, instead of the name of the city of Rasena, we find *Rasna* or *Alcsntre* for *Ἀλέξανδρος* (*Aléxandros*), with a possible vowel anaptyxis by scribes, e.g. Greek *Ἡρακλῆς* (*Hēraklēs*) pronounced as *Hercle*, and written as *Herecele*, or Artemis, Greek *Ἄρτεμις* (*Ártemis*) as *Aritimi*. However, some, like Pallottino,<sup>23</sup> feel that this is a newer phonological occurrence in the Etruscan language and vowel harmony.

The vowel system of Etruscan includes four vowels, the front close *i* and *u*, the mid front *e*, and the back close *a*, which is assumed to have centralized in later Etruscan. That is, the Italic personal name of *Loucios* appears in archaic texts as *Laucie* or *Lavcie*, and, in late Etruscan texts, as *Luvcie*.<sup>24</sup> The vowel /o/ is always written as /u/, for example, the Greek word *Ἀχέρων* (*Akhérōn*) "Acheron" becomes *Achrum*, and *Προμηθεύς* (*Promētheús*), "Prometheus" becomes *Prumathe*.<sup>24</sup>

The *Tabula Cortonensis* tile displays two different variants of /e/, one denoted by epsilon, and the other by a reversed epsilon. Considering the regular distribution, these are considered to be different sounds in late Etruscan, the /i/ becomes /e/ in stressed syllables; for example, *cipen*, "priest" on the *Tabula Capuana* monument, matches the word *cepen* in *Liber linteus*. Late Etruscan displays the monophthongization of the diphthong /ai/ to /e/;<sup>26</sup> for example, the name Ajax – *Aivas* – becomes *Evas* in younger inscriptions.<sup>27</sup> The Greek *eu* is sometimes preserved; for example, the muse *Εὐτέρπη* (*Eutérpē*) is called *Euterpa*; and is sometimes given *u*; for example, the name of Castor's brother Pollux, the Greek *Πολυδεύκης* (*Poludeúkēs*) turns into the Etruscan *Pultuce*. The final vowels are also frequently lost due to the strong stress on the first syllable; for example, the locative *śuθi-θi*, "in the grave" becomes *śuθi-θ*.<sup>28</sup>

The consonant system is composed of unaspirated and aspirated occlusives<sup>29</sup> /p t k p<sup>h</sup> t<sup>h</sup> k<sup>h</sup>/, the affricate /ts/, two liquids /l r/, two nasals /m n/, four fricatives /f s š h/, two semivowels /j

22 Bonfante 1990.

23 Pallottino 1955.

24 Agostiniani 2013.

25 Bonfante 2002.

26 Agostiniani 2013.

27 Usporedbe radi *vipina* ne prelazi u *\*vepina*, odnosno ako je visoki vokal u idućem slogu, on blokira snižavanje /i/ u /e/.

28 Bonfante 2002.

29 O tome da nema zvučnih okluziva vidimo, primjerice, po grčkim posuđenicama gdje su grčki /b d g/ zamjenjivani sa /p t k/, npr. Βᾶκχος (*Bákkhos*), Δίφιλος (*Díphilos*) i Γραικός (*Graikós*) kao *ραχα*, *tippile*, *creice*.

30 Bonfante 2002.

22 Bonfante 1990.

23 Pallottino 1955.

24 Agostiniani 2013.

25 Bonfante 2002.

26 Agostiniani 2013.

27 For comparison's sake, *vipina* does not turn into *\*vepina*, that is, if the high vowel is in the following syllable, it blocks the lowering of /i/ into /e/.

28 Bonfante 2002.

29 The fact that there are no voiced occlusives is seen, for example, in the Greek loanwords wherein the Greek /b d g/ are replaced with /p t k/; e.g. Βᾶκχος (*Bákkhos*), Δίφιλος (*Díphilos*) and Γραικός (*Graikós*) as *ραχα*, *tippile*, *creice*.

cima i iznimno ga vjerojatno nije bilo u indoeuropskom prajeziku.<sup>31</sup> Izgledno je da je etrursko /f/ posuđeno u ostale jezike govorene u Italiji, kao što su latinski, faliskički, umbrijski, oskijski, marsijski, venetski itd. Samo /f/ često alternira sa /h/, kao što je slučaj i u latinskom i faliskičkom, možda zbog italskoga utjecaja, primjerice u imenima **Fasti** i **Hasti**, a često alternira i sa *p*, primjerice u imenima **Apuna** i **Afuna**.<sup>32</sup>

## Morfologija

Etrurski je flektivni jezik, odnosno imao je bogatu morfologiju, no nije se radilo o fuzijskom, nego vjerojatnije o aglutinativnom tvorbenom sustavu, gdje se za više gramatičkih kategorija dodaje više sufikasa.<sup>33</sup> Primjerice, nominativ jednine jest *clen*, “sin”, nominativ plurala *clen-ar*, a dativ plurala *clen-ar-aši*.<sup>34</sup> U etrurskom je na djelu i tzv. *Suffiaufnahme*, konstrukcija slična posvojnome genitivu, gdje je posjedovano u genitivu, no slaže se u rodu, broju i padežu sa svojom glavom, primjerice *Uni-al-θi*, “u Junoninu svetištu”, gdje je *-al* genitivni nastavak, a *-θi* lokativni (Bonfante 1990).

Ranija istraživanja smatrala su da postoji muški i ženski rod, no generalno se smatra da postoje dvije imenske klase – živa i neživa. Primjerice *clan*, “sin” spada u živu klasu, dok *avil*, “godina” spada u neživu klasu. Samim time imenice klase živoga tvore plural sufiksima sa *-r*, a imenice nežie klase sufiksima *-χva/-cva/-va*. Primjeri plurala: *clan* – *clenar*, “sinovi”, *ais* – *aiser*, “bogovi”, *papals* – *papalse*, “unuci”, ali: *avil* – *avilχva*, “godine”, *cilθ* – *cilθcva*, “utvrde”, *zusle* – *zusleva*, “žrtve”.<sup>35</sup>

Etrurske imenice sklanjale su se po broju (jednina, množina) i padežu. Bonfante<sup>36</sup> smatra da se radi o pet padeža: nominativu/akuzativu, genitivu, dativu, lokativu i pluralnom padežu. Osobna imena imaju jasno označen rod, pri čemu muška imena završavaju na konsonant ili *-e*, a ženska imena na *-a* ili *-i*, primjerice *Tin* za Jupitera, *Hercle* za Herkula, ali *Uni* za Junonu i *Menrva* za Minervu. U genitivu je nastavak *-s/-ś* ili *-l*, ovisno, čini se, o rodu i završetku u nominativu: *fler*, “žrtveni prinos” – *flerś*, potom *Laris* – *Larisal*, a nakon *l* ili *r* obično dolazi nastavak *-s*, kao npr. *Vel* – *Velus*. U dativu imamo nastavak *-si*, primjerice *clen*, “sin” – *clensi*. Lokativni je nastavak *-θi*, primjerice *Tarχna* – *Tarχna-l-θi*.

w/ – something that is typologically very common and plausible. The deaspiration of /th/ is common at the end of the word; for example, *Larθial*, but *Lart* in the *Tabula Cortonensis*. The nasals /n m/ and the liquids /l r/ are often vowels, i.e. consonants become sonants and carry the syllable; for example, *Atalanta* is written as *Atlnta*.<sup>30</sup> Etruscan, interestingly, had the phoneme /f/, which is not very frequent in languages, and probably did not exist in the Proto-Indo-European language.<sup>31</sup> It is likely that the Etruscan /f/ was borrowed by other languages spoken in Italy, such as Latin, Faliscan, Umbrian, Oscan, Marsian, Venetic, etc.. The phoneme /f/ often alternates with /h/, as is the case in Latin and Faliscan, possibly due to Italic influences; for example, in the names **Fasti** and **Hastil**; it also often alternates with *p*; for example, in the names **Apuna** and **Afuna**.<sup>32</sup>

## Morphology

Etruscan is an inflected language, i.e. it had a rich morphology, but it was not a fusional, but, more likely, an agglutinative formation system wherein several suffixes were used to create several grammatical categories.<sup>33</sup> For example, the singular nominative form is *clen*, “son”, the plural nominative form is *clen-ar*, and the plural dative form is *clen-ar-aši*.<sup>34</sup> Etruscan also displays the, so called, *Suffiaufnahme*, a construction similar to possessive genitive, where the possessive is in the genitive, but matches its head in gender, number and case; for example, *Uni-al-θi*, “in Juno’s shrine”, where *-al* is the genitive suffix, and *-θi* the locative.

Earlier research was based on the assumption that there was a masculine and a feminine gender, but it is generally considered that there were two classes of nouns – animate and inanimate. For example, *clan*, “son” is in the animate class, while *avil*, “year” is in the inanimate one. Therefore, animate nouns form the plural with the suffixes *-χva/-cva/-va*. Examples of plural: *clan* – *clenar*, “sons”, *ais* – *aiser*, “gods”, *papals* – *papalse*, “grandsons”, but: *avil* – *avilχva*, “years”, *cilθ* – *cilθcva*, “forts”, *zusle* – *zusleva*, “sacrifice”.<sup>35</sup>

Etruscan nouns were inflected by number (singular, plural) and case. Bonfante<sup>36</sup> is of the opinion that there are five cases: nominative/accusative, genitive, dative, locative and a plural case. Personal names have a clearly expressed gender, wherein male names end in a consonant or *-e*, and female names end in *-a* or *-i*; for example, *Tin* for Jupiter, *Hercle* for Hecules, but *Uni* for Juno and *Menrva* for Minerva. In the genitive case, the suffix is *-s/-ś* or *-l*, depending on, it seems, the gender and suffix in the nominative: *fler*, “sacrificial gift” – *flerś*, then *Laris* – *Larisal*,

31 Kasniji odrazi novije su inovacije, kao npr. germanska.

32 Takve promjene tipološki su česte jer se radi o bliskim glasovima. Usp. primjerice u hrvatskom kako latinsko Franciscus daje Franjo, ali i Pranjčić, Pranjčković, Vrančić, Vranić i slično.

33 Primjerice, hrv. *-i* u *konj-i* označava i množinu, i muški rod, i nominativ, dok bi etrurski dodavao više sufikasa ovisno o kategoriji.

34 Agostiniani 2013.

35 Wallace 2016.

36 Bonfante 1999.

30 Bonfante 2002.

31 Later reflections are more recent innovations, such as, e.g. the Germanic one.

32 Such changes are typologically frequent because the sounds are similar. For comparison's sake, how the Latin Franciscus turns to Franjo, but also Pranjčić, Pranjčković, Vrančić, Vranić and the like.

33 For example, the Croatian *-i* in *konj-i* denotes the plural, as well as he masculine gender, and the nominative case, while Etruscan would add more suffixes depending on category.

34 Agostiniani 2013.

35 Wallace 2016.

36 Bonfante 1999.

Cijela paradigma imenice na primjeru imenice “sin” izgledala bi: *clen* (nominativ) – *clens* (genitiv) – *clensi* (dativ) – *clenθi* (lokativ) – *clenar* (plural). Agostiniani<sup>37</sup> smatra da se radi o apsolutivu, genitivu, ablativu, lokativu i pertinentivu<sup>38</sup> te pokazuje primjere pertinentiva i ablativa kao kompleksnih padeža koji su derivirani iz genitiva, primjerice nominativ *Larθ* – genitiv *Larθ-(i)al* – pertinentiv *Larθ-(i)al-e* – ablativ *Larθ-al-s*. Rix<sup>39</sup> to uspoređuje s hipotetiziranim srođnicima te pretpostavlja za etruski, retski i lemnijski izvorni genitivni nastavak -Vs i -Vl a za pertinentiv -Vsi i -Vle, pri čemu V stoji za neki vokal. Pridjevi su se također deklinirali, no nema dokaza fleksije i za rod, ali razlikovali su se po funkciji, primjerice kvalitativni pridjevi kao npr. *ais-iu* “božanski” (*ais* = “bog”), posvojni kao npr. *paχa-n*, “Bakhov” (*paχa* = “Bakho”) ili kolektivni kao *etera-ia* = “ropski” (*etera* = “rob”).

Među zamjenicama posvjedočene su lične, pokazne i odnosne zamjenice. Lična zamjenica 1. lica jednine jest *mi*, a njezin akuzativ *mini/mine/mene*, dok je zamjenica 3. lica *sa*. Postojale su pokazne zamjenice *ita/eta* i *ica/eca* te neodređena zamjenica *ena* (s akuzativom *itan/etan/tn*, potom *ican/ecan/ecn/cn* te genitivima *tas/tala/etas/tla* i *cas/ecs/cla*). Na zamjenice se mogao dodavati nastavak -n, -ni da bi se označio izravni objekt glagola. Odnosna zamjenica bila je -an za živu klasu te -in za neživu klasu.<sup>40</sup>

Što se tiče glagola, još se manje zna od imenske morfologije, no pretpostavlja se opreka između aktiva i pasiva, primjerice u prošlom vremenu *itun turuce* = “ovo je posvetio”, ali *cen zic zixuxe* = “ovaj natpis napisan je” (nastavci -ce i -xe). Imperativ je očekivano jednak korijenu riječi (npr. *trin* = “govori!”), a postoji i necesitativ, odnosno gerundiv,<sup>41</sup> npr. *acasri* = “mora/treba biti žrtvovan”.<sup>42</sup> Neobilježeni prezentski oblici razlikuju se od pasivnih oblika, usp. *turuce*, ali neobilježeno *ture*, “posvećuje”, a takvi oblici imaju funkciju prezenta i futura. Iz glagola su se mogli izvoditi i pridjevi, odnosno participi, najčešće sufiksom -u ili -θ na korijen, npr. *mul-u*, “darovan” te *trin-θ*, “koji govori”.<sup>43</sup>

and, / or r are usually followed by the suffix -s, as, e.g., *Vel* – *Velus*. The dative has the suffix -si; for example, *clen*, “son” – *clensi*. The locative suffix is -θi; for example, *Tarχna* – *Tarχna-l-θi*. The entire noun paradigm on the example of the noun “son” would be: *clen* (nominative) – *clens* (genitive) – *clensi* (dative) – *clenθi* (locative) – *clenar* (plural). Agostiniani<sup>37</sup> feels that the cases include absolute, genitive, ablative, locative and pertinentive,<sup>38</sup> and lists examples of pertinentive and ablative as complex cases that were derived from the genitive; for example, nominative *Larθ* – genitive *Larθ-(i)al* – pertinentive *Larθ-(i)al-e* – ablative *Larθ-al-s*. Rix<sup>39</sup> compares this to hypothesized related languages and assumes that Etruscan, Rhaetian and Lemnian had the original genitive suffix -Vs and -Vl, -Vsi for the pertinentive, and -Vle, wherein V represents a vowel. Adjectives were also inflected, but there is no evidence of inflection in gender. They did, however, differ in function; for example, qualitative adjectives such as, e.g., *Ais-iu* “divine” (*ais* = “god”), possessive such as, e.g., *paχa-n*, “Bakhov” (*paχa* = “Bakho”), or collective ones, such as *etera-ia* = “ropski” (*etera* = “slave”).

There is evidence of personal, demonstrative and relative pronouns. The 1<sup>st</sup> person singular personal pronoun is *mi*, and its accusative form is *mini/mine/mene*, while the 3<sup>rd</sup> person pronoun is *sa*. Demonstrative pronouns *ita/eta* and *ica/eca* existed, as did the indefinite pronoun *ena* (with the accusative *itan/etan/tn*, then *ican/ecan/ecn/cn*, and the genitives *tas/tala/etas/tla* and *cas/ecs/cla*). The suffix -n, -ni could be added to pronouns to denote the direct object of a verb. The relative pronoun was -an for the animate class, and -in for the inanimate class.<sup>40</sup>

When it comes to verbs, even less is known than about the morphology of nouns. However, it is assumed that there is an opposition between the active and the passive; for example, in the past tense *itun turuce* = “he dedicated this”, but *cen zic zixuxe* = “this inscription was written by” (suffixes -ce and -xe). The imperative is, expectedly, equal to the root of the word (e.g. *trin* = “speak!”), but there is also the necessitative, that is, the gerundive;<sup>41</sup> e.g., *Acasri* = “must/needs to be sacrificed”.<sup>42</sup> Unmarked present forms differ from passive forms, comp. *turuce*, but the unmarked *ture*, “dedicates”, and such forms function as both the present and the future tense. Verbs could also have been used to produce adjectives, that is, participles, most often by adding the suffix -u or -θ to the root; e.g., *mul-u*, “given”, and *trin-θ*, “that speaks”.<sup>43</sup>

37 Agostiniani 2013.

38 Apsolutiv spaja funkcije nominativa i genitiva, ablativ obično označava udaljavanje od čega i lokativne funkcije, a pertinentiv je emfatični genitiv te spaja funkcije lokativa i genitiva.

39 Rix 1998.

40 Wallace 2016.

41 Radnja koja se mora ili treba izvršiti, česta u jezicima svijeta, primjerice u latinskom sufiksom -ndum.

42 Agostiniani 2013.

43 Wallace 2016.

37 Agostiniani 2013.

38 The absolute combines the function of the nominative and the genitive, the ablative usually marks the distance from something, and locative functions, and the pertinentive is emphatic genitive and combines the functions of the locative and the genitive.

39 Rix 1998.

40 Wallace 2016.

41 An action that must or needs to be done, common in the languages of the world, for example, in Latin with the suffix -ndum.

42 Agostiniani 2013.

43 Wallace 2016.



## Morfosintaksa i sintaksa

Etruski nije imao prepozicija, što je očekivano za aglutinativni jezik, ali imao je postpozicija, primjerice *-ri*, “u ime koga” dodavano je na lokativne oblike, npr. *špureri*, “u ime zajednice” ili pak *-θi*, s varijantama *-θ/-ti/-te* u značenju “u”, “na”, npr. *hupnineθi*, “u pogrebnoj niši”.<sup>44</sup> Tako da su prijedložne fraze i takvi prijedložni sintaktički odnosi preneseni u morfologiju.

Pridjevi slijede svoje imenice, npr. *caper zamθic*, “zlatna vaza”, osim u formulama gdje se može naići na prepozicionalne pridjeve kao npr. *Larθal clan*, “Larthov sin”. Što se tiče slaganja u rodu, ne postoji nikakva sročnost pridjeva sa svojim imenicama ovisno o rodu, kao što je slučaj u npr. indoeuropskim jezicima.<sup>45</sup> Genitivne fraze, brojevi i pokazne zamjenice obično dolaze prije imenice koju modificiraju, primjerice *ci avil* = “u tri godine” ili *ita tmia* = “ovaj hram”. Pridjevi se slažu sa svojim imenicama u padežu, primjerice *cušuθuras larisališvla*, “ugovor braće Cušu”, gdje se pridjev slaže u genitivu plurala s imenicom. Brojevi se tvore dodavanjem za prvih šest brojeva u deseticama, primjerice *ci sar* za 13 (*š/sar* = 10), “tri i deset” ili *huθzar* za 16, no za zadnja tri broja oduzimaju se, npr. 18 kao *esl-em zaθrum* (*zaθrum* = 20), doslovno “jedan bez dvadeset”, a moguće je da je takva tvorba utjecala i na latinski.<sup>46</sup>

Nominativno-akuzativni ili apsolutivni oblik služio je kao subjekt prijelaznih i neprijelaznih glagola te objekt prijelaznih glagola. Genitivni oblik označavao je posvjedovanje, primjerice obiteljske veze te indirektni objekt u votivnim posvetama. Što se tiče kompleksnijih oblika pertinentiv je indicirao osobu kojoj je što dano ili kojoj se što učinilo, a u pasivnim konstrukcijama označavao je vršitelja radnje, a ablativ izvor radnje ili dio cjeline.<sup>47</sup>

Redoslijed sintaktičkih sastavnica bio je SOV, odnosno subjekt – objekt – predikat, a promjenom redoslijeda dobivala bi se emfatičnost, primjerice akuzativ na prvom mjestu označavao bi da tekst na neki način govori čitatelju. Što se tiče veznika, postojao je veznik “i” *-ka/-ca/-c* koji je bio sufiksalan kao i “ali” *-um/-m*.

## Leksik

Kao što je očekivano, izvorne etruske riječi dolaze od temeljnih pojmova kao što su obiteljski odnosi, koje najbolje poznamo, primjerice *clan*, “sin”; *sex*, “kći”; *apa*, “otac”; *ati*, “majka”; *ruva*, “brat”; *papals*, “unuk s očeve strane”; *tetals*, “unuk s majčine strane”; *nefts*, “nećak”; *prumts*, “praunuk”<sup>48</sup> te *apa nacna* i *ati nacna*, “baka” i “djed. Većina leksika dolazi iz *Liber linteus* te je

## Morphosyntax and syntax

Etruscan did not have prepositions, as expected in an agglutinative language, but it did have postpositions; for example, *-ri*, “in the name of whom” was added to locative forms, e.g., *špureri*, “in the name of the community”, or *-θi*, with its variants *-θ/-ti/-te*, meaning “in”, “on”; e.g., *hupnineθi*, “in the funeral niche”.<sup>44</sup> Adverbial phrases and such adverbial syntactic relations were transferred to morphology.

Adjectives follow their nouns; e.g. *caper zamθic*, “gold vase”, except in formulas where prepositional adjectives appear, such as, e.g., *Larθal clan*, “son of Larth”. When it comes to matching in gender, there is no inflection of adjectives and their accompanying nouns depending on gender, as is the case in, e.g. Indo-European languages.<sup>45</sup> Genitive phrases, numerals and demonstrative pronouns usually appear before the noun they modify; for example, *ci avil* = “within three years”, or *ita tmia* = “this temple”. Adjectives match their nouns in case; *cušuθuras larisališvla*, “the contract of the Cušu brothers”, where the adjective matches the plural genitive form of the noun. Numerals are formed by adding for the first six numbers in the tens; for example, *ci sar* for 13 (*š/sar* = 10), “three and ten”, or *huθzar* for 16, but are subtracted for the last three numbers; e.g. 18 as *esl-em zaθrum* (*zaθrum* = 20), literally “one without twenty”, and it is possible that such formation influenced Latin.<sup>46</sup>

The nominative-accusative or absolute form was used as the subject with transitive and intransitive verbs, and as the object with transitive verbs. The genitive form was used to denote possession; for example, family ties, and as the indirect object in votive devotions. When it comes to more complex forms, the pertinentive was used to denote the person to whom something was given or to whom something was done. In passive constructions, it was used to denote the doer of the action. The ablative was used to denote the source of the action or a part of a whole.<sup>47</sup>

The order of the syntactic components was SOV, that is, subject – object – predicate. A change in the order would cause emphaticness. For example, the accusative case in first position denotes that the text was in some way speaking to the reader. When it comes to conjunctions, “and” was expressed as *-ka/-ca/-c*, and was used as a suffix, as was “but” *-um/-m*.

## Lexis

As expected, original Etruscan words come from basic concepts such as family relations, and the best known ones are, *clan*, “son”; *sex*, “daughter”; *apa*, “father”; *ati*, “mother”; *ruva*, “brother”; *papals*, “grandson on the father’s side”; *tetals*, “grandson on the mother’s side”; *nefts*, “nephew”; *prumts*, “grand-grandson”<sup>48</sup> and *apa nacna* and *ati nacna*, “grandmother” and

44 Wallace 2016.

45 Primjerice *lijep-e žen-e*, ali *lijep-i konj-i*.

46 Usp. latinski *undeviginti*, dvadeset bez jednoga, *duodeviginti* = 20.

47 Wallace 2016.

48 *Nefts* i *prumts* vjerojatno su posuđeni iz umbrijskoga (Agostiniani 2013). Usp. latinski *nepos*, *nepotis*, što je inoeuropska riječ (\**népōts*), srodna s hrv. „nećak”.

44 Wallace 2016.

45 For example, in Croatian *lijep-e žen-e*, but *lijep-i konj-i*.

46 Comp. Latin *undeviginti*, twenty without one, *duodeviginti* = 20.

47 Wallace 2016.

48 *Nefts* and *prumts* were probably borrowed from Umbrian (Agostiniani 2013). Comp. Latin *nepos*, *nepotis*, which is an Indo-European word (\**népōts*), similar to the Croatian „nećak”.

religiozne prirode, primjerice *ais*, “bog”; potom *fler*, “prinos”; *zúsle*, “žrtva”; *trin*, “govoriti” i slično. Glagol “biti” bio je *am-* (perfekatsko *amce*, “bio je”, prezentsko *ame*, “jest”).

U etruskom postoje i posuđenice iz okolnih jezika, primjerice iz umbrijskoga *vinum*, “vino” te *cletram*, “košara za žrtve”. Iz grčkoga imamo dosta termina za razne keramičke objekte, primjerice *qutum* < κῶθων, “krčag”, *lextum* < λήκυθος, “boca za ulje”, *pruxum* < πρόχους, “vrč”, *χυλιχνα* < κυλίχνη, “šalica”.<sup>49</sup> Iz latinskoga vjerojatno dolaze *cela* iz *cella*, “sobica”, “oltar” ili *macstr-* iz latinskoga *magister*, “učitelj”, “gospodar”.

Etruski je utjecao i na druge jezike, posebice na latinski. U imenima se etruskim smatra ime rijeke Tiber, *Tiberis*, koja teče kroz bivši etruski teritorij, a poetski oblik *Thybrisima* ima *th* koji je nepoznat u latinskom jer je inače reduciran u *t*.<sup>50</sup> Etruski je znao i posredovati iz grčkoga, od čega je najpoznatiji primjer grč. πρόσωπον (*prósōpon*), preko etruskoga *phersu* do latinskoga *persona*, “maska”; “osoba”. Bonfante<sup>51</sup> i *fenestra*, “prozor” smatra etruskom riječi jer su indoeuropejske kuće imale samo vrata i dimnjak. Etruskima se smatraju i neki sufixi kao npr *-ennus* i *-enna* u latinskom, npr *Porsenna*. *Atrium* i *Varon* i *Servije* smatraju etruskima,<sup>52</sup> što je arhitektonski termin naprednije civilizacije. Etruskima se smatraju i imena nekih rimskih bogova, primjerice *Minerva*.<sup>53</sup>

## Završne napomene

Već prema vokabularu vidimo kako je etruski genealoški izoliran, no u etruskologiji se etruski pokušava povezati s drugim jezicima, od čega je najpoznatija teza Helmuta Rixa<sup>54</sup> o tirsenskoj jezičnoj porodici, koja bi uključivala retski (izumrli jezik istočnih Alpa) i lemnijski (izumrli jezik otoka Lemna u Grčkoj), na temelju spomenutih morfoloških, fonoloških i sintaktičkih podudarnosti, no malo je pravih leksičkih podudarnosti. Dakako, za detaljnija proučavanja strukture samoga etruskoga jezika od neprocjenjive bi važnosti bilo otkriće još ponekih natpisa, možda i retskoga i lemnijskoga, kako bi se bolje utvrdile moguće veze među njima. Dotad *Liber linteus* ostaje neprocjenjivi i glavni izvor znanja o etruskoj fonologiji, morfologiji, sintaksi i semantici, čije su najrelevantnije stavke ovdje ukratko bile izložene.

“grandfather”. Most of the lexis comes from the *Liber linteus* and is religious in nature; for example, *ais*, “god”; then *fler*, “contribution”; *zúsle*, “sacrifice”; *trin*, “to speak” and the like. The verb “to be” was *am-* (the perfect form *amce*, “was”, the present form *ame*, “is”).

Etruscan also included loanwords from surrounding languages; for example, *vinum*, “vine” and *cletram*, “sacrificial basket” from Umbrian. Greek provided numerous terms for different ceramic objects; for example, *qutum* < κῶθων, “pitcher”, *lextum* < λήκυθος, “bottle for oil”, *pruxum* < πρόχους, “jug”, *χυλιχνα* < κυλίχνη, “cup”.<sup>49</sup> Latin probably provided *cela* from *cella*, “small room”, “altar”, or *macstr-*, from the Latin *magister*, “teacher”, “master”.

Etruscan influenced other languages, especially Latin. When it comes to names, one of the Etruscan ones is the name of the Tiber River – *Tiberis*, which flows through former Etruscan territory. Additionally, the poetic form *Thybris* has the *th* that is unknown in Latin, seeing as it is usually contracted to *t*.<sup>50</sup> Etruscan also mediated from Greek, and one of the most famous examples is the Greek πρόσωπον (*prósōpon*), over the Etruscan *phersu* to the Latin *persona*, “mask”; “person”. Bonfante<sup>51</sup> also feels that *fenestra*, “window”, is an Etruscan word because Indo-European houses only had doors and a chimney. Some suffixes are also thought to be Etruscan, such as *-ennus* and *-enna* in Latin, e.g. *Porsenna*. Both Varrus and Servius thought that *atrium* was Etruscan,<sup>52</sup> marking an architectural term from a more advanced civilization. The names of some Roman gods are also thought to be Etruscan, for example, *Minerva*.<sup>53</sup>

## Final remarks

Already by looking at its vocabulary, it becomes clear that Etruscan is genealogically isolated. However, in Etruscology, there have been many attempts at connecting Etruscan with other languages. In that regard, Helmut Rix’s hypothesis is the most famous.<sup>54</sup> It refers to the Tyrsenian language family that includes Rhaetian (the extinct language from the eastern Alps) and Lemnian (the extinct language from the Greek island of Lemnos), which were connected based on the mentioned morphological, phonological and syntactic similarities. However, there is too few true lexical similarities. Naturally, possible future discoveries of other inscriptions, maybe even in Rhaetian and Lemnian, would be crucial for a more in-depth study of the Etruscan language itself, seeing as they would allow for determining their interconnectedness. Until then, the *Liber* remains as a priceless and main source of knowledge on Etruscan phonology, morphology, syntax and semantics, as was briefly presented in this paper.

49 Wallace 2016.

50 Bonfante 1985.

51 Bonfante 1985.

52 *Lingua Latina* V, 161 i In Vergilii *Aeneidem commentarii* I 726.

53 Bonfante 1985. Bonfante i Junonu smatra onomastički etruskom zbog božice Uni, no njoj se etimologije mogu izvesti i iz indoeuropejskih inačica, primjerice iz korijena *\*dyew*, “danje nebo” + *\*h<sub>3</sub>onh<sub>2</sub>* = “autoritet”, što bi dalo *\*Iuvō*, *\*Iūnis*, a potom *Iūnō*, *Iūnōnis* ili pak iz *\*h<sub>2</sub>eyu-*, “vijek” i s istim drugim dijelom složenice (usp. lat. *iuvenis*, “mlad”).

54 Rix 1998.

49 Wallace 2016.

50 Bonfante 1985.

51 Bonfante 1985.

52 *Lingua Latina* V, 161 and In Vergilii *Aeneidem commentarii* and 726.

53 Bonfante 1985. Bonfante sees Juno as onomastically Etruscan due to the goddess Uni, but its etymology could also be derived from Indo-European variants; for example, the root *\*dyew*, “day sky” + *\*h<sub>3</sub>onh<sub>2</sub>* = “authority”, which would result in *\*Iuvō*, *\*Iūnis*, then *Iūnō*, *Iūnōnis*, or from *\*h<sub>2</sub>eyu-*, “age” with the same second part of the compound (comp. Latin *iuvenis*, “young”).

54 Rix 1998.

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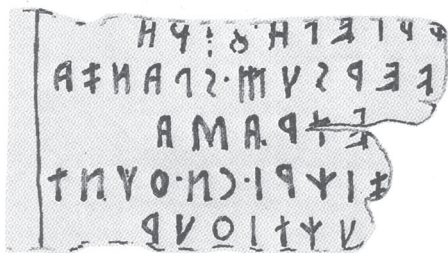
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# III. NOVA ISTRAŽIVANJA

# III. RECENT RESEARCH





# GRAFIČKA TEHNOLOGIJA ZAGREBAČKE LANENE KNJIGE

## GRAPHICS TECHNOLOGY AND DESIGN OF THE LINEN BOOK OF ZAGREB

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Dorela Dujmušić, Damir Modrić, Vesna Džimberg-Malčić

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Etruščanski *libri Tagetici, libri Vegonici, libri fatales, libri haruspicipini, fulgurales, rituales, fatales, Acheruntici* itd. spomenuti su primjeri etrurskih knjiga u rimskim pisanim izvorima.

Ovo poglavlje obuhvaća analizu temeljnih parametara grafičke tehnologije Zagrebačke lanene knjige, uključujući obradu prijeloma, tipografske hijerarhije i tipografije. Po prvi je put etrurska knjiga profesionalno analizirana iz navedenoga aspekta.

### 1. Prijelom Zagrebačke lanene knjige

Analiza prijeloma knjige obuhvaća međusobni odnos teksta i pismovne podloge u projektnoj shemi. Viđenje i prihvaćanje sadržaja te čitateljeva emocionalna reakcija na prijelom knjige utječe na razumijevanje i čitkost štiva.<sup>1</sup>

Primarna je svrha pravilnoga prijeloma, konkretnije pozicioniranje tekstualnih elemenata, omogućiti čitatelju da primi informaciju s minimalno uloženim trudom. S obzirom na to da raspored stranica i pozicija pojedine stranice unutar knjige utječe na prijelom stranice, nužno je znati kako je istraživana publikacija fizički sastavljena u cjelinu da bi bilo moguće analizirati prijelom knjige.

The existence of Etruscan books is confirmed by Roman literary sources. They mentioned the *Etruscan libri Tagetici, libri Vegonici, libri fatales from Veii, libri haruspicipini, fulgurales, rituales, fatales, Acheruntici*, and others.

This chapter contains study about basic graphical technological parameters of The linen book of Zagreb including layout design, typography hierarchy and typography font. This is the first time Etruscan book is professionally analyzed from this aspect.

### 1. The Linen book of Zagreb layout

Layout concerns the placement of text elements on writing surface in relation to one another and within the overall design scheme. How the content is viewed and received by the readers affect understanding and reading speed, as well as readers emotional reaction<sup>2</sup> towards it.

The primary objective of layout is to present, in this case, textual elements that are to be communicating in a manner that enables the reader to receive them with the minimum effort. Imposition as the arrangement of pages in the sequence and position in which they will appear when finished affect page layout. Therefore knowledge of how a publication is physically put together is important before layout analyzing begins.

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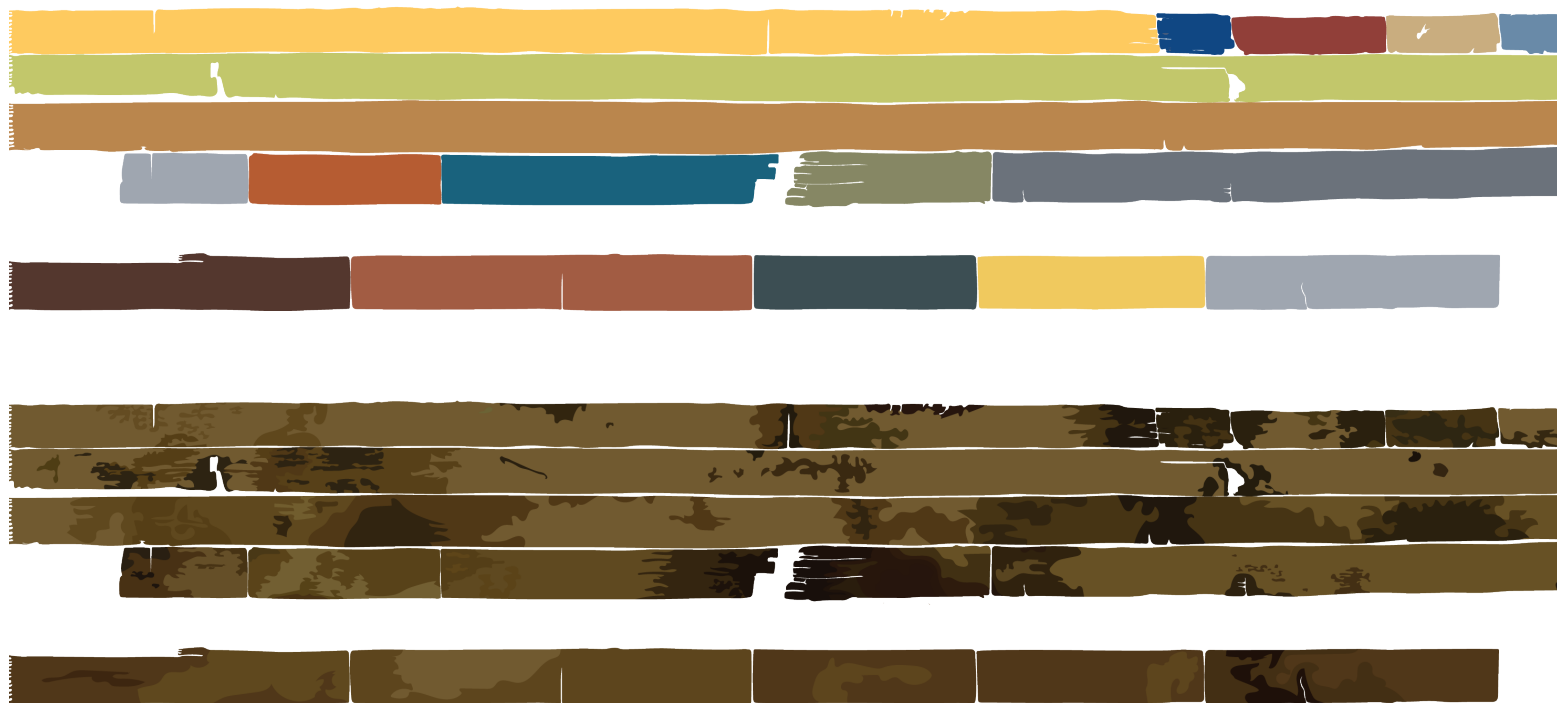
1 Ambrose 2005; Livingston, Livingston 2003.

1 Ambrose 2005; Livingston, Livingston 2003.

## 1. 1. Uvod

Za bolje razumijevanje prijeloma knjige potrebno je definirati stranice Zagrebačke lanene knjige. Ovo istraživanje bazira se na rekonstrukciji Francesca Roncallija<sup>2</sup> iz 1985. godine kada su trake vertikalno poredane u cjelinu knjige od pet horizontalno sastavljenih traka, koje je rekonstruirao Jakob Krall 1891. godine.<sup>3</sup> Horizontalna rekonstrukcija traka nije upitna s obzirom na to da im je fizički nemoguće promijeniti redoslijed. No, kompleksnija matematička studija potrebna je za točnije definiranje vertikalnoga redoslijeda Krallova ili Roncallijeva rasporeda, koja je nužna iz tehnološkoga aspekta i trebala bi biti provedena u budućnosti.

Godine 1985. provedeno je restauriranje i konzerviranje Zagrebačke lanene knjige u Švicarskoj, prilikom čega Flury-Lemberg navodi z-rotaciju pređe u svojim istraživanjima.<sup>4</sup>



## 1. 2. Snimak Zagrebačke lanene knjige u infracrvenom području elektromagnetskoga spektra

J. M. Edler snimio je 1981. ortokromatsku fotografiju Zagrebačke lanene knjige u Beču poslije neuspješnoga pokušaja I. Stadlera u Zagrebu.<sup>5</sup> I. Plotnikov snimio je 1932. prvi snimak Zagrebačke lanene knjige u infracrvenom području (IC), što je 1966. godine ponovio I. Lukan, a potom M. Seracini, s iznimkom da se ovoga puta radilo o snimku u boji.<sup>6</sup> G. Herbig 1910. je godine posljednji odvojio ispisani tekstilni materijal iz inventara Zagrebačke mušije vizualnom metodom.<sup>7</sup>

## 1. 1. Introduction

To better understand layout it is important to define pages of the Linen book of Zagreb. This study refers to reconstruction made by Francesco Roncalli<sup>2</sup> in 1985 when textile strips were vertically aligned together into one book arranged from five textile strips reconstructed by Jakob Krall<sup>3</sup> in 1891. Horizontal reconstruction of those five textile strips is not questionable since there is no physical possibility of divergent arrangement, Figure 1,2. But complex mathematical study is needed to better understand vertical alignment of Krall's or Roncalli's work, which is necessary from technological point of view, and should be done in the future.

Flury-Lemberg noted the z or clockwise direction of the thread spin during the conservation of the Linen book of Zagreb in Switzerland.<sup>4</sup>

## 1. 2. IR photography of the Linen book of Zagreb

In 1891 J. M. Edler made ortocromatic photography of the Linen book of Zagreb in Vienna after I. Standler failed to achieve it in Zagreb.<sup>5</sup> Ivan Plotnikov made first infrared photography (IR) in 1932, Ivan Lukan repeated that work in 1966 and finally Mauro Seracini made first colour IR photography of the Linen book of Zagreb.<sup>6</sup> Separation of textile between Zagreb mummy's wraps and Etruscan book was last time made by Gustav Herbig in 1910 [3] according to visual method.<sup>7</sup>

2 Pallottino 2003. 447-490.

3 Bilić, T.; Mirnik 2008. 457-462.

4 Flury-Lemberg 1986, 73-82.

5 Mirnik. Rendić-Miočević 1986, 40-71.

6 ibid.

7 Pallottino 2003. 447-490.

2 Pallottino 2003. 447-490.

3 Bilić, T.; Mirnik 2008. 457-462.

4 Flury-Lemberg 1986, 73-82.

5 Mirnik. Rendić-Miočević 1986, 40-71.

6 ibid.

7 Pallottino 2003. 447-490.

S obzirom na to da je jedan od ciljeva ovoga istraživanja bio obraditi prijelom Zagrebačke lanene knjige, bilo je nužno istražiti separiran tekstilni materijal inventara Zagrebačke mumije.

Kako su infracrvenim fotografijama dobiveni uspješni rezultati u navedenim prijašnjim istraživanjima (pigment uočljiv ekspaniranjem u intervalu infracrvenih valnih duljina), u travnju i svibnju 2018. godine tekstilne trake iz inventara Zagrebačke mumije detaljno su istražene infracrvenom modificiranom kamerom Sony Alpha (Hasselblad Lusso), opremljenom lećama Sony FE 55mm f/1.8 ZA Carl Zeiss Sonnar T\* u suradnji s Denisom Vokićem (Sveučilište u Dubrovniku, Odjel za umjetnost i restauraciju).

Iznenadujuće, u inventaru Zagrebačke mumije nije pronađena očekivana količina tekstila premazanoga smolom za balzamira-

The aim of this study was to better understand layout of the Linen book of Zagreb, therefore it was necessary to observe isolated textile from Zagreb mummy's inventory.

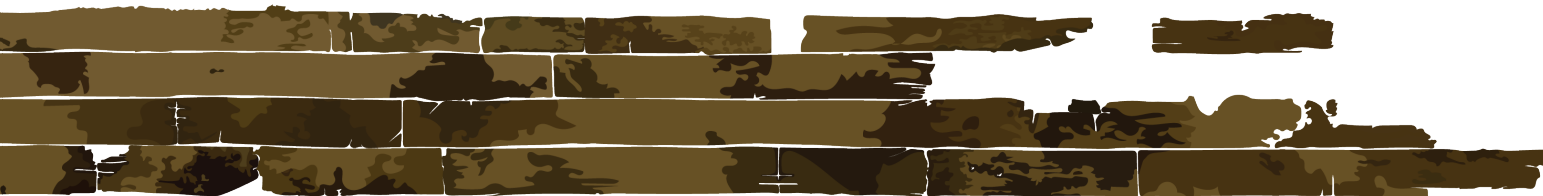
Since IR photography provided positive results in previous research on this Etruscan book and pigments were perceptible because of exposure to IR wavelengths, in April and May 2018 textile strips from Zagreb mummy's inventory were observed in detail with IR modified Sony Alpha 7R (Hasselblad Lusso) camera equipped with Sony FE 55mm f/1.8 ZA Carl Zeiss Sonnar T\* lens by Denis Vokić, University of Dubrovnik.

Surprisingly, in Zagreb mummy's inventory there is not much deteriorated textile covered with balsamic resin left, and inscription on healthy textile was already sorted by visual method. Therefore, in this research new fragments of text wasn't



sl. 1: Zagrebačka lanena knjiga, rekonstrukcija Francesca Roncallia 1985. Prvi red traka (9 fragmenata), drugi red traka (2 fragmenta), treći red traka (3 fragmenta), četvrti red traka (10 fragmenta), peti zamišljen red i šesti red traka (5 fragmenta).

FIG. 1: The Linen book of Zagreb reconstruction made by Francesco Roncalli in 1985. First row of textile strips (9 fragments), second row of textile strips (2 fragments), third row of textile strips (3 fragments), fourth row of textile strips (10 fragments), fifth imaginary row and sixth row of textile strips (5 fragments).



sl. 2: Lanene trake Zagrebačke lanene knjige s naglašenim dijelovima smole.

FIG. 2: Linen strips of the Linen book of Zagreb with emphasized balsamic resin parts..

nje (tamniji i mehanički uništen). Ispisani povići već su bili razmatrani vizualnom metodom i stoga su dijelovi s natpisom na nepremazanom tekstilu već odvojeni. No, izdvajaju se pojedini fragmenti tekstila premazanoga smolom i prekriveni znatnom količinom prašine koji potencijalno mogu sadržavati zapis. Stoga će u našem sljedećem istraživanju potencijalni fragmenti Zagrebačke lanene knjige biti snimani multispektralnom kamerom.

### 1. 3. Sabiranje

Kako je već ranije spomenuto, za bolje razumijevanje prijeloma potrebno je definirati sabiranje knjige. U travnju i svibnju 2018. tekstilni svršeci (Prikaz: 3) dužine koja približno odgovara Zagrebačkoj lanenoj knjizi pronađeni su u inventaru Zagrebačke mumije koji nalikuju na gornju i donju marginu knjige – prostor koji obrubljuje blok teksta. Stoga je Margarita Gleba iz Instituta McDonald za arheološka istraživanja, University of Cambridge, istražila navedene komade tekstila u prosincu 2018. godine. Rezultati njezina istraživanja potvrđuju s-rotaciju pređe, a ne z-rotaciju, koju Flury-Lemberg navodi u svojim istraživanjima,<sup>8</sup> uzorak dokazuje nepodudarnost tekstilnih uzoraka.

found. But potential pieces of textile covered with balsam and dust may contain inscription. In our next research those textile fragments will be observed by multispectral camera.

### 1. 3. Gathering

To better understand the books layout it is important to know its gathering as it was already mentioned before. In April - May 2018 textile endings with the length of the Linen book of Zagreb were found in Zagreb mummy's inventory (Fig. 3 a-b) suggesting head and foot (bottom) margins, the empty space that surrounds the text block, of the Linen book of Zagreb were found. Therefore, Margarita Gleba from McDonald Institute for Archaeological Research, University of Cambridge, studied textile in December 2018. Although the linen texture is similar, the results clearly show the s, unlike the z or clockwise direction of the thread spin noted in the old publications by Flury-Lemberg<sup>8</sup> after the conservation of the Linen book of Zagreb in Switzerland.

Iako novi pronađeni uzorci tekstila ne pripadaju Zagrebačkoj lanenoj knjizi, dvije kopče na spomenutom tekstilu i dalje sugeriraju mogućnost da su lanene knjige visjele kao tapiserija, a s obzirom na to da i sam taj tekstil potencijalno sadrži zapis, kao takav, možda daje informaciju o sabiranju, odnosno o nesabiranju lanenih knjiga u grafičkoj produkciji.

Stoga u ovom radu neće biti govora o sabiranju Zagrebačke lanene knjige zbog manjka fizičkih dokaza. No, ako pretpostavimo da je knjiga visjela kao tapiserija, u suvremenoj grafičkoj tehnologiji takav bismo prijelom mogli svrstati u proces kopčanja, a oblik takve vrste publikacija varira.

This new found textile does not belong to the Linen book of Zagreb but two found buckles still suggest this textile was hanging as tapestry and since it has its own possible inscription leaves indication how this is example of linen book production.

Therefore, there will be no talk about book gathering since there is no physical evidence. It can be closest compared to binding, as a format choice that directly affects layout as the various binding methods produce different physical attributes in the resulting product if this new found textile is treated as usual linen books head margin.

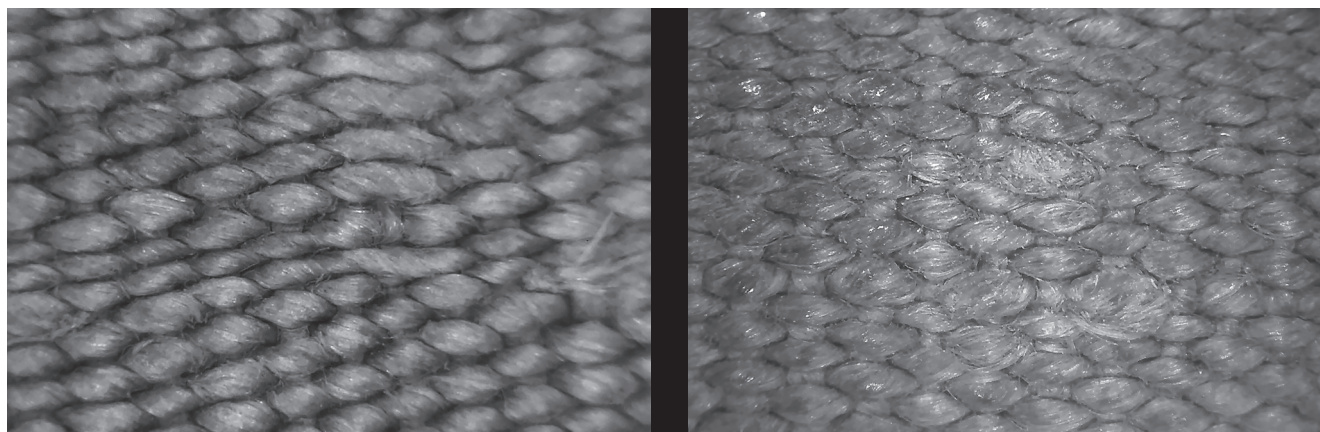


SL. 3A: Tekstilna traka s kopčom

FIG. 3A: Possible example of linen book margin with buckle found in Zagreb's mummy inventory.

SL. 3B: uzorak tekstila pronađene potencijalne margine lanene knjige (b- lijevo) i Zagrebačke lanene knjige (c-desno) u omjeru 1:1.

FIG. 3B: shows textile texture from found possible margin in Zagreb mummy's inventory on the left and Figure 3c on the right shows textile texture from the Linen book of Zagreb in ratio 1:1.



#### 1. 4. Mreža

*Upotreba mreže odraz je zrelog stava budući da je na taj način rad dizajnera konstruktivno definiran i orijentiran prema budućnosti.*

Josef Müller-Brockmann<sup>9</sup>

Mreže omogućavaju precizno pozicioniranje elemenata stranice, a ponekad se radi samo o određivanju proporcija. Primjerice, zlatni rez baziran je na sekvencionalnom uparivanju Fibonaccijevih brojeva i takva mreža definira površine u omjeru 8:13, koje

#### 1. 4. The Grid

*The use of the grid as an ordering system is the expression of a certain mental attitude inasmuch as it shows that the designer conceives his work in terms that are constructive and oriented to the future.*

Josef Müller-Brockmann<sup>9</sup>

Grids are used to give accurate measurements when placing page elements, but use of grids can sometimes be a simple matter of judging proportions. For example, the golden section use

9 Jardi 2007, 64-101.

9 Jardi 2007, 64-101.

nisu vezane uz standardizirane dimenzije stranica.<sup>10</sup> Prije definiranja mreže važno je definirati stranicu. U ovom je slučaju teško odrediti njezine točne dimenzije s obzirom na to da jedna ili više tekstilnih traka mogu nedostajati u vertikalnom poretku i problematično je ograničiti premazani tekstilni materijal desne strane knjige. Možemo pretpostaviti da je Zagrebačka lanena knjiga prelomljena prema simetričnoj mreži, što je primjer klasičnoga tipa, koji je definirao njemački tipograf Jan Tschichold (1902. – 1974.), za stranicu proporcija 2:3. Jednostavnost takve stranice karakterizira prostran odnos bloka teksta i margina. Ovakva mreža definira se prvenstveno odnosom proporcija, a ne mjerama dimenzija. Ovaj tip mreže koji je definirao Jan Tschichold ili poslije formula definiranja mreže Paula Rennera, bile su standardi u doba srednjega vijeka i renesanse.<sup>11</sup>

Svrha simetrične mreže jest organizirati informacije i omogućiti smislen odnos dviju međusobnih stranica,<sup>12</sup> u ovom primjeru dvanaest ili više stranica. Ovaj etruski primjer imao bi odnos gornje i donje margine 1:1 ako pretpostavimo da nam pronađena potencijalna margina knjige daje informaciju o marginama antičkih lanenih knjiga. Nemoguće je definirati omjer bloka teksta i margina. Najčešće je unutarnja margina uža, a vanjska šira. Tradicionalno je vanjska margina dvostruko šira od unutarnje, a suvremeno sužavanje vanjskih margina nalikuju primjeru Zagrebačke lanene knjige. Donja margina najčešće je najšira margina uopće i skoro je dvostuko duža od gornje margine. Etruski primjer pokazuje izjednačenje dimenzija donje i gornje margine ako nađeni tekstilni material razmatramo kao primjer margina antičkih lanenih knjiga. Dakle, suvremena izdavačka industrija zbog ekonomskih je razloga utjecala na sužavanje margina koje danas nalikuju na Zagrebačku lanenu knjigu.<sup>13</sup> Ovaj etruski primjer knjige možemo definirati i kao *Passe Partout*, koji se uobičajeno odnosi na specifično obrublivanje fotografije bijelim prostorom, koji nalikuju na njezin okvir.<sup>14</sup> Takav odnos sličan je odnosu blokova teksta i margina Zagrebačke lanene knjige.

Jednokolumnna mreža karakterizira Zagrebačku lanenu knjigu. Ljudsko oko teško nalazi sljedeći red teksta ako je broj znakova prevelik, što se može dogoditi kod prijeloma s jednom kolumnom. S druge strane, prijelom s prevelikim brojem kolumni može uzrokovati prekratak red teksta i time navesti čitatelja da prečesto prelazi u novi red čitanja. Najčešće se preporučuje 60-65 znakova po redu teksta [1] a kolumna Zagrebačke lanene knjige sadrži cca pola vrijednosti toga broja. S obzirom na to da je 35 znakova minimalan broj koji tipografi preporučuju, uključujući punktaciju i slijepi materijal (bjelinu), u ovom slučaju točke između riječi kolumna je preuska i čitatelj prebrzo prelazi u novi red teksta [7].

Kolumna je dopušten organizirani prostor u kojim se slova nižu unutar bloka teksta, a njezina širina može imati značajan utjecaj na prikaz teksta. Kolumna omogućava snažan dojam strogo definiranoga poretka, no jednako tako može rezultirati statičnim oblikovanjem ako ostaje premalo mogućnosti za varijacije u prijelomu blokova teksta. Stoga, ako Zagrebačku lanenu

sequential pairs of Fibonacci numbers and the grid defines an 8:13 area while physical measurements are unimportant.<sup>10</sup> Before grid can be made a page is needed. In this case it's hard to define actual page size because one or more textile strips may be missing and it's hard to define deteriorated edges of preserved textile strips. We can assume that the Linen book of Zagreb is made according to symmetrical grid. Classic layout, pioneered by German typographer Jan Tschichold (1902-1974), is based on a page size with proportions of 2:3. The simplicity of this page is created by the spatial relationships that contain the text block in harmonious proportions with margins. The other important factor about this grid is that it is dependent upon proportions rather than measurements. Jan Tschichold or Paul Renner formulas on how to define the margins of a page were attractive models in the Middle Ages or the Renaissance.<sup>11</sup>

Symmetrical grids aim to organize information and provide a sense of balance across a double-page spread. The structure of the recto page is reflected on the verso page in terms of column placement and width.<sup>12</sup> In this case twelve of more pages. Etruscan example has margin ratio head : foot (bottom), inner (spine) : outer ca 1:1 according to found margins. It's impossible to talk about ratio between text block and margins. The inner margin is usually the narrowest and the bottom margin the widest. Traditionally, the outer margin is twice as wide as the inner margin, although these days the outer margins tend to be narrower as Etruscan linen book. The foot or bottom margin is usually the largest margin on the page, sometimes the bottom margin is twice the width of the head margin. Etruscan example has width of foot margin equaled to head margin if we assume found margin is example of linen book production. The publishing industry, with its economic criteria, has reduced margins today turning them into straight and narrow space.<sup>13</sup> This Etruscan example can be described as *Passe Partout*, usually refers to the specific setting of an image so that it uses the white space of the edge of the page that surrounds it as a border [1], as does the Linen book of Zagreb with text blocks according to white space.

Single-column grid characterize the Linen book of Zagreb. By using a single column of text the eye may have problem to locate the next line if character count (measure) becomes to great. Generally no more than 60-65 characters per line [1] are recommended and the Linen book of Zagreb contains ca half of this number. Since 35 characters, including punctuation and spaces between words, in this case dots between words, are recommended as minimum it means the columns of text are to narrow and the reader constantly have to jump from line to line [7].

A column is an area of field into which text is flowed so that it is presented in an organized manner. Column width can have a dramatic effect on the presentation of the text. Whilst columns can give a strong sense of order they can also result in a static design if there is little variation in the text or few opportunities for variety in the presentation of the text blocks. Therefore, if

10 Ambrose 2005; Livingston, Livingston 2003.

11 ibid.

12 ibid.

13 Jardi 2007, 64-101.

14 Ambrose 2005; Livingston, Livingston 2003.

10 Ambrose 2005; Livingston, Livingston 2003.

11 ibid.

12 ibid.

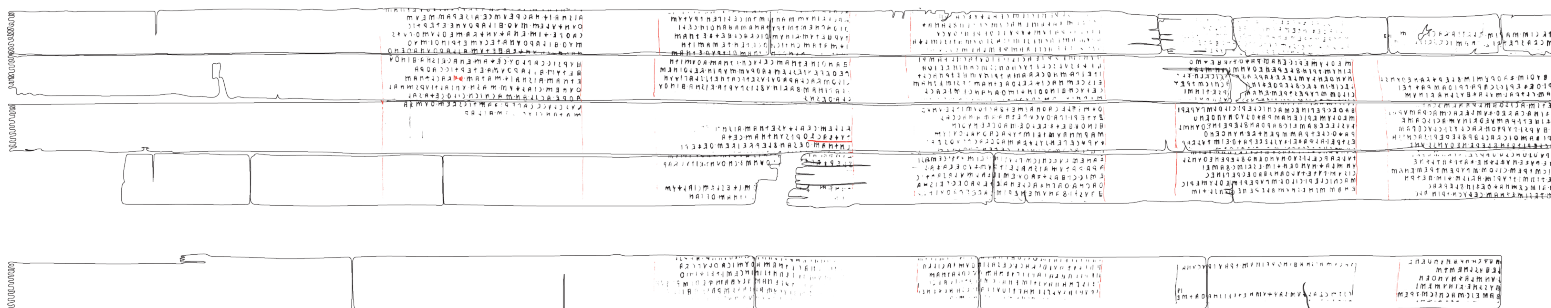
13 Jardi 2007, 64-101.

14 Ambrose 2005; Livingston, Livingston 2003.

knjigu tretiramo kao prijelom 12 ili više stranica, tada se svaka pojedinačna stranica može opisati kao statičan prijelom teksta. No, s obzirom na to da postoji mogućnost da se radi o tapiseriji, knjiga može biti tretirana kao jedna stranica prelomljena na 12 ili više kolumni. A u tom slučaju prijelom kolumni ostvaruje dinamičan valoviti ton blokova teksta, Sl. 4.

Ako ćemo ovu etrusku knjigu tretirati kao jednu stranicu s 12 ili više kolumni, tada odnos gornje i donje margine ostaje isti, a margine su uske između pojedinih kolumni. U tom je slučaju sačuvana samo lijeva, iznimno široka vanjska margina. A upravo zbog dobre očuvanosti lijeve strane i neočuvanosti desne strane knjige možemo zaključiti kako su trake tekstila bile paralelno namatane na mumiju za vrijeme mumificiranja, Sl 2.

Prikaz 4 pokazuje kako su Etrušćani upotrebljavali rešetku na mreži kolumne. Ta rešetka danas nalikuje na okvir i nikada se neće vidjeti u konačnom grafičkom proizvodu, samo u radnom procesu. Na finalnom etruskom grafičkom proizvodu ta rešetka crvenim vertikalnim linijama definira samo širinu blokova teksta ili horizontalne crvene linije nisu sačuvane. Ako Zagrebačku lanenu knjigu tretiramo kao knjigu prelomljenu na jednu stranicu s 12 ili više kolumni, tada govorimo o modulnoj rešetci.<sup>14</sup>



Temeljna linija kao grafička osnovica omogućava precizno pozicioniranje grafičkih elemenata (slova). Iako je teško prostoručno pratiti temeljnu liniju, Zagrebačka lanena knjiga karakterizirana je gotovo potpuno ravnom i preciznom temeljnom linijom.

### 1. 5. Poravnanje, rastavljanje riječi, udovice i siročići

Tekst ovoga primjera vertikalno je složen i poravnat u desno i kao takav ostavlja neravne rubove lijeve strane. Izuzev arhajskih natpisa, Etrušćani pišu s lijeva na desno ponekad mijenjajući smjer pisanja,<sup>15</sup> stoga ovaj način prijeloma teksta odgovara suvremenom poravnanju u lijevo s gornjom granicom.

Svrha rastavljanja riječi je reproducirati blok teksta bez prevelikih razmaka riječi unutar bloka i zato ga je važno kontrolirati. Pritom čitkost teksta mora biti očuvana. Idealno je rastavljanje

the Linen book of Zagreb is treated as 12 pages book than single page can only be characterized as static design. But since it may be tapestry it can be treated as one page with twelve or more columns and in that case Etruscan book has wavy tune of text blocks that becomes dynamic, Fig. 4.

If Etruscan book is going to be treated as one page with twelve or more columns than ration between head and foot margins remains, and column gutters as spaces between two columns are short, while wide-range of left margin is the only one left since left side of textile strips are preserved unlike deteriorated right side of reconstructed linen book which suggests how those strips were parallelly wrapped, Fig. 2. Integer head margin suggests how margins were removed from text blocks before wrapping.

Figure 4 shows how Etruscan used column-based grid. Column-based grid is box shaped today and it can never be seen on final graphical product, only in working process. On finished Etruscan linen book red column-based grid defines only text blocks line or horizontal column-based grid is not preserved. If the Linen book of Zagreb is treated as one page than we talk about Module-based grid, symmetrical module or field-based grid formed by an array of evenly spaced square.<sup>14</sup>

The baseline grid as the graphic foundation upon which a design is constructed provides a guide for positioning elements on the page with accuracy. Although the baseline grid is difficult to achieve by eye alone the Linen book of Zagreb baseline grid is almost full path.

### 1. 5. Alignment, Hyphenation and justification (H&Js), widows and orphans

The text in this example is vertically aligned and ranged right to leave a ragged-left edge. Etruscan writing was from right to left except in archaic inscriptions, which occasionally used boustrophedo,<sup>15</sup> therefore alignment of this book is equal to today's top aligned and right ranged text.

The aim of breaking words, hyphenation, is to produce text blocks that look clean and have no unsightly gaps or rivers. This

15 Pallottino 2003. 447-490.

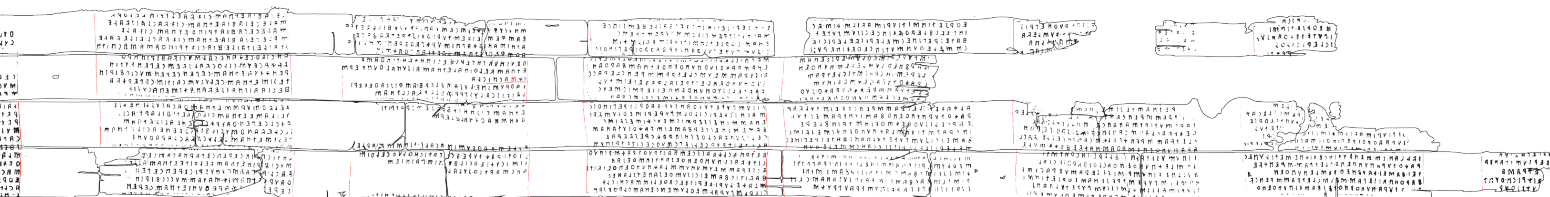
15 Pallottino 2003. 447-490.



u slogovima, izuzev riječi s četiri ili manje znakova koje ne bi trebale biti rastavljane uopće.<sup>16</sup> Uske kolumne čine balansiranje s prevelikim razmacima između riječi i prevelikim brojem crtica uzrokovanim rastavljanjem riječi u bloku teksta. Iz grafičkoga aspekta u primjeru Zagrebačke lanene knjige teško je zaključiti jesu li Etrušćani rastavljali riječi.

„Poravnanje u lijevo tretirajte kao pravilo. Prelamajte riječi samo ako morate. U savršenom svijetu svi bi tekstovi bili tako prelamani. Ova se izjava možda čini drastična, no ako o njoj razmislite, učit ćete kako je to jedini način prijeloma teksta koji omogućuje optimalni razmak između riječi ili slova. Trebalo bi reproducirati tekst s razmakom koji je osmislio tipograf. Ovakvim poravnanjem također čitatelju omogućujete čitkost teksta jer će s lakoćom preći u novi red teksta.”<sup>17</sup>

Razmak između slova dijelimo u tri vrste: prostran, uobičajen i zbijen.<sup>18</sup> Tekst Zagrebačke lanene knjige pripada prostranom tipu prijeloma teksta gdje povećanjem razmaka između riječi razmjerno povećavamo i širinu prostora kolumne i blok teksta činit će se vizualno prozračniji, bjelji. Suprotno tome, redukcijom razmaka između riječi blok teksta biti će siviji što su Etrušćani izbjegavali sudeći po primjeru Zagrebačke lanene knjige.



SL. 4: Stranice/kolumne Zagrebačke lanene knjige

Udovice su dio teksta kojima završava paragraf, a izgledaju kao početak kolumne. Siročići su dio teksta koji se čine kao svršetak kolumne, a zapravo su početak paragrafa koji počinje u sljedećoj kolumni. Iz estetskih razloga izbjegavaju se udovice i siročići u tekstu.<sup>19</sup> Čini se kako je Etrušćanima bila važna ta estetika jer zadnji redovi paragrafa neće završiti točkom ako je taj red ispunjen s dvije trećine ili manje tekстом od cjelokupnoga reda. Čini se kako su Etrušćani radije ostavili da zadnja riječ visi nedovršena u paragrafu nego da definiraju njegov završetak. Sudeći po primjeru Zagrebačke lanene knjige Etrušćani su upotrebljavali klasično uvlačenje pasusa.

is why it is important to control it. Breaking a words should not make the text more difficult to read. Ideally it should be broken between its syllables, except for those words composed of less than four characters which should not be broken at all.<sup>16</sup> The difficulties of setting justified text in a narrow column requires balancing ugly spaces and a rash of hyphens. Are words allowed to break (hyphenate) on Etruscan book is not known.

„As a rule, make left-aligned, unjustified columns. If you have to, hyphenate words. In a perfect world, all texts should be unjustified and range left. This statement might seem a bit extreme but, if you think about it, setting lines without justifying them is the only way to achieve the optimum space between letters and words. At very least, it should be the space that the print’s creator devised. Furthermore, when you range left, you help the reader know where to continue after each line.“ Enric Jardi.<sup>17</sup>

Letter spacing between individual characters is generally divided in three types: loose, normal and tight.<sup>18</sup> First type characterize this Etruscan book, therefore by increasing word spacing proportionally increases the width of these spaces. Increasing word spacing will result in a “whiter” body of text, conversely decreasing it will result in a more solid or grey appearance that Etruscan avoided according to this example.

FIG. 4: The Liber linteus Zagradiensis pages/columns

Widows are lines of text that are the end of a paragraph but appear as the first line in a column. An orphan is a line that appears at the end of a column but is the beginning of a paragraph that begins in the next column. Avoiding widows and orphans in a text is simply an aesthetic issue, as is eluding articles, pronouns, or short words at the ends of lines or leaving letters alone at the end of unjustified compositions.<sup>19</sup> It seems that this esthetic was important for Etruscans because all paragraphs in which last line is only third of the whole doesn’t end with dot like full line does. Therefore, it seems Etruscans rather left last line hanging with few words unfinished than finished it with dot and close the paragraph. Etruscan used traditional indentation to mark paragraph breaks according to the Linen book of Zagreb.

16 Ambrose 2005; Livingston, Livingston 2003.

17 Jardi 2007, 64-101.

18 Ambrose 2005; Livingston, Livingston 2003.

19 Jardi 2007, 64-101.

16 Ambrose 2005; Livingston, Livingston 2003.

17 Jardi 2007, 64-101.

18 Ambrose 2005; Livingston, Livingston 2003.

19 Jardi 2007, 64-101.

## 2. Tipografija

### 2. 1. Medij

Gotovo svaka tipografija oblikovana je za točno određen medij. Sva slova konstruirana su za specifičnu tehniku reprodukcije. Tehnički crtež svakoga slova izrađen je za konvencionalnu tehniku otiskivanja iz doba kada je nastala.<sup>20</sup> Primjerice, gotovo sva slova klasične tipografije (Garamond, Boldoni, Caslon, Baskerville etc.) metalna su pomična slova za knjigotisak na glatkom papiru i uvelike se razlikuju od današnjih preoblikovanih inačica konstruiranih za suvremen *offsetni* tisak. To je bilo stoljeće debelih serifa koji su povećavali izdržljivost tiskovne forme. Adobe Garamond primjer je najpreciznije rekonstrukcije klasičnoga Garamonda u njegovu digitalnu verziju.<sup>21</sup> Robert Slimbach konstruirao je ovu tipografiju na osnovu kataloga Egelhnoff-Berner iz 1592. godine. Odabrao je srednju veličinu slova znajući da je u originalu svaka vrsta u hijerarhiji imala svoju vlastitu konstrukciju. Upravo zbog toga Adobe Garamond može biti pretanak za *offsetni* tisak ako je u pripremi odabir visine slova premalen.<sup>22</sup>

Tipografija se u praksi reproducira u zamjenskim medijima iako nije izvorno oblikovana za taj medij. U ovom slučaju važno je primjetiti da je Zagrebačka lanena knjiga pisana rukom i kao takva je rijedak primjerak teksta koji nije klesan u kamenu.<sup>23</sup> Stoga su uočljive razlike uspoređujući tipografiju Zagrebačke lanene knjige i klasično rekonstruiranih slova s nadgrobnih spomenika.

Na području nekadašnje Etrurije pronađeno je oko 9000 natpisa (na kamenu, lončariji, bronci, olovu, zidu, etc...) No, *Zagrebačka lanena knjiga* jedini je očuvani rukopis.

### 2. 2. Kategorije

Hijerarhija je vizualno logičan poredak važnosti različitih tekstualnih elemenata koji omogućava organizaciju unutar teksta. Pravilnim odabirom hijerarhije tekst će postati jasan, jednoznačan, a time i čitak.

U tipografiji, manje nije uvijek više, no taj se moto preferira. Upotreba različitih vrsta slova daje u konačnici i više značenja, kontrasta, ritma, simetrije i pravaca. U ovom primjeru Etruščani upotrebljavaju samo jednu tipografiju, veličinu i debljinu slova. Stoga je Zagrebačka lanena knjiga tipografski jednoznačna po hijerarhiji te prijelom nije nezgrapnan i zbunjujući, već nedvosmislen i jasan.

## 2. Typography font

### 2. 1. Medium

Almost all typefaces were devised for a specific medium. Every alphabet was designed to be reproduced using a specific technique. The drawing of each alphabet is meant for the most common medium at its time of creation and some of them are versatile for more than one medium.<sup>20</sup> For example, nearly all of the classics of typography (from Garamond to Boldoni, through Caslon or Baskerville) were originally metal movable types that were printed downward on smooth paper with very different results from those we get now in offset printing. Century, with thick serifs and lower contrast than its forerunners, was meant to hold up to rotary printing presses. Adobe Garamond is example of the most accurate digital version of the historical Garamond that now exist.<sup>21</sup> His creator Robert Slimbach designed it from the Egelhnoff-Berner catalog from 1592. He used intermediate size as a solution to update a historic typeface knowing that when it was used, different body sizes had different drawings. But because of that, Adobe Garamond can also be too weak or too fine for small bodies of text to be printed on an offset printer.<sup>22</sup>

Typefaces have been used primarily in different media from that they were meant for. In this case it is important to think how the Linen book of Zagreb typeface was painted by hand and how this is also rare example of Etruscan inscription that wasn't carved in stone.<sup>23</sup> Therefore typeface differences are noticed comparing typography design of this example and regular shaped letters reconstructed from tombstones.

As mentioned above, in the Etruria itself, roughly matching the modern Tuscan, almost 9,000 inscriptions (on stone, pottery, bronze, lead, on walls and so on) were discovered. However, by far the longest and most important written document, in fact the only existing Etruscan manuscript that can be regarded as a "book" is the Zagreb document - already mentioned as written on the linen wrappings of Egyptian mummies.

### 2. 2. Categories

Hierarchy is a logical and visual way to express the relative importance of different text elements by providing a visual guide to their organisation. A text hierarchy helps make a layout clear, unambiguous and easier to digest.

In typography, less is not always more, but it does tend to be preferable. Since more characters means more vocals, contrast, rhythm, symmetry, or movement can be achieved by increasing the number of divergent characters. Etruscan used only one typeface, weight and body size in this example. Therefore, The Linen book of Zagreb typography has only one vocal in design. Because of this, the Etruscan book is not awkward and confused, but unambiguous and straightforward.

20 Jardi 2007, 64-101.

21 ibid.

22 ibid.

23 Pallottino 2003. 447-490.

20 Jardi 2007, 64-101.

21 ibid.

22 ibid.

23 Pallottino 2003. 447-490.

Mnogo je suvremenih primjera tipografije rekonstruirano po uzorku rukopisa. Serifi i ovalne linije umjesto kružnih čest su pokazatelj takve vrste tipografije. Najstroža razlika u tipografiji jest serifna i neserifna. Serifna tipografija kaligrafskoga je karaktera: debljina linije varira kao da je slovo pisano perom. Mnoge odišu duhom vremena, dok nalazimo i diskretnije i rafiniranije primjere ove vrste tipografije. Serifnu tipografiju klasificiramo u četiri kategorije: *old style*, klasičan, moderan i tablični<sup>24</sup> te četiri osnovna tipa serifa: konzola, vrlo tanki potez, tablični i *wedge*.<sup>25</sup> Mnogi neserifni primjeri tipografije monolitni su zbog relativno ujednačene debljine linije i kategoriziramo ih u tri različita tipa: *grotesk*, *humanist* i geometrijsko.<sup>26</sup> Tipografija Zagrebačke lanene knjige najbliže se podudara s tipom *humanist*. Karakteristike tipografije *humanist* jesu izostanak serifa, slova su oblikovana bez velikih varijacija u debljini linije koja je ujedno i ovalnoga karaktera, a tom opisu odgovara tipografija Zagrebačke lanene knjige.

Kroz povijest tipografije struktura i detalji oblika slova modificirani su od tipografa bez ikakvoga opravdanja. Svatko je volio dodati individualnu inovaciju pojedinom slovu, zbog čega danas i razlikujemo toliko različitih tipografija. U današnjoj praksi, ako jedno slovo detaljem odstupa od standarda, nije preporučljivo za primjenu u dužim tekstovima jer će zbuniti čitatelja.<sup>27</sup> Manuskript Zagrebačke lanene knjige sadrži takva slova i stoga je tipografija Zagrebačke lanene knjige u ovom istraživanju razmatrana kao tipografija s prekomjerenim slovima, a ne kao rukopisna slova.

### 2. 3. Razrada tipografije Zagrebačke lanene knjige

U Arheološkom muzeju u Zagrebu snimljeno je 937 uzoraka slova prijenosnim svjetlosnim mikroskopom (Dino-lite AM413T, 10-50x/200x) i obrađeno u programu *OriginPro* 8.5 po etrurskoj abecedi: *a*(80), *c*(50), *e*(86), *v*(34), *z*(32), *h*(38), *θ* (*th*) (44), *i*(82), *l*(64), *m*(23), *n*(63), *p*(35), *ś*(14), *r*(51), *s*(38), *t*(41), *u*(71), *φ* (*ph*)(10), *x* (*kh*) (53) i *f*(28). Oblik svakoga pojedinačnoga slova definiran je obradom podataka u programu *OriginPro* 8.5 na temelju liste zadanih točaka dobivene alatom Philippea Thévenaza *PointPicker* programa *ImageJ*.<sup>28</sup> U Sl. 5 predstavljeno je 10 odabranih uzoraka svakog pojedinog slova etrurske abecede. Pritom je potrebno naglasiti kako je pigment sačuvan gotovo samo na mjestima veznih točaka platnenoga veza.

Arhaiskim natpisima pripadaju slova *r*, *u*, *φ* (*ph*) i *x* (*kh*), a mlađim natpisima pripadaju slova *z*, *h*, *m*, *n* i *t*. Rezultati dobiveni obradom podataka na 10 odabranih uzoraka pokazuju kvačicu i uzlazni potez slova *a*, te nagib spajajuće crte i karakteristič-

Many of the characteristics of type are based on the characteristics of handwriting, given that letterforms were originally written. To this day, some of these innate human characteristics are evident, such as serifs or designing with ovals instead of circles. The least fine-grained distinction of type design is between serif and sans serif typefaces. Serif fonts are calligraphic in nature; the width of their strokes varies as if someone were drawing each letter with calligraphic pen with a wide and flat nib. Many serif styles reflect the zeitgeist of a particular time, with some more ornate or bolder, while others are more discreet and refined. The classifications of serif fonts are: old style, transitional, modern and slab.<sup>24</sup> There are also four main types of serif: bracketed, hairline, slab and wedge.<sup>25</sup> Many sans serif fonts are usually monolith because their strokes are relatively fixed-width and they can be divided into three broad categories: grotesque, humanist and geometric.<sup>26</sup> Typeface of the Linen book of Zagreb is closest to humanist category. Humanist characteristics of sans serif fonts are greater variations in stroke widths and designing with ovals instead of circles [8] which are also characteristics of Etruscan typeface in this example.

The shape of the letterforms, both in their structure and in their details, has been modified over time without any justification. Throughout history, all of the creators of letters have enjoyed adding little personal innovations that have made way for the present and extraordinary variety of typefaces. In practice today if there is one letter in an alphabet that stands out that typeface is not made for longer text because it will distract readers.<sup>27</sup> The Linen book of Zagreb handwriting contains such letters, therefore although the Linen book of Zagreb is manuscript in this study handwriting is treated as typeface with superfluous characters (attention-drawing characters) and not as script.

### 2. 3. Elaboration of the Linen book of Zagreb typography font

Experimental samples for typography font analysis were letters from the Linen book of Zagreb measured in Archaeological Museum in Zagreb with Digital Microscope (Dino-lite AM413-T, 10-50X/200X) and 937 letters were studied in 2017/2018 according to Etruscan alphabet: *a*(80), *c*(50), *e*(86), *v*(34), *z*(32), *h*(38), *θ* (*th*) (44), *l*(82), *l*(64), *m*(23), *n*(63), *p*(35), *ś*(14), *r*(51), *s*(38), *t*(41), *u*(71), *φ* (*ph*)(10), *x* (*kh*) (53) i *f*(28). Remained ink particles on the textile writing surface were calculated in scientific image analysis program *ImageJ* with Philippe Thévenaz's tool *Point Picker*<sup>28</sup> for ten measurements of each letter of Etruscan alphabet. These results were analyzed by Technical Graphic *Origin* 6.0 Professional and results are presented in Fig. 5.

Glyphs of archaic inscriptions are: *r*, *u*, *φ* (*ph*), *x* (*kh*) and glyphs from late alphabet are: *z*, *h*, *m*, *n* and *t*. Glyph *a* has no major diagonal stroke as usually letters *A* or *V* has, but it has diagonal crossbar that bonds one oval curve which shapes glyph from

24 Julien 2012, 7-195.

25 Livingston, Livingston 2005.

26 Julien 2012, 7-195.

27 Jardi 2007, 64-101.

28 Ferreira, Rasband 2012, 36-37.

24 Julien 2012, 7-195.

25 Livingston, Livingston 2005.

26 Julien 2012, 7-195.

27 Jardi 2007, 64-101.

28 Ferreira, Rasband 2012, 36-37.

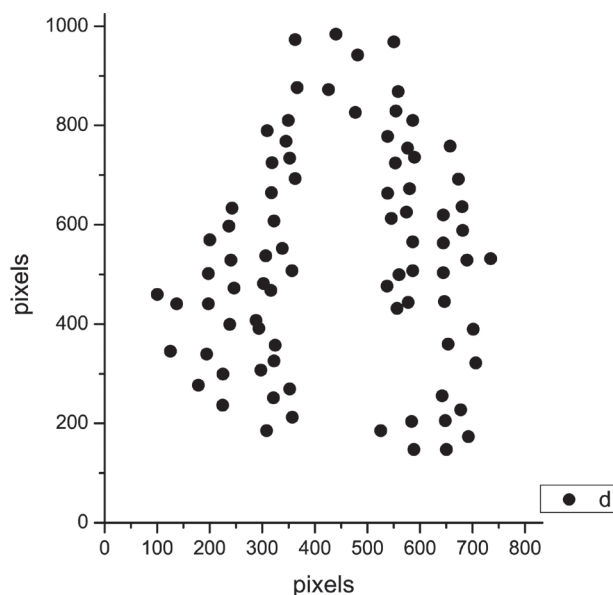


SL. 5: Tipografija Zagrebačke lanene knjige dobivena ujedinjenjem 10 uzoraka slova obrađenih alatom *Point Picker* u program *Image J*.

FIG. 5: Typography font of the Linen book of Zagreb gained by combining 10 dot samples calculated with *Point Picker* in program *Image J*.

no oblikovanu krivulju spajajućega poteza (*spine*) slova *c*. Oble konture slova *e* napisanoga iz dvaju poteza u kojem prvi nalikuje na slovo *c* s pomakom spajajućeg poteza po vertikalnoj osi, a drugi na etrursko slovo *p*. Ovako oblikovano slovo *e* komplicira definiranje temeljne linije jer je u suvremenoj tipografiji slovo *e* definirano ravnom donjom linijom koja sjedi točno na temeljnoj liniji, dok se druga slova protežu ispod ili iznad nje. Ova je os konstanta u tipografiji i od elementarne je važnosti za poravnane redova teksta. Rezultati mjerenja slova *v* pokazuju kvačicu uz uzlazni potez koji se nastavlja na oblu krivulju spajajućega poteza koji završava ravnim potezom. Spajajući potez te krivulje naslonjen je na ravan temeljni potez slova. Slova *e* i *v* ekstremno se razlikuju od klasične rekonstrukcije slova.<sup>29</sup> Ravan i vertikalni temeljni potez slova *z* nosi dvije poprečne crte pod nagibom. Slovo *h* karakteriziraju dva ravnopravna ravna temeljna poteza, od kojih prvi završava kvačicom, a drugi počinje. Kosinu kvačica prati kosina spajajućeg poteza. Eliptičnost slova  $\theta$  (*th*) povećava se u unutrašnjoj bjelini slova zbog zadebljanja linije desnoga poteza. Slovo *i* karakterizira ravan i temeljni potez, a ravan i vertikalni temeljni potez slova *l* ne završava silaznim potezom i kvačicom, već završetak temeljnog poteza nosi

spur terminal as superfluous character on the left to the major vertical stroke (stem) on the right side of the glyph. Counter space, the open space in a fully or partly closed area within a glyph, is small because of stroke thickness. Glyph *c* is made out of one oval curve. Top and bottom arms of glyph *e* are carried out of one oval stroke. Second stroke of that glyph creates diagonal middle arm connected to the stem. This glyph is extremely divergent from other examples of letter *e*<sup>29</sup> because usually this glyph is made out of four strokes, three diagonal arms connected to stem with descender. Both arms of letter *v* are made out of one curve connected to the stem. This example is also different because oval stroke replaces usual diagonal arms made out of two strokes. Glyph *z* has two diagonal strokes that cross stem stroke in the middle of their length. Left stem with ascender is connected to right stem with descender through three diagonal crossbars of glyph *h*. These superfluous characters as ascender and descender of glyph *h* make this letter divergent from other examples [3]. Counter is again small because of stroke thickness. Glyph  $\theta$  (*th*) is made out of one oval calligraphic curve without slant angle and that is the indicator for regular font family. One straight vertical line makes stem and the only



SL. 6: Potencijalno slovo *d* pročitano kao *p* Zagrebačke lanene knjige.

FIG. 6: Potential glyph *d* read as *p* of the Linen book of Zagreb.

poprečnu crtu pod nagibom. Rezultati obrade podataka na 10 odabranih uzoraka slova *m* i *n* pokazuju ravnu vertikalnu liniju temeljnog poteza na koji se nadovezuje kvačica s uzlaznim potezom koji završava ravnim silaznim potezom i preuzima ulogu temeljnoga poteza koji nosi identičnu krivulju u slučaju slova *m*. U suvremenoj tipografiji bismo ovako oblikovana slova *m* i *n* nazvali kurentnim slovima. Slovo *p* karakterizira kvačica uz uzlazni potez koji se nastavlja na oblu krivulju spajajućeg poteza koji završava ravnim temeljnim potezom. Slovo je  $\mathcal{S}$  oblikovano iz jednog poteza koji sadrži dva uzlazna poteza. Rezultati mjerenja na 10 uzoraka slova *r* pokazuju ravan i vertikalni temeljni potez koji nosi krivulju s oblim potezom. Dok rezultati dobiveni obradom podataka na 10 uzoraka slova *s* pokazuju krivulju s iskrivljenjem obloga poteza (*spine*) sa završnom oblinom.

stroke of glyph *i* while similar stem of glyph *l* is connected at the bottom of line with the end of diagonal crossbar. Three stems are sharply connected with two diagonals in glyph *m* and two stems are sharply connected with one diagonal in glyph *n*. One oval curve with spur terminal as superfluous character on the left ends as straight stem on the left side of glyph *p*. Glyph  $\mathcal{S}$  is shaped out of one curve that creates three stems with two round ascenders that are divergent from usual sharp junctions [3]. Lobe and stem makes glyph *r*, one curve glyph *s* and glyph *t* is made out of straight stem crossed with diagonal crossbar on its center. Glyph *u* is made of one short straight stem connected with the middle of curve with ascender on the left side and spur terminal on the right side of the glyph *u*. Superfluous characters of glyphs *u* and  $\phi$  (*ph*) are atypical [3]. Vertical

Ravan i vertikalni temeljni potez koji nosi poprečnu crtu pod nagibom slova *t* u suvremenoj tipografiji bismo nazvali kurentnim slovom. Ravan i vertikalni temeljni potez slova *u* koji nosi krivulju s uzlaznim potezom na svom lijevom svršetku i završnu oblinu na desnom karakteriziramo prekomjernim slovom. Rezultati obrade podataka na 10 uzoraka pokazuju ravan i vertikalni temeljni potez slova  $\phi$  (*ph*) sa završnom oblinom koji nosi eliptičnu krivulju. A ravan i vertikalni temeljni potez slova  $\chi$  (*kh*) nosi poprečnu crtu čiji završetak nalikuje na kvačicu u smislu dijakritičkoga znaka s pomakom vrha od temeljne linije. Posljednje slovo etruske abecede *f* oblikovano je iz jednog poteza koji počinje i završava na sjecištu krivulje.

Od svih slova pročitanih kao slovo *p* izdvaja se jedan primjerak koji nalikuje na slovo *d*. Sudeći po samo jednom uzorku teško je reći radi li se o grešci pri pisanju ili je riječ o rijetko upotrebljavanom slovu (Sl. 6). Abecedu slova (20+1) karakterizira regularna tipografija bez značajne razlike u debljini linije. Izdvajaju se prekomjerna slova: *a*, *h*, *u* i  $\phi$  (*ph*), dok su oblo oblikovana slova *e*, *v* i *p*.

Kompleksnija matematička analiza omogućit će preciznije definiranje detalja pojedinih slova za konstruiranje digitalne verzije tipografije Zagrebačke lanene knjige.

straight stem with leg carries elliptical curve in glyph  $\phi$  (*ph*) and vertical straight stem carries two diagonal strokes reflected to each other and dislocated from the center according to stem position in glyph  $\chi$  (*kh*). And finally, one curve that starts and ends at its intersection makes glyph *f*.

Figure 6 shows letter read as *p* and this glyph indeed is made out of one oval curve with spur terminal as superfluous character on the left ends and straight stem on the left side as glyph *p* usually has, but it can be also treated as potential glyph *d* as unique sample in this book because curve is elongated on the left side which is typical for suggested glyph.

Those glyphs (20+1) are characterized as regular family font with no significant difference in stroke thickness. Those glyphs has superfluous characters as ascender and descender of glyph *h*, spur terminals in glyphs *a* and *u*, round ends in glyphs *e*, *v* and *p*, and tail was found as terminal in glyph  $\phi$  (*ph*), therefore typography font of the Linen book of Zagreb is treated as typeface with superfluous characters since those glyphs are not decorated with serifs.

More complex math analysis can provide more accurate results about those glyphs, therefore further measurements and calculations at digital photography with high resolution are necessary to construct digital typeface of typography font of the Linen book of Zagreb.

	VISINA SLOVA / GLYPHS HEIGHT	PRORED / LEADING	POMAK TOČKE OD TEMELJNE LINIJE / BASELINE SHIFT OF DOTS	RAZMAK IZMEĐU SLOVA / LETTER SPACING
DIMENZIJA / SIZE (mm)	7 ±0,5	9,9 ±0,6	2,8 ±0,3	2,9 ±0,6

TAB. 1: Parametri bloka teksta dobiveni na temelju 10 odabranih uzoraka slova.

TAB. 1: Character measurements (10 samples).

Rezultati određivanja parametara bloka teksta predstavljeni su u Tablici 1. Važno je naglasiti da je prored računat kao zbroj visine slova i bijeloga prostora između dvije linije paragrafa. S obzirom na to da su riječi odvojene točkom, vertikalni pomak točke od temeljne linije određen je i predstavljen u tablici, dok je bijeli prostor između dvaju slova definiran kao razmak.

Character measurements are presented in Table 1. It is necessary to point out how leading is calculated as sum of glyphs height and white space between two lines of paragraphs. Since characters are separated by a dot, vertical movement of dot according to the baseline is calculated and presented as baseline shift of dots in Table 1. Since kerning is not defined letter spacing in this case represents literally white surface between characters.

### 3. Zaključak

U ovom je radu etrurska knjiga po prvi put profesionalno analizirana iz aspekta grafičke tehnologije i oblikovanja te je istraživanje dovelo do sljedećih zaključaka:

- Suvremene vanjske margine imaju tendenciju sužavanja i takve uočavamo u primjeru Zagrebačke lanene knjige ako je razmatramo kao prijelom od 12 ili više stranica, iako je tradicionalno vanjska margina bila dvostruko šira od unutrašnje.
- Na temelju propadanja tekstilnoga materijala prema lijevoj strani svih 5 traka može se zaključiti o relevantnosti zapisa pri likom mumificiranja jer su trake namatane paralelno na Zagrebačku mumiju;
- Hijerarhija elemenata stranica/stupaca provedena je odvajanjem blokova teksta i međunaslova bijelim prostorom, što danas preporučuju tipografi za razliku od donedavno upotrebljavane tipografske hijerarhije.
- Crvena mreža stupaca teksta Zagrebačke lanene knjige ograničava samo širinu blokova teksta ili horizontalna crvena linija mreže stupaca koja bi ograničila visinu blokova teksta nije očuvana.
- Cca 30 tipografskih znakova u redu bloka teksta premalen je broj zbog čega čitatelj prečesto prelazi u novi red čitanja.
- Tekst je poravnat u desno, što rezultira neporavnatim lijevim blokom teksta, no takav način čuva preglednost tipografije i danas je preporučljiv.
- Povećana bjelina između tipografskih znakova čini blok teksta prozračnijim.
- Slova e i v atipičan su primjer tipografskih znakova, uspoređujući ih s preostalim očuvanim primjerima etruskoga alfabeta.
- Prekomjerna slova a, h, u i φ (ph) primjer su individualnoga zapisa pojedinca.

### 3. Conclusion

This study has provided several conclusions:

- Today the outer margins tend to be narrower as Etruscan linen book, although traditionally the outer margin was twice as wide as the inner margin
- Increase of deterioration from left to right side of all five textile strips indicate how inscription was important factor during wrapping because they were parallelly wrapped.
- Typographic hierarchy of the Linen book of Zagreb is accomplished with blank space which is recommended today unlike traditionally used different versions and sizes of the same font family.
- Red column-based grid of the Linen book of Zagreb defines only text blocks line or horizontal column-based grid is not preserved.
- The columns of text are too narrow, ca 30 characters per line, and the reader constantly has to jump from line to line.
- The text is vertically aligned and ranged right to leave a ragged-left edge, therefore text is unjustified and the optimum space between letters and words is achieved.
- Loose letter spacing between individual characters characterize this Etruscan book, therefore increasing word spacing proportionally increases the width of these spaces and increasing word spacing is resulting "whiter" body of text.
- Combined arms of glyphs e and v into one curve are atypical examples of those letters in Etruscan known alphabet.
- Superfluous characters of glyphs a, h, u and φ (ph) are personal innovations that have made variety of typography font of the Linen book of Zagreb.

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Brončana statueta ženu u dugoj haljini pripijenoj uz tijelo, s dugačkom kosom i pokrivalom na glavi 7.-6. st. stare ere (AMZ).

A bronze statuette of a long-haired female with a covered head, wearing a long dress; 7<sup>th</sup> – 6<sup>th</sup> century BC (AMZ).



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[www.kikirpa.be](http://www.kikirpa.be)

University of Cambridge  
Dr. Margarita Gleba  
The McDonald Institute  
Downing street  
Cambridge, CB2 3ER  
United Kingdom

18/12/2019

## RADIOCARBON DATING REPORT

RICH-27920 (leaf) : 2810±24BP

68.2% probability  
995BC (68.2%) 925BC  
95.4% probability  
1030BC (95.4%) 900BC

RICH-27921 (liber linteus B) : 1955±27BP

68.2% probability  
15AD (68.2%) 75AD  
95.4% probability  
40BC (90.6%) 90AD  
100AD ( 4.8%) 130AD

All the best,  
Mathieu Boudin

[Mathieu.boudin@kikirpa.be](mailto:Mathieu.boudin@kikirpa.be)

Parc du Cinquantenaire 1 - BE-1000 Bruxelles  
Jubelpark 1 - BE-1000 Brussel

Tel. +32 2 739 67 11 • Fax +32 2 732 01 05 • E-mail [info@kikirpa.be](mailto:info@kikirpa.be)  
CCP IBAN BE73 6792 0047 5960 • BIC PCHQBE33



Recentno datiranje *Liber Linteusa* obavljeno u Bruxellesu krajem 2019. god. stavlja taj rukopis u 1.-2. stoljeće nove ere. S druge strane lišće iz pogrebne opreme pokazuje se znatno starijim, pa pitanje povezanosti mumije ostaje i dalje dvojbeno.

The recent datation of the *Liber Linteus*, made in Brussels at the end of 2019, dates the manuscript to the 1<sup>st</sup>-2<sup>nd</sup> century AD. On the other hand, the leaves that were regarded as grave goods seem to be significantly older, which means that the answer to the question of their relation to the Mummy remains unclear.



# X PALEORADIOLOGIJA

# X PALEORADIOLOGY

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Mislav Čavka

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Paleoradiologija je znanost čija se aktivnost proteže već kroz tri stoljeća, no i dalje se nije mnogo odmakla od margina istraživanja u arheologiji i antropologiji, najviše zbog nedostupnosti medicinskih aparata arheolozima i antropolozima te zbog manjka stručnoga interesa među radiolozima. Kao datum „rođenja” možemo uzeti 1896. godinu, što je samo tri mjeseca nakon što je Conrad Roentgen otkrio X-zrake, a kada se snimila mumija iz Frankfurtskoga muzeja. Hrvatska se već 1901. pozicionirala na mapi svjetske paleoradiologije kada je Dragutin Gorjanović Kramberger bio snimio fosilne ostatke krapinskoga pračovjeka u Bolnici milosrdnih sestara u Vinogradskoj ulici,<sup>1</sup> što je prvi put da su snimljeni fosilni ostatci u svijetu.<sup>2</sup> Razvitkom kompjuterizirane tomografije (CT-a) 70-ih godina ta se tehnologija počinje primjenjivati i u paleoradiologiji, a 90-ih dolaskom novijih generacija aparata te 2000-ih razvojem softvera otvaraju se nove mogućnosti s virtualnim 3D-prikazom.

Magnetska rezonancija (MR), unatoč činjenici što već 80-ih godina ulazi u kliničku primjenu, zbog drukčijega principa rada ne uspijeva zaživjeti i u paleoradiologiji; MR se naime bazira na rezonanciji iona vodika, koji se u ljudskom tijelu većinom nalaze u molekulama vode, a kod mumije su dehidrirane i ne sadrže vodu. Tek primjenom sekvencije *ultra short echo time* (UTE) 2007. u Zürichu<sup>3</sup> otvara se mogućnost snimanja tzv. suhih mumija (*dry mummies*), a što smo mi u Zagrebu prvi u svijetu ponovili na cijeljoj egipatskoj mumiji; u Zürichu je snimljena peruanska mumija i dijelovi egipatskih mumija.

Paleoradiology is a science with three hundred years of history, but which has still not moved away from the margins of research in archaeology and anthropology, mostly due to the fact that archaeologists and anthropologists do not have access to medical instruments, but also due to the general lack of interest among radiologists. The date of its “birth” is 1896, only three months after Conrad Roentgen discovered X-rays, and when shots were taken of the mummy from the museum in Frankfurt. Croatia positioned itself on the world map of paleoradiology already in 1901, when Dragutin Gorjanović Kramberger took shots of the fossil remains of early humans from Krapina at the Milosrdnih sestara hospital in Vinogradska Street,<sup>1</sup> which was the first time fossil remains were ever shot in the world.<sup>2</sup> Computer tomography (CT) developed in the 1970s, and the technology was immediately introduced into paleoradiology. In the 1990s, new generations of machines were developed, and, in the 2000s, new software was developed that created new possibilities with virtual 3D images.

Despite the fact that it entered clinical use in the 1980s, magnetic resonance imaging (MRI) did not gain popularity in paleoradiology due a different principle of operation. Namely, MRI is based on the resonance of hydrogen ions that are mostly found in water molecules in the human body, and mummies are dehydrated and do not contain water. Only with the application of the Ultra short echo time sequence (UTE) in 2007 in Zurich,<sup>3</sup> the possibility appeared to make scans of the, so called, dry mummies. This was done for the first time in the world on an entire Egyptian mummy kept in Zagreb. In Zurich, scans were taken of a Peruvian mummy and parts of Egyptian mummies.

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1 Gorjanović-Kramberger 1901;31:164–97.

2 Boni ,Ruhli, Chhem 2004; 55:203-10.

3 Rühli, Waldburg, Nielles-Vallespin, Boni, Speier 2007; 298:2618-20.

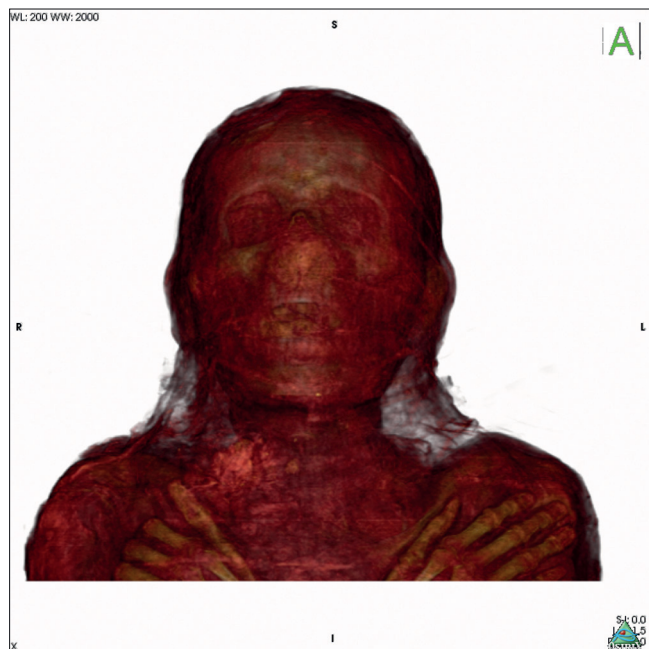
1 Gorjanović-Kramberger 1901;31:164–97.

2 Boni ,Ruhli, Chhem 2004; 55:203-10.

3 Rühli, Waldburg, Nielles-Vallespin, Boni, Speier 2007; 298:2618-20.

U znanstvenom proučavanju mumija u sklopu paleopatologije Zagrebačka mumija nije nepoznata te se spominje u pionirskom djelu znanstvenoga proučavanja mumija,<sup>4</sup> ali više kao zanimljivost da je bila omotana tekstem na etruskom jeziku, a ne zbog

The Zagreb Mummy is not unknown in the scientific research of mummies within the scope of paleopathology. It is mentioned in the pioneer paper on the scientific study of mummies,<sup>4</sup> but more so for the curious fact it was wrapped with an Etruscan text than



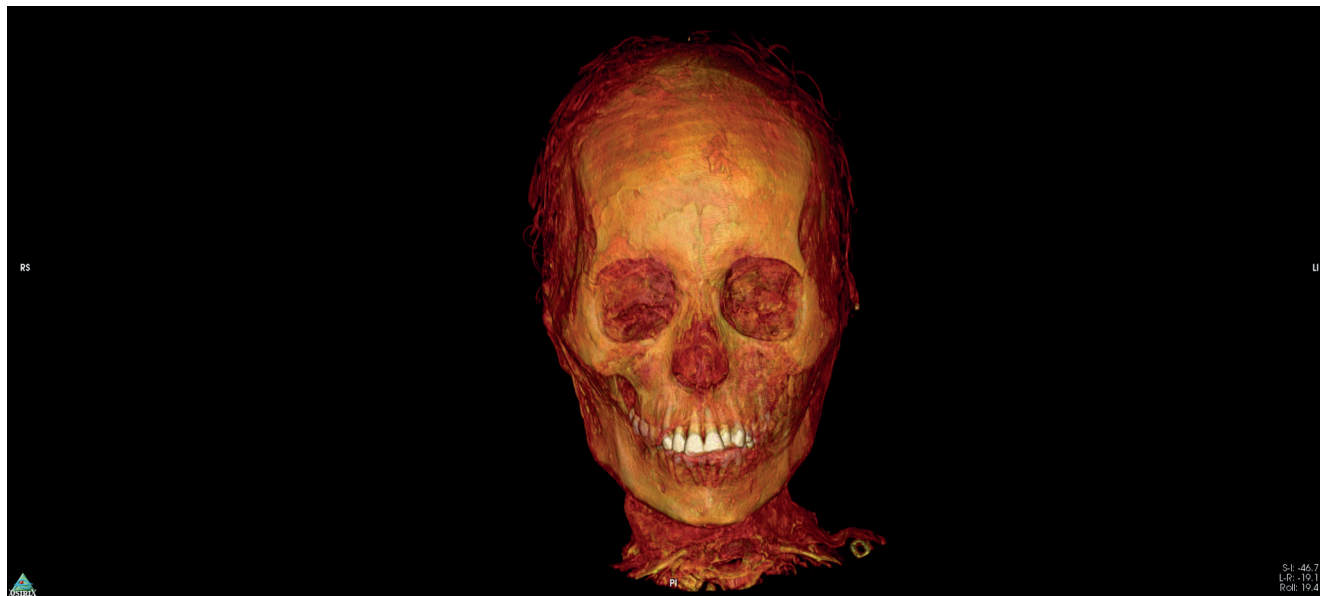
SL. 1: CT Kareset.

FIG. 1: CT of Karaset.



SL. 2: RTG snimak Zagrebačke mumije iz 1986.

FIG. 2: The Zagreb Mummy RTG from 1986.



SL. 3: 3D VRT CT rekonstrukcija, 2012.

FIG. 3: The 3D VRT CT reconstruction, 2012.

paleopatoloških nalaza. Prvi put je RTG-om snimana u siječnju 1986. na Zavodu za radiologiju Kliničkoga bolničkoga centra „Zagreb”,<sup>5</sup> a po usmenim navodima očevidaca (Josip Lučić, razgovor 2018.) snimljen je i CT, no rezultati nikada nisu objavljeni. Na

for its paleopathological finds. The first RTG shots of it were taken in January 1986 at the Institute of Radiology of the “Zagreb” Clinical-medical center.<sup>5</sup> Based on verbal accounts from witnesses (Josip Lučić, interview in 2018), only a CT was made, and

4 Cockburn, Cockburn E. 1980.

5 Plavšić, Hančević 1986;19:99-103.

4 Cockburn, Cockburn E. 1980.

5 Plavšić, Hančević 1986;19:99-103.

temelju RTG-a zaključeno je da se radi o odrasloj ženskoj osobi, opisan je defekt na okcipitalnoj kosti, a na kalvariji su opisana dva metalna strana tijela. Opisane su degenerativne promjene desnoga koljena i lijevoga kuka, brojne postmortalne frakture te se hipotetiziralo o frakturi na kostima zdjelice koja je zarasla za vrijeme života.

Nakon objave tih rezultata prošlo je preko 25 godina do novih istraživanja a za vrijeme kojih su se radiologija i paleoradiologija razvili u dotada nezamislivom smjeru. U svakodnevnu kliničku upotrebu ušli su CT i MR, a cijela je radiologija, uključujući i RTG, digitalizirana. Nakon obrade tzv. Pete mumije, gdje smo opisali neke vrlo rijetke artefakte<sup>6</sup> te prvi u svijetu upotrijebili endoskopiju pod kontrolom CT-a,<sup>7</sup> i obrade mumije ranije poznate pod imenom Kareset, kada smo prvi u svijetu upotrijebili MR u diferencijalnoj dijagnozi kod znanstvenoga proučavanja mumija,<sup>8</sup> pristupili smo ponovnoj radiološkoj analizi, što je objavljeno u mojoj doktorskoj disertaciji<sup>9</sup> te na 7. europskom kongresu egipologa,<sup>10</sup> a dijelom i u katalogu izložbe *Mumije – znanost i mit*.<sup>11</sup> U navedenoj disertaciji je opisan i postupak remumifikacije:

*Mumija je restaurirana na prijelazu iz 1997. u 1998. godinu, a zbog kasnije rasprave smatram da je korisno pobrojati materijale korištene kod restauracije (tj. ponovne mumifikacije). Stručnjak za restauracije mumija iz Vatikanskih muzeja, Nazzareno Gabrielli, mumiju je najprije dezinficirao 20 postotnom otopinom formalina u 70 posto alkohola, a zatim 5-postotnim benzalkonijevim kloridom u smjesi petroletera i terpentina u omjeru 1:1. Za raskuživanje od insekata, jajašca te ličinki tijelo je zatvoreno u kutiju te je pušten plinoviti formaldehid. Potom je učvrstio talokruralne zglobove i koljena tako da je prvo omekšao kožu s hidratantnom emulzijom na bazi linolske i linolenske kiseline, glicerina i vode, a zatim je zamotao u parafinsku plastičnu foliju, potom je u zglobove injicirao 50-postotnu otopinu poliestera u stirenu, kataliziranu metil etil keton peroksidom i ubranu kobalt naftenatom. Nakon što je s tijela uklonjena kolofonska smola otopinom petroleja i etera, tijelo je rehidrirano s emulzijom nezasićenih masnih kiselina, glicerina i vode te postavljeno u stakleni sanduk s uključenim protokom toplog zraka kako bi tvari lakše prodrle u tkivo. Defekti na koži popunjeni su mješavinom djevičanskoga voska, kolofenske (prirodne) smole, palminoga (Karnauba) voska i terpentina u jednakom omjeru. Dva veća defekta; na gornjem toraksu, odnosno na lijevom hemitoraksu najprije su prekrivena pergamentom i nakon toga ispunjena gore opisanom smjesom. Na licu se prije injiciranja smjese upotrijebila kao baza 20-postotna otopina etil metakrilata u toluenu radi lakšega prijanjanja kože uz podlogu. „Zlatna zvijezda” na čelu je učvršćena poliesterom smolom. Mumija je ponovno mumificirana smjesom razvijenom 1980-ih koja se često koristila za mumifikaciju tijela svetaca. Sastojci otopine jesu: etilni alkohol 42–50%, fenol 8%, kreozot 3–5%, benzoična kiselina 10%, terpenin 25%, nitrobenzen 5% i paradiklorometakrezol 5%. Koštano tkivo učvršćeno je pedeset-*

the results have never been published. Based on the RTG, it was established that the body belonged to a grown woman with a defect on the occipital bone and two metal foreign bodies on the scalp. The descriptions also include degenerative changes on the right knee and the left hip, numerous post mortal fractures, as well as a possible fracture on the pelvis that might have started growing back during her life.

More than 25 years went by after those results were published, and radiology and paleoradiology had, in the meantime, developed in previously unimaginable ways. The CT and the MRI entered everyday clinical use, and all of radiology, including RTG, was digitalized. After processing the, so called, Fifth mummy, where we described some very rare artefacts,<sup>6</sup> and were the first in the world to use CT-guided endoscopy,<sup>7</sup> and after being the first in the world to use an MRI on the mummy known as Kareset to make a differential diagnosis within the scientific study of mummies,<sup>8</sup> we made another radiological analysis, as published in my doctoral dissertation,<sup>9</sup> presented at the 7<sup>th</sup> European Conference of Egyptologists,<sup>10</sup> and partially published in the “Mummies – science and myth” exhibition catalogue.<sup>11</sup> The mentioned dissertation includes the description of the re-mummification process:

*The mummy underwent restoration at the transition from 1997 to 1998. Due to the following discussion, I feel that it is useful to record all the materials used in the restoration process (i.e. the re-mummification). Nazzareno Gabrielli, an expert on the restoration of mummies from the Vatican Museums, disinfected the mummy with a solution of 20% formalin in 70% alcohol, then with a solution of 5% benzalkonium chloride in petroleum and turpentine in a 1:1 ratio. To disinfect it from insects, eggs and larvae, the body was closed in a box and gas formaldehyde was introduced. The expert then stabilized the talocrural joints and the knees by softening the skin with a hydrating emulsion on the base of linoleic and linolenic acid, glycerin and water. The area was then wrapped in paraffined plastic foil. He then injected the joints with a 50% solution of polyester in styrene that was catalyzed with methyl ethyl ketone peroxide and accelerated with cobalt naphthene. After the colophene resin was removed from the body with the help of an emulsion of unsaturated acid oils, glycerin and water, the body was placed into a glass container with warm air circulation in order for the substances to penetrate the tissues more easily. The lacerations on the skin were filled in with an equal part mixture of virgin wax, colophene (natural) resin, palm (carnuba) wax and turpentine. Two larger lacerations, on the upper thorax, i.e. the left hemithorax, were first covered with a parchment base, and then filled with the described mixture. Before the injecting of this mixture to facial tissues, a 20% solution of ethyl methacrylate in toluene was injected to make the skin adhere to the substratum. The “golden star” on the forehead was attached with polyester resin. The mummy was*

6 Čavka, Janković, Rajić, Šikanjić, Tičinović, Radoš, Ivanac, Brkljačić 2010; 34:797-802.

7 Čavka, Petaros, Boščić, Kavur, Janković, Despot, Trajković, Brkljačić 2012; 32:2151-2157.

8 Čavka, Petaros, Ivanac, Aganović, Janković, Reiter, Speier, Nielles-Vallespin, Brkljačić 2012; 36:281-286.

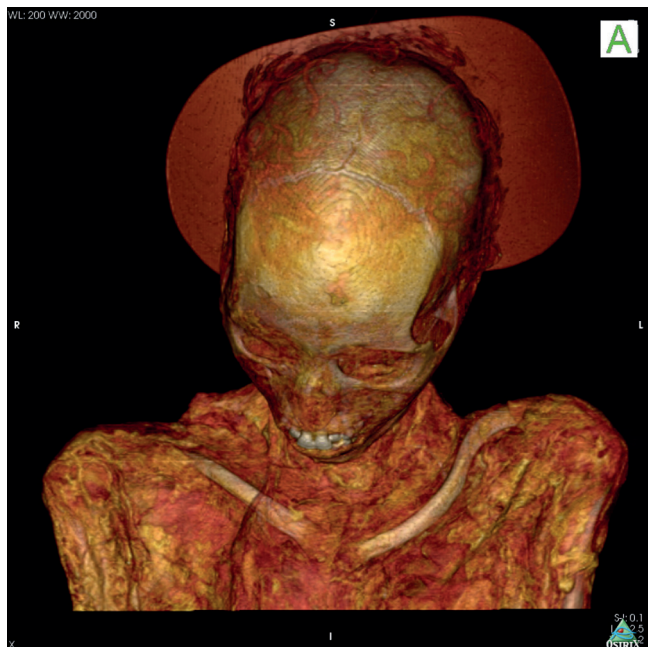
9 Čavka 2013.

6 Čavka, Janković, Rajić, Šikanjić, Tičinović, Radoš, Ivanac, Brkljačić 2010; 34:797-802.

7 Čavka, Petaros, Boščić, Kavur, Janković, Despot, Trajković, Brkljačić 2012; 32:2151-2157.

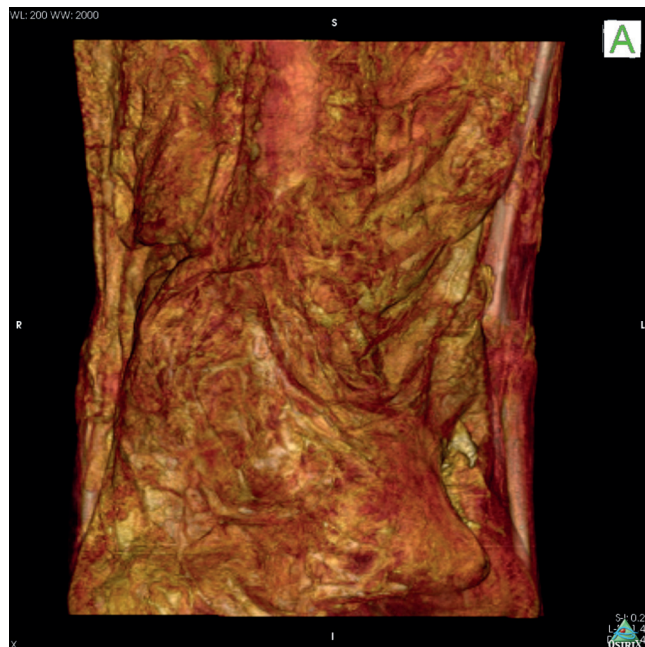
8 Čavka, Petaros, Ivanac, Aganović, Janković, Reiter, Speier, Nielles-Vallespin, Brkljačić 2012; 36:281-286.

9 Čavka 2013.



SL. 4.1: 3D VRT CT rekonstrukcija, 2012.

FIG. 4.1: The 3D VRT CT reconstruction, 2012.



SL. 4.2: 3D VRT CT rekonstrukcija, 2012.

FIG. 4.2: The 3D VRT CT reconstruction, 2012.

postotnom otopinom poliestera u stirenu, a uz kralježnicu je kao potpora umetnuta traka od konoplje. Podloga od konoplje postavljena je preko cijele stražnje strane tijela. Po završetku konzervacije primijenjena je zaštitna otopina, koja se sastoji od petpostotne otopine paraloidea B/72 (etil metakrilat) u toluenu s 5% lindana te bojanjem titan-bijelom, terra d'ombra i terra verde, a otopini je pridodano i 0,5% silikatnoga praha.<sup>22</sup>

Radiološka obrada zagrebačke mumije ponovljena je 2012. kada je u Kliničkoj bolnici „Dubrava” snimljena na RTG-u, CT-u i MR-u. Na RTG-u i CT-u dokazano je da je mumija excerebrirana transnazalno (transsetmoidalno) te da defekt koji je ranije opisan na okcipitalnoj kosti odgovara razlici u denzitetima uslijed ostatnoga materijala za mumifikaciju (smola ili gips) sl. 2. Slična zabuna nastala je i ranije na temelju snimke Tutankhamunove lubanje iz čega je zaključeno da se radi o frakturi te izvedene razne teorije o smrti, pa čak i ubojstvu, što je poslije opovrgnuto<sup>13</sup>. Potvrđeno je da se radi o odrasloj ženskoj osobi. Navodi o metalu na čelu (Zlatna zvijezda) također su se pokazali kao pogrešni jer se radi o vrlo gustom materijalu za mumifikaciju (smola), koji se natolžio na jednom mjestu na frontalnoj kosti. Glava je u neprirodnom položaju u hiperfleksiji uz frakturu trnastoga nastavka. Anatomske odnose u toraksu i abdomenu u potpunosti poremećeni s prsnom kosti u desnom hemitoraksu, brojnim luksacijama i frakturama rebara te križnom kosti koja je u potpunosti luksirana prema naprijed, a postoje i manje sublaksacije u drugim zglobovima;

re-mummified with a mixture developed in the 1980s, and which was often used to mummify the body of saints. The mixture was composed of: ethyl alcohol (42–50%), phenol (8%), creosote (3–5%), benzoic acid (10%), turpentine (25%), nitrobenzene (5%), and paradichlorometacresol (5%). The bone tissue was consolidated with a 50% solution of polyester in styrene. A hemp sheet was placed along the spine as support, and it covered the entire posterior part of the body. After the process of conservation was over, the body was covered with a protective 5% solution of paralooid B72 (ethyl methacrylate) in toluene with 5% Lindane, and was then dyed with titanium white, terra d'ombra and terra verde. The solution was diluted with 0.5% of microzined silica.<sup>22</sup>

The radiological study of the Zagreb Mummy was repeated in 2012, when it underwent RTG, CT and MRI scans at the “Dubrava” clinical hospital. The RTG and CT scans revealed that the mummy was excerebrated transnasally (transethmoidally), and that the previously described laceration on the occipital bone matches the difference in density caused by extra material used for mummification (resin or plaster) Fig. 2. A similar error had previously occurred based on the scan of Tutankhamun’s skull. Back then, it was thought that it was a fracture, and numerous, subsequently refuted, theories about his death, even murder, appeared.<sup>13</sup> The scans revealed that the body belonged to an adult female. The records of the metal on her forehead (the Golden star), were also proven to be wrong. In fact, it is a very dense material used

10 Cepulić, Čavka, Brkljačić, Petaros 2015 31-32.

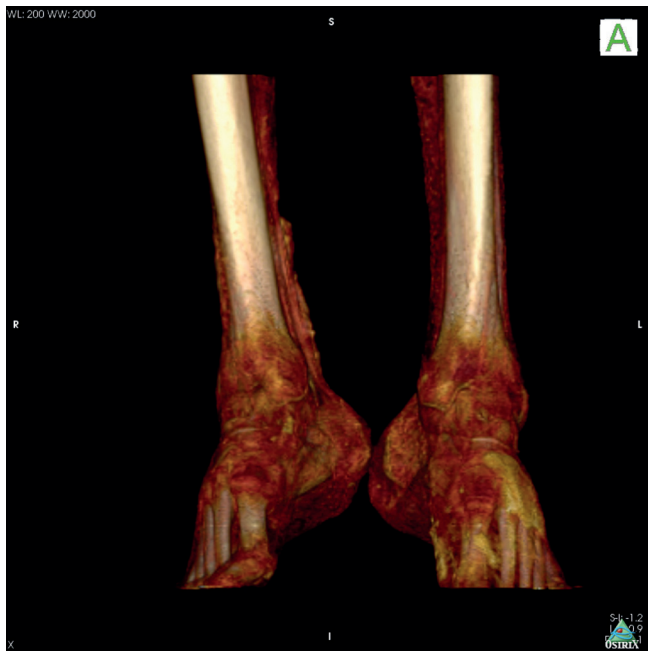
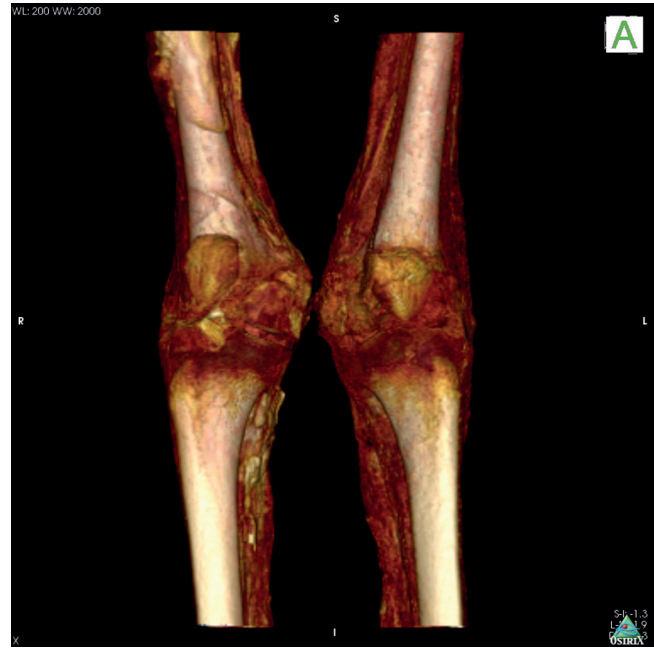
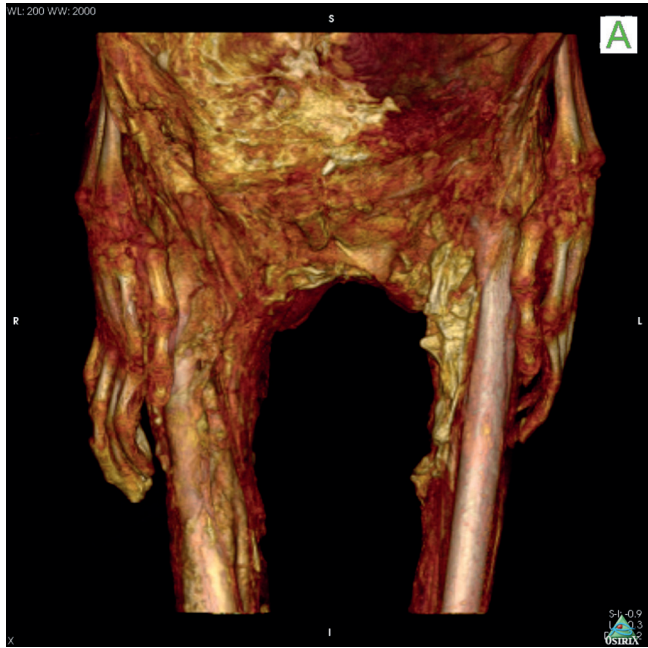
11 Gabrielli N. *Restauriranje Zagrebačke mumije*. VAMZ. 2005;38:128-132.) (Čavka, Mislav. *Radiološka obrada mumificiranih ostataka iz Egipatske zbirke Arheološkog muzeja u Zagrebu / doktorska disertacija*. Zagreb: Medicinski fakultet, 16. 10. 2013.

12 Ruhli FJ, Ikram S. *Purported medical diagnoses of Pharaoh Tutankhamun, c. 1325 BC*. *Homo*. 2014;65:51-63.

10 Cepulić, Čavka, Brkljačić, Petaros 2015 31-32.

11 Gabrielli N. *Restauriranje Zagrebačke mumije*. VAMZ. 2005;38:128-132.) (Čavka, Mislav. *Radiološka obrada mumificiranih ostataka iz Egipatske zbirke Arheološkog muzeja u Zagrebu / doktorska disertacija*. Zagreb: Medicinski fakultet, 16. 10. 2013.

12 Ruhli FJ, Ikram S. *Purported medical diagnoses of Pharaoh Tutankhamun, c. 1325 BC*. *Homo*. 2014;65:51-63.



poput lakta. Sve opisane promjene uzrokovane su postmortalno, a s obzirom na to da ih nigdje ne prate znakovi koštanoga cijeljenja, dijelom su promjene nastale već u starom vijeku (fraktura trnastoga nastavka), a ostale su najvjerojatnije posljedica brojnih manipulacija, od putovanja od Egipta do Austrije 1848., poslije iz Austrije do Hrvatske pa sve do držanja na zidu poput umjetnine.

MR-nalazi zanimljivi su jer možemo pratiti ispadne signala i hiperintenzitete na koži te u nekim zglobovima koji nam daju uvid u remumifikaciju. Taj će nam aspekt istraživanja u budućnosti moći otvoriti nova saznanja u materijale korištene kod mumifikacije, koji su skriveni u tjelesnim šupljinama, a koji su dosada bili nedostupni analizi.

SL. 4.3 – 4.5: 3D VRT CT rekonstrukcija, 2012.

FIG. 4.3 – 4.5: The 3D VRT CT reconstruction, 2012.

in mummification (resin) that had collected at one spot on the frontal bone. The head is in an unnatural position – hyperflexion along the fracture of the spinous process. The anatomical relations in the thorax and the abdomen are completely disturbed – the sternum is in the right hemithorax, there are numerous luxations and fractures on the ribs, the sacrum is completely dislocated to the front, and there are also some minor subluxations in other joints, such as the elbow. All of the described changes were caused post-mortem, seeing as there are no recorded traces of healing on the bones. Some of them were probably created in ancient times (the fracture of the spinous process), and others are probably the result of numerous manipulations, including the voyage from Egypt to Austria in 1848, and later from Austria to Croatia, and keeping it up on the wall as an exhibit.

The MRI scans are interesting because they allow us to track the dropouts of signal and hyperintensities on the skin and some of the joints, thereby providing insight into the re-mummification process. In the future, this aspect of research will allow us to gain new knowledge on the materials which were used in the mummification process, and which are hidden in bodily cavities and have not, so far, been available for analysis.

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**LIBER I MUMIJA**  
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**LIBER AND THE MUMMY**  
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UREDNIK  
EDITOR

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