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A Unique Late-Medieval Cuisse Found near Sisak, Croatia: Analysis, Dating and Determination**

The paper examines a rare late 14th / early 15th century cuisse recovered from the Sava River near Sisak, Croatia, in 1911. Using comparative methodology and typological analysis, supported by historical contextualization, the study proposes a revised date and determination of the object. Particular attention is given to its morphology and decorative elements. Comparisons with extant examples and contemporary depictions in art are used to place the armour within its context of production and use, while also contributing to the assessment of its authenticity.

Keywords: plate armour, leg armour, cuisse, goldsmithing, medieval period, archaeology, aquatic find, Sisak, copper alloy, decoration

Introduction

The discovery of this unique artefact, a piece of well-preserved late-medieval plate armour is a significant addition to a very neglected field of study in Croatia – late medieval archaeology and the study of historical arms and armour in general. The aim of this paper is to make this valuable artefact, preserved in the Croatian History Museum, publicly available for study and further research to

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both scholars and armour enthusiasts alike, as well as to encourage museums to reevaluate their collections and make their lesser-known artefacts available for study. The paper presents a thorough analysis of the artefact through the use of comparative methodology of morphological, decorative and constructive elements, using Dr Goll's typology, known extant examples and depictions of armour in art with the aim of providing a more accurate determination and dating of the artefact. Presented are also the results of research into the provenance and post-excavation history of the artefact, which, combined with the results of the analysis, provide evidence regarding its authenticity. Historical context is presented in brief, regarding the possible place of production as well as the usage of armour on the territory of present-day Croatia and the surrounding area in the late medieval period.

The artefact was found in the Sava River in 1911 during the dredging of rivers in the city of Sisak and its surrounding area. The armour in question is a late 14th / early 15th century cuisse, protection for the upper left leg, trimmed with a copper alloy¹ application with various patterns and gothic decorative "lettering." The cuisse was supposedly found with a piece of similarly decorated shoulder armour which is now lost. Fortunately, the cuisse was preserved, though it had to be "rediscovered" over a hundred years later as it was, at some point in time, incorrectly identified as "protection for the shin" and dated to the 18th / 19th century, suggesting it might have been a replica or a part of a costume.² The functional and morphological features of the cuisse, as well as the decorative elements of the copper alloy application share obvious similarities with extant pieces of late 14th century / early 15th century armour preserved in various museum and private collections, allowing for a more precise analysis, dating and determination of the cuisse and its elements.

The Dredging

The dredging of the Sava and Kupa rivers around Sisak was supervised by the archaeological department of the former National Museum, as they were part of

¹ The term copper alloy is used to refer to the application material in the paper as the specific composition of the metal is still undetermined. Latten was commonly used in the period to decorate armour and other objects however, not all copper alloys used in this context fit precisely within the definition of latten. Copper alloy is a broader term that encompasses any alloy containing copper, whereas latten typically refers to a specific type of copper alloy, a mixture of copper and zinc.

² The artefact was published only once as part of a paper cataloguing freshwater finds from the Croatian History Museum in Dora Bošković, "Slatkovodni nalazi u zbirci hladnog oružja Hrvatskoga povijesnog muzeja u Zagrebu" [Freshwater Finds in the Collection of Edged Weapons of the Croatian History Museum in Zagreb], in *Jurišićev zbornik. Zbornik radova u sjećanja na Marija Jurišića.*, ed. Luka Bekić (Zagreb: Hrvatski restauratorski zavod; Međunarodni centar za podvodnu arheologiju u Zadru, 2009), 121.

a wider infrastructural project which aimed to modernize river ports, reshaping the river bed to allow for larger ships and barges. The National Museum requested to supervise the works in order to save any artefacts which would inevitably be found.³ The cuisse was found in 1911 as part of the dredging which was done each year from 1909 to 1913. What the archaeological department hoped for was the discovery of ancient artefacts from the Roman city of Siscia, now the site of modern-day Sisak. This meant that the ancient Roman artefacts were given priority – made evident by the lack of documentation made for finds which are not related to that period. The archaeological excavations and the dredging were done inside the city itself, the surrounding area, and much further along the Kupa and Sava rivers as the infrastructural project continued along the rivers. The artefacts found during the excavations and dredging, and which found themselves in the Croatian History Museum were all donated by Antun Bukvić,⁴ a trustee of the Archaeological Department who was in charge of supervising the dredging. Antun Bukvić has donated numerous artefacts to the National Museum, of which 29 were added to the Historical Collection of the Archaeological Department. Artefacts which were dated to the period before the 11th century were sent to the Archaeological Collection, and finds dated after the 11th century were sent to the Historical Collection, the predecessor of the Croatian History Museum. Out of 29 total items that Bukvić donated, 25 are now part of the Arms and Armour Collection, while four are preserved in the Collection of Objects from Everyday Life. The finds consist of different types of blades, axe heads, tools, locks, horse riding equipment, sabres, spearheads, war hammers (or war picks) and swords, dated from the 13th to the 19th century.⁵ The cuisse was found in the Sava River near the village Gušće, approximately 20 km south east from the city of Sisak. The only items found at that location are the cuisse and the supposed armour for the shoulder. In 1911, both items were determined as medieval pieces of armour. Regrettably, the shoulder piece is currently missing with no surviving photo-

³ Each time the water level of the rivers would recede, an abundance of artefacts would surface. The National Museum was aware of this since the 1870s. The first dredging started in the 1880s and the archaeological supervision was done by “Siscia,” a volunteer archaeological society together with policemen to prevent theft. The first large scale dredging would begin in 1901 which would then be supervised by the Archaeological Department of the National Museum. The second dredging began in 1909 and the Museum was allowed to expand the dredging if they suspected more artefacts could be found. More dredging followed in 1910, 1911 and in 1912 when the largest number of artefacts were uncovered. This allowed for dredging to be done exclusively for archaeological purposes in 1913. Ivan Radman-Livaja, Vlatka Vukelić, *Blago rijeke Kupe = Thesaurus Colapis fluminis: arheološka istraživanja Kupe kod Siska prije 1. svjetskog rata* [Thesaurus Colapis Fluminis – The Treasure of the Kupa River: Archaeological Excavations of the Kupa near Sisak before WWI] (Zagreb: Arheološki muzej, 2012), 6.

⁴ Antun Bukvić was the head of the river metrology office in Sisak, and since 1909 a trustee of the Archaeological department of the National Museum.

⁵ Six of those artefacts were found in the Kupa River, while 23 were found in the Sava River.

graphs or drawings of the item, except for a brief description in the inventory book which states it was also trimmed with a copper alloy decoration.⁶

The leg harness consists of three main components: the cuisse, which covers the thigh; the poleyn, which protects the knee; and the greave, which shields the shin. The cuisse might include additional plates on the side for added protection or be fully enclosed. The greave could also vary in coverage, covering the front, outer three quarters, or entirety of the leg. The armour for the foot is called the sabaton, basically an iron shoe that covers the top of the foot.⁷ What is still preserved is an almost complete piece of plate protection for the upper left leg, a cuisse. The cuisse is missing a poleyn which would have been attached to the main plate and is possibly the missing part which was confused for shoulder armour. Unfortunately, the piece of armour was overcleaned and over polished at some point during the 20th century and no record of this conservation attempt exists.⁸ This overcleaning has likely removed important information, possibly the makers mark, which could have still been discernible if the item was properly conserved.⁹ The polished appearance may raise suspicions on first glance that the item is not genuinely medieval. Such caution is welcome as there is always danger of falling for forgeries. However, being dredged from a river by museum and archaeology professionals in 1911 begs the question, why and how would a high-quality decorative replica find itself submerged near a small village in Croatia? While it is possible replicas could have been planted for archaeologists to

⁶ The artefact's description in the Croatian History Museum's first inventory book states: "Dijelovi konjaničkoga oklopa (od l. bedra i l. ramena), od željeza, obrubljeni ornamentiranim mjedenim pločicama. Srednji vijek." [En. "Parts of a horseman's armour (from l[eft] thigh and l[eft] shoulder), made of iron, trimmed with brass ornamented plates. Medieval."]. Croatia– Croatian History Museum, Zagreb (hereafter CHM) – CHM documentation, Inventar arheološkog odjela narodnoga muzeja u Zagrebu. Historička zbirka, inv. no. 1859, 235.

⁷ Nickolas Dupras, "Armourers and their Workshops. The Tools and Techniques of Late Medieval Armour Production," vol. 1 (PhD diss., The University of Leeds, 2012), 16–18.

⁸ Some of the other medieval items in the collection, most notably the bronze mace heads, shared the same fate – being overcleaned to the point where the bronze colour completely returned to the items, removing all patina and possibly finer details along with it. Just as in the case of the armour piece, there are no records of conservation works done on those mace heads. The maces were published in: Marija Šerčer, *Staro oružje na motki* [Old Polearms] (Zagreb: Hrvatski povijesni muzej, 1972) and more recently in Leon Bošnjak, "Medieval knobbed maces of the Arms and Armour Collection of the Croatian History Museum," in *History of Antique Arms. Researches 2020: A Collection of Scientific Papers from the Fourth International Conference on Weapons which took place in Kyiv, Ukraine on November 3-4, 2020.*, ed. Denys Toichkin (Kyiv: Institute of History of Ukraine; National Academy of Sciences of Ukraine, 2023), 38–74.

⁹ The original surface often contains precious information, and the loss of it can be of crucial importance in the specialised or scientific interpretation of the object. Damir Doračić, "Observations during laboratory studies," in *Swords of the Chivalric Period in Croatia. Swords of the High and Late Middle Ages from the Arms Collection of the Croatian History Museum* (Zagreb: Hrvatski povijesni muzej, 2009), 32.

“discover,” there was no “pomp” made after finding them. After going through the *Dossier Siscia* files in the Archaeological Museum,¹⁰ where one can follow the correspondence between people in the field and the museum, it is evident that the focus of the dredging and excavations was on ancient Roman artefacts, being the only type of artefact that was documented and reported on in detail. Given the predominant interest in artefacts from the ancient Roman era, there seems to be little motivation to plant non-genuine items from other historical periods. Additionally, the authenticity of other artefacts found during the dredging process reinforces the credibility of the cuisine.

Find-Location and Historical Context

As is the case with most aquatic finds, the artefact was found without a proper archaeological context. The area where it was found was not an especially relevant locality in the late 14th or early 15th century. Consequently, it cannot be associated to a specific event and provide a clear historical context. By the beginning of the 15th century, Sisak itself became a market town as it laid on one of the more important roads, considered a *via magna*, which connected Sisak with Topusko to the southwest, and Ivanić and Križevci to the north.¹¹ While there is no direct evidence for a river crossing at Gušće in the 14th or 15th century,¹² a ferry crossing known as *Pukurtui* existed slightly further downstream, likely between the present-day villages of Suvoj and Trebež. This crossing was under the control of the powerful Babonić family from at least 1314 until the 1340s and held significant strategic and economic importance during that period.¹³ Although it remains unclear whether this exact crossing remained in use by the end of the century,

¹⁰ Croatia – Archaeological Museum, Zagreb – Dossier Siscia, Sisak, 1851 – 1935, 42/25.

¹¹ Lovorka Čoralić, *Put, putnici, putovanja – ceste i putovi u srednjovjekovnim hrvatskim zemljama* [Road, Travellers, Travellings: Roads and Routes in Medieval Croatian Lands] (Zagreb: AGM, 1997), 225–229.

¹² For example, during these same dredging projects, two longswords and three spearheads have been found in the Sava river at Dubočac which was a documented river crossing with a castle built to protect it, first mentioned in 1408. Stanko Andrić, “Rijeka Sava kao protuturski bedem (do pada Bosne)” [The Sava river as a bulwark against the Turks (until the fall of Bosnia)], in *Rijeka Sava u povijesti. Zbornik radova znanstvenog skupa održanog u Slavonskom Brodu 18-19. listopada 2013.*, ed. Branko Ostajmer (Slavonski Brod: Hrvatski institut za povijest, Podružnica za povijest Slavonije, Srijema i Baranje, Slavonski Brod, 2015), 209; The swords and spearheads are published in: Dora Bošković, “Slatkovodni nalazi,” 109, 110, 111, 114.

¹³ It was likely a frequent crossing used by the many subjects under the Babonić family who traded their goods in Gračenica to the north. Hrvoje Kekez, “Preskočiti rijeku: geostrateško značenje skela na rijeci Savi” [Crossing the River: The Geostrategic Significance of Ferries on the Sava River during the Time of the House of Babonić at the End of the 13th and Beginning of the 14th Century], in *Rijeka Sava u povijesti. Zbornik radova znanstvenog skupa održanog u Slavonskom Brodu 18-19. listopada 2013.*, ed. Branko Ostajmer (Slavonski Brod: Hrvatski institut za povijest, Podružnica za povijest Slavonije, Srijema i Baranje, Slavonski Brod, 2015), 121.

the very fact that it existed earlier indicates the value of maintaining a river crossing in this area. Existence of such infrastructure nearby and the find itself suggest that the area was a focal point for trade and travel, reinforcing the likelihood that it retained a degree of importance into the late 14th and early 15th centuries.¹⁴

There are no recorded battles or skirmishes in this area during this period. However, the situation in the lands of the crown of St. Stephen was very turbulent in the last two decades of the 14th and the first decade of the 15th century. The death of king Louis the Great on September 16th 1382, brought forth a period of severe political instability for the kingdom as the king died without a male heir. Amidst this turmoil, several claimants to the Hungarian crown emerged. Their rivalry entangled the Hungarian and Croatian nobility with the courts of Naples, Bosnia, Bohemia, Venice, and Poland, and ultimately the Ottomans, triggering a fierce conflict for control over Croatia and Dalmatia.¹⁵ Out of this turbulent time, Sigismund of Luxembourg emerged victorious as the sole King of Hungary. Other than fighting rebels and pretenders within the kingdom, king Sigismund organized large military campaigns against enemies from without as well; most notably a crusade which ended with the catastrophe of Nicopolis in 1396, the invasion of Bosnia in 1408 and the invasion of the republic of Venice in 1412. These campaigns were soon followed by more frequent and large-scale Ottoman invasions which would mark the rest of the 15th century. These conflicts had dramatic consequences for Croatian lands. Most of the major battles were fought

¹⁴ Unless there is evidence of disruption, the continued utility of crossing the river in that area likely remained until the Ottoman incursions. There are ferryboat crossings at Gušće and Suvoj today which suggests the long-term practicality and importance of crossing the Sava at this point. This continuity supports the idea that the area retained a certain logistical relevance well into the late 14th and early 15th centuries.

¹⁵ Immediately after the death of King Louis I, on September 17, 1382, his daughter Mary was crowned King of Hungary and Croatia. However, real power in the kingdom was in the hands of Louis's widow, Elizabeth, daughter of the Bosnian Ban Stjepan II Kotromanić. During his lifetime, Louis I had betrothed his daughter Mary to Sigismund of Luxembourg, Count of Brandenburg and son of the Holy Roman Emperor and King of Bohemia, Charles IV. Soon after Louis's death, several claimants emerged seeking the Hungarian-Croatian throne, including Louis of Orléans and later Ladislaus, son of King Charles III of Naples. Louis of Orléans was quickly eliminated from the succession struggle, leading to the formation of two opposing factions—one supporting Ladislaus of Naples and the other backing Sigismund of Luxembourg. This political and military conflict persisted until 1408, when Sigismund finally secured his position on the throne. One of the major consequences of these turbulent events was the separation of Poland, which led to the formation of a new personal union between the Kingdom of Poland and the Grand Duchy of Lithuania. In 1409, Venice seized control of the Dalmatian cities and islands, causing the Kingdom of Hungary and Croatia to lose most of its coastline. This sequence of important events of this tumultuous period; the numerous conflicts, conspiracies and political intrigues which arose during the late 14th and early 15th century in the kingdom of Hungary and their consequences for Croatia have been described in detail in: Vjekoslav Klaić, *Povijest Hrvata: od najstarijih vremena do svršetka XIX stoljeća*, knjiga druga [History of the Croats: From the Earliest Times to the End of the Nineteenth Century: Book Two] (Zagreb: Nakladni zavod Matice Hrvatske, 1988), 225–400.

in Eastern Slavonia, Dalmatia and Bosnia. However, they involved significant troop movements and the frequent passage of noble and royal entourages across Western Slavonia and the Sisak area. One of the better documented examples of this is the abduction of queen Mary and her mother Elisabeth in 1386. The “two queens” were taken prisoner by conspirators who lay in ambush of the queens’ entourage near Gorjani in Slavonia. Following the ambush and battle, the prisoners were taken to Ivanić, then Gumnik near Čazma, from where they were soon taken to Novigrad in Dalmatia.¹⁶

The usual route for reaching Dalmatia from Slavonia at the time was through Bihać¹⁷ by following the Una River, access to which was provided by a *via magna* passing through Sisak. For example, in 1412, Sigismund’s large army composed of troops from Germany, Bohemia, Hungary and Croatia ended up fighting in Istria and Friuli. The army set off from Hungary, passed through Zagreb and Western Slavonia, following the same path to Bihać. It is exceedingly difficult to prove exactly which event or person this particular cuisse is linked to. However, such times of upheaval in the kingdom involved frequent mustering of troops, skirmishes, battles and transit of men, as well as arms and armour, across the kingdom and surrounding states. The area around Sisak was a frequent transit spot, particularly for those en route to Dalmatia or Bosnia during this period. Given the context and martial nature of the object, it is plausible the cuisse found itself at the bottom of the Sava River as a result of these events.¹⁸

A Brief Look at 14th / early 15th Century Armour in Croatia

The study of high- and late-medieval armour in Croatia is underdeveloped, with nearly non-existent archaeological evidence.¹⁹ A comprehensive analysis of written sources would be necessary to fully understand the prevalence and nature of

¹⁶ Klaić, *Povijest Hrvata*, 258.

¹⁷ King Sigismund has conducted at least two large military campaigns which followed the Una River, one in 1405 on his campaign toward Bihać, Sokol and Jajce in Bosnia as well as for the campaign in 1412 against the Venetians when the army moved from Zagreb to Bihać using the Una River. The army likely passed by Sisak and continued to Brinje and Ljubljana, from where it moved to Gorizia and the Friuli region. Klaić, *Povijest Hrvata*, 375–376; Čoralić, *Put, putnici, putovanja*, 97, 247.

¹⁸ Possibly a result of an accident during transport or a river crossing, or it could have been stored in an encampment on the river bank and washed away in a sudden rise of water or flooding as the area is rich in water; multiple rivers meet in the area, numerous creeks and the largest wetland in Croatia today is in close proximity of the find-location. Bošković, “Slatkovodni nalazi,” 101.

¹⁹ Apart from a single find of heavily fragmented plates with copper alloy rivets belonging to a brigandine or a corazzina have been found in the Sokol fortress near Konavle. Nikolina Topić, “Inventory of finds and multiphase cemetery by fort Sokol in Konavle,” *Archaeologia Adriatica* 13 (2019): T. XXIV 2, 246.

armour use during the late 14th and early 15th century; however, as such a study is beyond the scope of this paper, a brief overview will have to suffice.

Other than the CHM cuisse, no known significant piece of late medieval plate armour has been preserved in museum collections in present-day Croatia. While material evidence from Croatia is limited, finds from neighbouring present-day Bosnia and Herzegovina do offer some insight into the usage of armour in Croatia as well. These finds include the Maglaj bascinets,²⁰ the Donja Dola bascinet fragment and upper cannon,²¹ and a breastplate reportedly found near Prijedor.²² Although these items testify to the use of plate armour in the area, they do not provide a suitable analogy for the CHM cuisse. Similarly, there are no relevant works done on early plate armour in Hungary and extant pieces are very rare or unpublished.²³ Of the few known extant early plate cuisses in the world, the CHM cuisse is the only known example of early upper leg plate armour preserved within the former lands of the Crown of St. Stephen, including areas further east and south in Europe.

In absence of material evidence and due to a lack of research in written sources, visual depictions of armour in art are necessary to provide more insight into the subject.²⁴ A number of known depictions of late 14th and early 15th century armour preserved in present-day Hungary and Slovakia exist, however none can be used as direct analogies. The most relevant is the effigy of one of the main protagonists during the crisis in Hungary, palatine and one of the most powerful men in the kingdom, queens' Mary and Elizabeth's main supporter, Nicholas I. Garay (1325–1386). Garay was killed at the battle of Gorjani in Slavonia in 1386. On his

²⁰ Ivo Bojanovski, "Stari grad Maglaj – istraživački i konzervatorski radovi 1962. i 1963. g." [The Old Town of Maglaj: Research and Conservation Works in 1962 and 1963], *Naše starine* 10 (1965): 73; The largest hoard of plate armour found in the area are the Maglaj helmets from Bosnia which include five bascinets dated to 1360–1400: Ivo Bojanovski, "Stari grad Maglaj," figs. 7–8, 74–77; Tomislav Aralica, "Maglajske basinete" [The Maglaj Bascinets], *Hrvatski vojnik* 4 (1994), br. 62: 118.

²¹ Pavao Anđelić, "Zanimljivi primjerci srednjovjekovnog oružja iz okoline Bileće" [Noteworthy Examples of Medieval Weapons from the Vicinity of Bileća], *Tribunia* 6 (1975): 73–81.

²² The current whereabouts of the breastplate are unknown as the photographs of the item were only posted on social media which is why there is controversy surrounding the item, including justified suspicions of authenticity.

²³ The only item known to the author is a late 14th century bascinet preserved and displayed in the Hungarian National Museum. The bascinet is of unknown provenance and has no decoration but is thought to be of a Central European style. The bascinet has modern interventions and additions, and is of questionable authenticity. Temesváry Ferenc, *Fegyverkincsek, díszfegyverek* (Budapest: Corvina/Halikon kiadó, 1982), cat. no. 6; Doug Strong, *Surviving Examples of Early Plate Armour 1300–1430*, vol. I: *Bascinets* (Wheaton: Freelance Academy Press, 2018), 78.

²⁴ Depictions of armour in local art, or from regions with a significant impact on local culture, can serve as primary sources for this particular subject.

tombstone, he is depicted armoured in knightly fashion.²⁵ Such type of “transitional” armour was still in use in the 1390s, however it is characteristic for earlier periods with certain elements from the 1350s and 1370s.²⁶ The cuisse shown on the effigy is a transitional “full floating” type (without articulated joints between the elements), which were in use before joined pieces became common.²⁷

Most known references on the use and production of armour in present-day Croatia originate from coastal cities, particularly Zadar and Dubrovnik as they have received most scholarly attention. Zadar, as a regional centre of trade and goldsmithing, provides numerous artworks containing depictions of armour, although leg protection is often obscured or depicted without enough detail.²⁸ Archival records indicate the presence of armourers in the Dalmatian communes, although little is known about the nature of their work outside of Dubrovnik.²⁹ Armourers in late 14th century Republic of Ragusa (Dubrovnik) were few, usually employed by the state to make armour intended for the lightly armoured state troops and to satisfy the needs of surrounding lords, mostly in terms of repairs.³⁰ Written evidence of individual plate armour in Dubrovnik is very scarce and is mostly found in testaments of wealthy individuals. Such plate armour was occasionally made if specially ordered but it seems to not have been common practice as such armour was imported from Venice and other Italian cities.³¹ Communes

²⁵ “Palatine Miklós Garai,” Effigies and Brasses, accessed 25. 3. 2025 <https://effigiesandbrasses.com/1081/4137#image>.

²⁶ A similar configuration of armour characteristic for Central Europe at the time can be seen here: “Voit von Rieneck,” Effigies and Brasses, accessed 25.3.2025 <https://effigiesandbrasses.com/864/4470>; The frescoes depicting the legend of St. Ladislaus in Karaskovo, Slovakia (1380–1390) show more contemporary armour used in the Kingdom of Hungary. “Karaskovo,” Szent Laszlo, accessed 12.2.2024. <https://www.szentlaszlo.com/gallery.en.kraskovo.php>.

²⁷ The use of outdated armour could be explained by the fact that Nicholas Garay was about 60 years old when he was killed and it is possible he was portrayed in the armour he used when he was younger or, perhaps, he simply did not acquire the newest configuration of armour which was more common in the west of Europe.

²⁸ Many examples of such depictions can be seen in: Tugomir Lukšić, *The Splendour of Zadar Treasures. Religious Art in the Archdiocese of Zadar 4th – 18th centuries* (Zagreb: Muzejsko-galerijski centar, 1990).

²⁹ Nevenka Bezić Božanić, *Artists and Craftsmen from 9th to 19th Century in Dalmatia* (Split: Ministarstvo culture Republike Hrvatske, 1999), 227–246.

³⁰ State troop armour consisted only of head, chest, neck and possibly hand protection which was mostly acquired in Venice in the first half of the century. Since mid-14th century Dubrovnik employed master armourer and Petrović, *Dubrovačko oružje u XIV veku* [Weapons of Dubrovnik in the Fourteenth Century] (Beograd: Vojni muzej, 1976), 100; Filipović, *Viteštvo*, 288.

³¹ A cuisse (*cosseria*) is mentioned in a restriction of import and export of armour from 1366. Local armourers produced leg armour from 1370s onwards. However, as they were not mentioned in the state arsenal lists in 1387, they were likely not part of the state troops' equipment, but ordered by individuals. Another mention of a cuisse comes from 1382 when master armourer Vid requested to export *paria IIII cossaliorum* from Dubrovnik, and again in his testament from 1400. In 1399, a cuisse is

and noblemen on the eastern shore of the Adriatic and subsequently its hinterlands, including neighbouring states, regularly purchased armour from Italy and modelled locally made armour according to Italian style.³² As most extant depictions are preserved in coastal areas due to cultural, political and economic ties of Hungary,³³ and especially Croatia itself, they depict Italian style of armour and dress.³⁴ Unsurprising, as even further inland, the lands of the crown of St. Stephen and the neighbouring states in the Balkans imported armour from Venice or Dubrovnik.³⁵ There are records of entire suits of armour from Venice and Dubrovnik being gifted to various Balkan rulers for military accomplishments³⁶ testifying to the usage of Italian-made armour further inland as well.

General Morphological Features

Morphological features of the cuisse are compared to similarly dated extant cuisses preserved in museum and private collections in Europe and the world, and depictions in art with the aim of discerning the use of those features, better understanding of how the cuisse functioned and what it looked like as a whole during its working life. Additionally, shared features among extant examples and depictions in art can testify to the authenticity and assist with a more accurate determination of the cuisse.

The construction of the CHM cuisse consists of a single thin steel plate shaped to fit the upper left leg and the upper half of the knee, with a slightly pronounced median ridge. The cuisse is shaped to the shape of thigh muscles as was common with armour of this period. As metallography tests have not been conducted yet,

recorded among pieces of armour Benko Gundulić bought in Florence. Petrović, *Dubrovačko oružje*, 100, 115–125.

³² In Dubrovnik, it was common for Italian masters to work in the city. Emir O. Filipović, *Viteštvo u srednjovjekovnoj Bosni* [Chivalry in Medieval Bosnia] (Zagreb: Plejada, 2024), 287.

³³ The Kingdom of Hungary, during the reign of king Louis I the Great (1340–1382), encompassed land stretching from the south of Italy to the Baltics which offered great incentive to trade and economic ties, allowing for more goods and money, as well as cultural influence to arrive from flourishing cities in the north and south of Italy. Neven Budak, Tomislav Raukar, *Hrvatska povijest srednjeg vijeka* [Croatian Medieval History] (Zagreb: Školska knjiga, 2006), 247.

³⁴ Ljiljana Mokrović, “Bizantski i zapadni stil na minijaturama Hrvojeva misala” [Byzantine and Western Styles in the Miniatures of Hrvoje’s Missal], *Slovo* 60 (2010): 530–531; A good example is an effigy found in Nin, depicting an armoured man wearing a typical early 15th century northern Italian hat as seen in: Kristian Gotić, Nikolina Mađar, Nikolina Uroda, *Varvaria / Breberium / Bribir: Historical Layers Revealed* (Zagreb: Hrvatski povijesni muzej, 2019), 169. Additionally, the famous Column of Roland (Orlando) in Dubrovnik made in 1419 depicts 15th century Italian plate armour.

³⁵ Gavro A. Škrivanić, *Oružje u srednjovjekovnoj Srbiji, Bosni i Dubrovniku* [Weapons in Medieval Serbia, Bosnia, and Dubrovnik] (Beograd: Naučno delo, 1957), 148; Petrović, *Dubrovačko oružje*, 100–101.

³⁶ Škrivanić, *Oružje*, 148–149; Filipović, *Viteštvo*, 287.

we cannot say with certainty whether the cuisse was made of steel or iron. However, North Italian armour of higher quality in the period was often made of steel, especially armour made for the knightly class, which was also hardened.³⁷ Hardened steel armour provided better protection while remaining thinner and lighter than armour made of iron, which needed to be thicker to provide the same level of protection.³⁸

The condition of the surface is common for ferrous aquatic finds which were exposed to corrosion processes for centuries.³⁹ Additionally, there are indications of electrochemical overcleaning, likely the result from outdated conservation attempts.⁴⁰ The inside surface of the cuisse has clearly visible hammer marks from the forging and shaping process, commonly left unworked and unpolished. (figs. 2.1 and 2.2).

Table 1. Measurements of the CHM cuisse⁴¹

	Upper part	Lower part	Big toe side	Small toe side	Total
Height	/	/	32.5 cm	25 – 27 cm	33 cm
Width	18.5 cm	9.5 cm	/	/	9.5 – 18.5 cm
Thickness	1.6 mm	0.8 mm	1.5 mm	1.4 mm	1.2 – 1.6 mm
Openings	2.4 – 3.4 mm	4.3 – 4.5 mm	3.2 – 3.9 mm	17.4x5.5 / 16.9x5.2 mm	/

³⁷ Allan Williams, *The Knight and the Blast Furnace. A history of the Metallurgy of Armour in the Middle Ages and the Early Modern Period* (Boston; Leiden: Brill, 2003), 56.

³⁸ Although no metallography tests were made yet, the thickness of the plate, as well as the decoration, suggests the steel was likely hardened. Decorative elements like copper alloy applications would have been more commonly found on armour belonging to a noble man or a well-situated citizen. Elaborate decoration is indicative of status and wealth, as they required additional resources and craftsmanship to produce, making the object costlier. Armour made of iron or non-hardened steel would have been more utilitarian compared to what the nobility would have used. Therefore, the presence of such copper alloy applications correlates with social and economic status. Goll, "Iron Documents," 189–191.

³⁹ Various corrosion products mineralized and accumulated on the surface, trapping particles such as sand, pebbles and soil, causing the pitting on the surface.

⁴⁰ Such electro-chemical methods have for a long time now been abandoned in the conservation and restoration of archaeological iron or steel objects because of their destructive impact on the original surface. Doračić, "Observations," 32.

⁴¹ The thickness values represent only the main plate; the thickness of the sides was measured on the edges, approximately mid-length of the cuisse. The thickness of the plate varies, being thinner on the lower part which would be covered by the poleyn, and thicker on the more exposed upper part. Due to all of the rivets being heavily damaged by corrosion, they were not measured. The openings are measured where possible and where they were reasonably well preserved. The openings on the small toe side are two large rectangular openings for the strap and are measured individually.

On the earliest examples of plate upper leg protection, the top of the cuisse is almost completely level, while on slightly later examples, tends to extend upwards on the small toe side. On some late 15th century cuisses, the sides extend much higher to protect the hips. In the case of the CHM cuisse, the top part extends upward toward the small toe side. Out of the six 14th century cuisses published by Dr Goll in the comprehensive doctorate dissertation “Iron Documents,”⁴² three share this feature.⁴³ The central part of the plate has a raised median ridge which stretches the entire length of the cuisse and effectively divides the armour in two halves. It is slightly less pronounced than on other extant examples, possibly due to erosion and overcleaning of the item as the ridge is easily visible on the inside. The cuisse extends over the upper portion of the knee. Over it, a permanently attached poleyn would be placed. There are visible indentation lines on the surface left by the poleyn, as well as the remains of one pivoting rivet on the big toe side of the cuisse, used to attach the poleyn. Out of the six commonly known extant examples of late 14th / early 15th century plate upper leg protection, the main plate extends over the knee on three examples which are all dated between 1380 and 1400.⁴⁴

Out of all the extant cuisses, the general form of the CHM cuisse is analogous with a pair of cuisses on display in the Rüstkammer Schloss Churburg, in Schluderns, Italy⁴⁵ (figs. 3.1-3 and 4.1). The lower part of the CHS12 cuisses also extends over the upper part of the knee, the upper edge rises in a very similar angle towards the small toe side. Both CHM and the left CHS12 cuisse have the same number of large rivets (eight) on the upper edges. The number of rivets on the small toe side matches as well, as both cuisses have six. The small toe sides of both cuisses have two rectangular holes for the straps, with rivets to secure it. The lower rivet, among the two, is damaged similarly to all the surviving rivets on the CHM, with most of the material on the heads missing. On the CHS12 cuisse, pieces of leather are still preserved under the rivets, showing their purpose (fig. 4.1). The median ridge is more pronounced than on the CHM cuisse and the upper edge of the

⁴² Matthias Goll, “Iron Documents. Interdisciplinary studies on the technology of late medieval European plate armour production between 1350 and 1500” (PhD diss., Heidelberg University, 2014), DOI: 10.11588/heidok.00017203.

⁴³ In the paper, the “ref_arm” prefix before a certain number refers to reference codes of armour pieces used by Dr. Goll to access in his dissertation “Iron Documents.” Clicking on these references in the dissertation text opens a separate file with images and relevant information about the item. ref_arm_3024 (Royal Armouries, Leeds – III.1285, 1380–1390), ref_arm_3028 (The Metropolitan Museum, New York, 29.154.3, 1380–1400), ref_arm_2910 and ref_arm_2912 (Rüstkammer Schloss Churburg, Schluderns, CHS12, 1380–1400).

⁴⁴ Goll, “Iron Documents:” ref_arm_2956 (Musée des Beaux Arts, Chartres, 1380), ref_arm_2910 and ref_arm_2912 (Ruestkammer Schloss Churburg, Schluderns, CHS12, 1380–1400), ref_arm_3028 (The Metropolitan Museum, New York, 29.154.3, 1380–1400).

⁴⁵ Goll, “Iron Documents:” ref_arm_2910 and ref_arm_2912 (Ruestkammer Schloss Churburg, Schluderns, CHS12, 1380–1400).

CHS12 cuisse is turned. However, the general shape and plenty of comparable features provide good reference points for the CHM cuisse. If the poleyn of the CHM cuisse managed to be preserved, its form would have likely resembled the form of the poleyn on the CHS12 cuisse.

Typological Classification

According to Dr Goll, there are three types of upper leg protection, depending on the coverage of the leg the armour provides. Type-I upper leg protection encloses the front half of the upper leg and is the earliest type of cuisse which gradually stopped being produced by the early 15th century. Type-II encloses the upper leg by more than half; the front is covered by the main plate like on the Type-I, with the small toe side being protected by an additional plate flap commonly connected by hinges. These examples are recorded already in the 14th century, but from 1400 until the end of the 16th century this was the most common type of upper leg defence. As leg armour was made for mounted knights, the part of legs which rest on the horse's sides are not necessarily covered with plates.⁴⁶ Type-III upper leg protection encloses the entire leg and is a feature that Dr Goll states is present only in a small number of costly suits from the early 16th century, and intended for combat on foot and for tournament use.⁴⁷ While this statement holds true when examining extant examples, it is important to note that numerous artistic depictions from around the year 1400 portray what appear to be fully enclosed cuisses being used in the field, both on foot and on horseback.⁴⁸ The prevalence of such depictions suggests that they cannot be dismissed as errors on the part of the artists.

On the CHM cuisse, there are two rectangular openings on the small toe side with a rivet placed on the inner side of each of the openings. The lack of hinges which could be used for the additional plate flap mean this cuisse should be classified as a Type-I. However, there is evidence of the usage of leather belts and buckles for fastening of the additional plate which make it possible for it to

⁴⁶ Other than being more comfortable, this allows for a better "feel" for the horse and thus better control.

⁴⁷ Goll, "Iron Documents," 48.

⁴⁸ A late 14th / early 15th century fresco in church of St. Barnabas in Vižinada, Istria depicts sleeping guards who could represent footmen with fully closed cuisses (fig. 5.2). However, numerous depictions of what seem to be Type-III cuisses in medieval art can be seen on mounted warriors, knightly or royal characters on foot, but who would surely fight on horseback. See examples in: "Closed cuisses," Manuscript Miniatures, accessed on 25.9.2023, <https://manuscriptminiatures.com/search?tag=3415#results>; "Closed cuisses," Armour in Art, accessed on 25. 9. 2023, "Altarpiece of St George," Victoria and Albert Museum, accessed on 28. 2. 2024, <https://armourinart.com/search?tag=3415#results>; <https://collections.vam.ac.uk/item/O17807/altarpiece-of-st-george-altarpiece-master-of-the/?carousel-image=2023NN8046>.

be classified as a Type-II. Such fastening can be seen on a Burgundian statue of St George in Dijon (1390–1399) depicting a similarly decorated cuisse (fig. 5.1). There are no depictions of such flap fastenings in Italy or south-eastern Europe known to the author, but the possibility the CHM cuisse was fastened the same way cannot be excluded, as the rivet position and the rectangular opening for the belt correspond with the cuisses depicted on the Dijon statue.⁴⁹ The year 1400 marks the upper limit for Type-I cuisses, with Type-II cuisses becoming increasingly prevalent thereafter.⁵⁰ Type-II and III cuisses were adopted very early in the lands across the Adriatic, as can be seen on the depictions of Hrvoje Vukčić (1408/1409), on a late 14th / early 15th century church fresco in Vižinada and a late 14th / early 15th century triptych depicting St. George in Zadar (figs. 5.2–4). They depict what should be Type II cuisses with hinged flaps on the former or even completely closed Type III cuisses on the latter two depictions.⁵¹ While it is more likely the CHM cuisse is a Type I simply due to Type I's being more prevalent with such a fastening system, the possibility of a flap being attached via a belt cannot be completely excluded.

Fastening Straps and Rivet Holes

What survives of the cuisse today is not the entire product. It is missing multiple parts which are indispensable for proper use, as it needs to be connected and fitted together with other armour parts and the wearers garment using various fastening systems.⁵² Therefore, it is necessary to identify all the constructive parts and remnants of fastening systems on the armour if we are to understand what the armour looked like as a whole. As the CHM cuisse is a river find, there are no organic materials remaining. However, openings and rivets made for the purpose of fastening still remain. Comparing the CHM cuisse with other similar extant cuisses from this period, it was possible to deduce the function and armourer's intentions for most of the holes and rivets on the cuisse.⁵³ Plenty of reproductions have been made without holes necessary for the proper function of the armour or

⁴⁹ The cuisses on the statue share other features with the CHM cuisse, including the general shape and the decorative copper alloy application on the upper edge.

⁵⁰ Goll, "Iron Documents," 48. Evidence exists for the usage of both types both before and after this period, indicating that this year serves primarily as a reference point rather than a strict rule.

⁵¹ When it comes to armour for the high nobility, it seems that there was no lag in the adoption or acquirement of the newest type of leg armour. Another example that the high nobility in the region used contemporary armour systems is the depiction of a knight on the great seal of Stefan Tomaš, king of Bosnia (1443–1461) based on the matrix for the seal for King Tvrtko in 1377. It shows a knight using single plate Type-I cuisses, common for the 1370s. The seal can be seen on a charter issued to Ragusa in 1444 by king Stefan Tomaš: Dubrovnik State Archives, *Diplomata et acta*, 15th c. nr. 268.

⁵² Dupras, "Armourers and their Workshops," 105.

⁵³ Goll, "Iron Documents," 107.

are simply wrongly placed, which is another reason to consider these features.⁵⁴ Armour parts for the limbs did not have lining or padding underneath. The only organic materials for limb protections were leather straps riveted interiorly along the edges for the purpose of fastening. At the upper edge, there was usually a leather and/or linen strap riveted to the interior which was laced upwards to an arming harness worn around the waist.⁵⁵

On the upper edge of the CHM cuisse, there are eight larger rivets punched through the plate and the decorative copper alloy application. Four out of eight rivets are made of a copper alloy and four out of iron (figs. 6.1-2). The central positioning of iron rivets suggests their intended function for lacing to the arming harness, as they protrude, seemingly designed to accommodate material (figs. 4.1-2) – a feature not shared by the copper alloy rivets. Iron is stronger than copper alloys, which is why it would have been preferable to use iron ones, primarily for fastening, and secondly to secure the decorative application in place. Additionally, the rivets would not be left protruding on the inner side without a function as a lack of material underneath the rivet heads would damage the wearer's garment.⁵⁶ The copper rivets, placed on the sides, were exclusively used for securing the application, which allowed for the replacement of iron rivets without dismounting the application. Maintenance work made it necessary to regularly replace rivets, broken plates and old organic parts during the working life of the item. There are six holes on the big toe side of the armour, with iron rivets still remaining in two. The bottom sixth rivet is much larger than the others in this grouping and its placement at the bottom edge indicates that it is the remains of a pivoting rivet, used for securing the poleyn to the cuisse, which allowed the bending of the leg while wearing the armour.⁵⁷ There are visible remains of a damaged hole on the opposite side made for the other pivoting rivet. (figs. 7.1 and 7.2).⁵⁸ The foremost five holes have one remaining rivet protruding on the inner side, indicating its function of securing leather or fabric material. This material would envelop the back of the leg and serve to accommodate buckles or to facilitate insertion into buckles placed on the opposing sides of the armour.⁵⁹ A similar

⁵⁴ Reproductions can be perfectly made and genuine items could have errors or certain features we are not familiar with so it is necessary to consider the item in its entirety, its provenance and history before making a conclusion on authenticity.

⁵⁵ Goll, "Iron Documents," 115.

⁵⁶ Leather straps must be secured using rivets with wide heads or washers so that the rivet head does not tear through the material.

⁵⁷ Goll, "Iron Documents," 66; Dupras, "Armourers and their Workshops," 106. From the mid-14th century the poleyn was permanently attached to the upper leg, the lower leg armour or greaves could be attached to the poleyn or the demi-greave, but was always detachable.

⁵⁸ Possibly, a remnant of a non-constructive application; a dome-headed copper rivet used to bring a decorative highlight.

⁵⁹ Dupras, "Armourers and their Workshops," 107.

system can be seen on this mid-15th century extant example (fig. 4.2) which has a triangular leather strap with a buckle attached at the big toe side.⁶⁰ However, the presence of two rectangular openings on the small-toe side of the CHM cuisse could indicate the placement of straps with buckles on the small-toe side, a practical feature which would allow for easier access to the buckle, allowing the wearer to put the armour on and remove it himself with more ease.

The Copper Alloy Application

The upper edge of the cuisse is decorated with a rivet-attached 26 mm wide application cut from a copper alloy plate strip, decorated with various ornamental patterns. This crafting technique is characteristic of copper-alloy applications to early plate armour and is consistent across all artefacts discussed in the paper. The presence of cast copper-alloy applications appears to be a defining feature of armour produced in the 2nd half of the 15th century.⁶¹ This evidence supports both the authenticity and the proposed production date of the CHM cuisse, and further suggests a likely origin in Northern Italy. The application tapers on both ends, the upper edge forms a rope-like edge and slightly envelops the upper edge of the cuisse. The surface of the application is decorated with two sets of Gothic script lettering, flanked on each side with a symbol resembling a stylized Roman numeral two. Ornamental geometrical shapes are engraved on both left and right sides of the application, and a rectangular cross is engraved in the centre between two sets of Gothic script lettering. The background is decorated with a dense pattern of zig-zag lines which was finely done using wriggle work.⁶² Other decorative motifs are executed using this technique as well, however with much denser strokes. The lower part of the strip is decorated with small punched holes, and embossed buds. The entire length of the bottom edge is jagged or toothed (figs. 8.1-3).⁶³

⁶⁰ Originates from the Churburg collection. Goll, "Iron Documents," ref_arm_2839 (Kelvingrove Art Gallery, Glasgow, s-E.1939.65.e.-9, 1450–1460).

⁶¹ The later applications were made using the lost wax mould method, after the craftsman designed the desired shape in wax and fitted them exactly to the curves of the armour. Goll, "Iron Documents," 125–129.

⁶² A common engraver's technique often found on decorated metal objects in medieval and early modern Europe. Called wriggle work because the side to side 'push' of the graver tool caused a zipper like design that could travel around perimeters of different objects and crisscross into open fields. Skilled engravers would create different patterns and elaborate decorations. The patterns on the application were then engraved onto the surface with a specialized tool called a graver, a very small chisel used to create shapes by carving away material. Dupras, "Armourers and their Workshops," 100–101.

⁶³ A very similar copper application edge from early 15th century Zadar can be seen on the reliquary of St. Catherine. Marijan Grgić, *Zlato i srebro Zadra i Nina* [The Gold and Silver of Zadar and Nin] (Zagreb: Turistkomerc, 1972), cat.no. 45, 136.

Several clues suggest a possibility that the application may be a replacement, made after the original was damaged or replaced for some other reason. The primary indication comes from the placement of rivet holes: beneath the current rivets is a row of five smaller holes, only one of which, on the big toe side, is used to secure the application.⁶⁴ Even this appears to have been done in a makeshift manner. The remaining holes are either completely covered by the application but unused, partially covered, or left exposed, indicating a significant misalignment. This suggests that the original application was wider and secured along both its top and bottom edges.⁶⁵ Another possibility is that the cuisse is missing an entire upper plate which could be added to the upper edge and attached by a piece of leather, which could explain the now empty holes. The lower placement of these holes would allow the main plate to overlap the supposed attached upper plate. As most artistic depictions of leg armour do not show the upper part, this cannot be confirmed. Additionally, there is always a possibility that the craftsmen did not coordinate to align the openings perfectly as decorations like these were often not made by armourers, but sourced out to other craftsmen like the goldsmith, as it required a higher degree of specialization.

Copper alloy used as a decorative element on armour was a popular way of highlighting the raw bluish grey colour of steel and iron in the early 14th century and remained in popular use throughout the 16th century. Copper alloy was first used in the form of rings to decorate mail armour, such as sleeves, skirts, collars and aventails.⁶⁶ Alternatively, plate armour was decorated either by mounting specific copper alloy components, such as applications or rivets, or by gilding entire sections, such as visors or knee cops, to achieve a similar highlighted effect.

The most commonly known copper alloy decorated late 14th century armour is the Churburg set (CHS13) to which the only extant breastplate with such decorations belongs, including one of the two sets of decorated upper and lower cannons.⁶⁷ Many surviving examples of copper alloy applications of the time can be

⁶⁴ All the holes are either entirely or partially obstructed by the application, or slightly under the lower edge of the application. Only in one hole on the edge of the big toe side, there is a small copper rivet which is punched through the application and serves the purpose of securing the lower edge (figs. 2, 8.2-3).

⁶⁵ As the armour was made without a turned upper edge, it was likely made with the intention of having a mounted application as they offer practical benefits as well by covering the unturned edges of the armour, ensuring comfort for the wearer and reducing the risk of damage to underlying garments. This could serve as additional motivation to have it replaced as soon as possible, in whatever workshops available. Out of five other known late 14th or early 15th century extant examples of cuisses, only two do not have a turned upper edge (ref_arm_3024 and ref_arm_3028) with the latter being decorated with a copper alloy application, serving the same purpose as a turned edge.

⁶⁶ Roland Thomas Richardson, "The medieval inventories of the Tower armouries 1320–1410," (PhD diss., University of York, 2012), 38–39, 44.

⁶⁷ Goll, "Iron Documents," ref_arm_4098 (Ruestkammer Schloss Churburg, Schluderns, CHS13, 1370–1400); The only other armour for the arms featuring copper alloy applications is part of the

seen on helmets, with some of the most notable examples being the bascinet from the CHS13 Churburg set (see fig. 13.3), the bascinet in the Met (fig. 12.5.) and the Lyle bascinet (see fig. 12.3).⁶⁸ Other lesser known applications include those found mounted on the brow of a bascinet in Musée Languedocien in Montpellier, France (see fig. 13.1)⁶⁹ and a bascinet visor discovered in Veliko Tarnovo, Bulgaria, which features a thin copper alloy application on the upper edge (fig. 10.1). Lastly, fragments of an application mounted on a helm were found off the coast of Wales on the Newport 15th century shipwreck.⁷⁰ Another group of armour components which survived with such decorations are gauntlets; the Churburg CHS13 set gauntlets (fig. 12.1), gauntlets from the Wallace Collection in London (fig. 13.2), gauntlets housed in the *Museo Nazionale del Bargello*, Florence (figs. 10.2-3, 12.2), a strip once mounted on a gauntlet, housed in *Museo Archeologico Medioevale di Attimi*, Faedis (fig. 11.2), including a fragment of a similarly decorated strip from an unknown location which belongs to a private collector (fig. 11.1). Concerning leg armour, there is only one extant cuisse decorated with a copper alloy application preserved in the Metropolitan Museum of Art in New York (fig. 12.4).⁷¹ The ornamental features shared by the mentioned applications and the CHM cuisse, executed with the same techniques, provide strong support for the authenticity of the cuisse and the application.⁷²

What distinguishes the CHM “inscription” on the CHM application is the absence of meaning. Out of the ten extant examples of armour which have Gothic

extensively modified Chalkis armour set, housed at the Metropolitan Museum. “Armor,” The Metropolitan Museum of Art, accessed 23. 7. 2023, <https://www.metmuseum.org/art/collection/search/23205>.

⁶⁸ “The Lyle Bacinet,” Royal Armouries, accessed 4.3.2024, <https://royalarmouries.org/collection/object/object-500>.

⁶⁹ Although the helmet underwent extensive restoration, the application itself appears to be original. At the time of writing this paper, the Musée Languedocien was listed online as closed and e-mails were not reaching them. Therefore, the inventory number of the object and further information about the item were unavailable. Thank you to Jean-Marc Ebert “Réchignac” for posting photographs of the object which would otherwise be unknown to the author, and allowing them to be published in this paper.

⁷⁰ Images, drawings and reconstruction can be seen in: Nigel Nayling, Toby Jones. “The Newport Medieval Ship, Wales, United Kingdom,” *The International Journal of Nautical Archaeology* 42 (2013), no. 1: 36, DOI: 10.1111/1095-9270.12053.

⁷¹ “Armor,” The Metropolitan Museum of Art, accessed 23. 7. 2023, <https://www.metmuseum.org/art/collection/search/23205>.

⁷² Can be seen on Bargello gauntlets (figs. 10.2-3 and 12.2), Churburg CHS13 set (ref_arm_1259 and ref_arm_1301), the Lyle (ref_arm_1525) and Veliko Tarnovo (ref_arm_4370) bascinets, and the cuisse and visor belonging to the famous armour set housed in “The Met” in New York. The set underwent significant restoration, during which certain components were “adjusted” and manipulated to fit in ways that were not historically accurate. Despite this the copper alloy application at the top edge of the left cuisse, the lower edges of the right greave, and the visor are genuine. “Armor,” The Metropolitan Museum of Art, accessed 23. 7. 2023, <https://www.metmuseum.org/art/collection/search/23205>.

lettering engraved on the application, all bear the same biblical quote used to invoke protection from God and the Saints, citing Luke IV:30: *Iesus autem transiens per medium illorum ibat* (Jesus passed through their midst and went on his way).⁷³ Other everyday items with copper alloy applications from the Late Gothic period, like belt or book fittings were also often inscribed with words or abbreviations, always bearing a certain (religious) meaning.⁷⁴ However, the inscription on the CHM cuisse seems to have none, being a decorative pattern made to resemble Gothic letters with the use of minims, building blocks of letters in Gothic script.⁷⁵ Minims used as decoration were a common thing, usually found in manuscripts as it only took one simple stroke to write, although such a reason does not translate on a metal surface. There is however, an analogy for such decorative use of Gothic script on a metal, copper alloy surface in Zadar. The inscription is found on a *nodus* of a processional cross on display at The Permanent Exhibition of Religious Art (SICU) in the Benedictine monastery of St. Mary in Zadar (fig. 9.1),⁷⁶ with a similar background pattern and style of minims which are purely decorative, possibly mimicking familiar aesthetics seen in manuscript culture.

The cross symbol, similar to the one found at the centre of the copper alloy application consisting of four symmetrical arms extending from the centre towards the edges and widening outwards into a three-pronged forked end, can be found on two Late Gothic processional crosses, dated to the late 14th and early 15th centuries. One is on display in the Treasury of the Gold and Silver of Nin (fig. 9.2)⁷⁷

⁷³ Goll, "Iron Documents," ref_arm_1251, ref_arm_1298, ref_arm_1278, ref_arm_1280, ref_arm_3811, ref_arm_1495, ref_arm_1265, the Musée Languedocien bascinet, and the Newport find (see fig. 13.1 and footnote 70).

⁷⁴ An example of this is the copper alloy belt fitting bearing Gothic letters "AM," likely meaning "Ave Maria," The Netherlands, 1350–1400 (inv. no. 2009/11.205). "Riembeslag," *Doorzoek de collectie van het Rijksmuseum van Oudheden*, Rijksmuseum van Oudheden. Accessed 20. 3. 2024, <https://hdl.handle.net/21.12126/189517>; and a book fitting with the "IHC" – the sacred monogram based on the Greek word for Jesus (unique ID: GLO-9B942D): "Book fitting," Portable antiquities scheme, accessed 4. 4. 2024, <https://finds.org.uk/database/artefacts/record/id/975749>.

⁷⁵ Minims are short vertical strokes used in handwriting, and are used as basic strokes to form letters: 'I', 'M', 'N' or 'U' in Gothic script.

⁷⁶ The cross itself is dated to the 13th century, however the date is open for question with the possible date of production ranging from the 11th to the 14th century. The enlarged domus on the patibule (staff) of the cross might have been made later, or at least decorated in the late 14th or early 15th century as the decorative gothic lettering resembles very much so the decoration on the cuisse. Grgić, *Zlato i srebro Zadra i Nina*, cat.no. 12, 38–41; Nikola Jakšić, Radoslav Tomić, *Umjetnička baština zadarske nadbiskupije – Zlatarstvo* [The Artistic Heritage of the Archdiocese of Zadar – Goldsmithery] (Zadar: Zadarska nadbiskupija, 2004), cat. no. 008, 55–57.

⁷⁷ Ivo Petricioli, "Prilozi izučavanju srednjovjekovnog zlatarstva u Zadru" [Contributions to the Study of Medieval Goldsmithery in Zadar], *Radovi filozofskog fakulteta u Zadru. Razdio historije, arheologije i historije umjetnosti* 2 (1963), no. 1: fig. 1, 135, DOI: <https://doi.org/10.15291/radovi-hahu.1946>; Lukšić, *The Splendour of Zadar Treasuries*, cat. no. 174, 233, 329; Marijana Kovačević, "Zlatari Pavao i Stjepan Petrovi iz Kotora – majstori gotičkih ophodnih križeva iz Nina, Božave,

and the other in SICU Zadar.⁷⁸ Despite the absence of direct analogies on copper alloy applications on extant armour, the appearance of such decorative elements in the works of late-medieval goldsmiths supports the notion that the application is an authentic product of the late 14th or early 15th century.

Place of Production and Use

There are no markings visible on the cuisse which could specify the production centre or the maker. Although possible it was removed during the overcleaning of the item, unmarked armour pieces were regularly made, sold and exported.⁷⁹ This includes both lower quality armour made for foot soldiers, as well as highest quality armour made for the wealthy nobility.⁸⁰ Most extant pieces of armour decorated with this type of copper alloy application are dated to the late 14th or early 15th century and attributed to Northern Italian or Milanese armour makers. Northern Italy, specifically Lombardy was one of the major centres of economic activity in Europe, specifically when it came to the production of metal goods. The proximity to the Alps supplied the iron, and powerful rivers provided power for the smithies which were integral to the region's ability to grow a powerful metallurgical industry of which the free city of Milan was the centre.⁸¹ By the end of the 13th century the city of Milan became home to armourers' workshops which started taking advantage of the ever-growing demand for plate armour.⁸² In the following century, Milanese armour became the most sought-after armour in Europe.⁸³ It dominated the market until the advent of munitions grade armours of the 16th century which could be mass produced as it required less skill, the technology advanced, warfare changed and the expectations of armour with it. Due to similar comparable examples in general morphology or decorative elements, it is probable that the cuisse was made in Northern Italy; Milano, or Brescia alternatively as North-East Italy and the Venetian Republic traditionally

Ugljana i Kali?" [Goldsmiths Pavao and Stjepan Petrov of Kotor – Masters of Gothic Processional Crosses from Nin, Božava, Ugljan and Kali?], *Ars Adriatica* 4 (2014): fig 1.

⁷⁸ Jakšić, Tomić, *Zlatarstvo*, cat. no. 067, 164.

⁷⁹ Williams, *The Knight and the Blast Furnace*, 62 table 1, 65 table 2. In Alan Williams' metallurgical analysis, 13 pieces of armour from the period 1380–1400 were examined, out of which only five had marks.

⁸⁰ Dupras, "Armourers and their Workshops," 137.

⁸¹ Alternatively, there was the free city of Brescia, however most of its armourers originated from Milan. Doran Tucker, "The preeminence of the Milanese armor industry," (bachelor's thesis, The Pennsylvania state university, 2018), 33, 54.

⁸² Keith Downen, "The introduction and development of plate armour in medieval western Europe c. 1250-1350," *Fasciculi Archaeologiae Historicae* 30 (2017): 26–27, DOI: 10.23858/FAH30.2017.002.

⁸³ Williams, *The Knight and the Blast Furnace*, 57.

supplied armour from Brescia.⁸⁴ The amount of extant armour with surviving applications and depictions in art representing copper alloy decorated plate armour suggests it was common practice of Italian armourers from the 1360s until the late 15th century.⁸⁵ The decorative elements in combination with the morphological features of the CHM cuisse suggest that it was made in the last two decades of the 14th century or in the first decade of the 15th century.

Although some limited armour production existed on the eastern shore of the Adriatic and its communes, the absence of a maker's mark prevents any serious consideration of local production.

That such decorated armour was in use by the local high nobility can be seen on the depiction of vojvode Hrvoje Vukčić Hrvatinić, a powerful magnate at the time, whose vast lands, holdings, riches and splendour rivalled that of kings.⁸⁶ The depiction is found in "Hrvoje's missal (*Missale glagoliticum Hervoiar ducis Spalatensis*), a Glagolitic manuscript created between 1408 and 1409⁸⁷ in Zadar or Split, made for or ordered by Hrvoje himself, as he held the title of Duke of Split at the time (fig. 5.3).⁸⁸ The illumination depicts a knight in full plate armour, missing a helm and sabatons. The edges of the armour components are trimmed with copper alloy. The upper edge of the cuisse in the illumination is obscured by the mail skirt, however, it is safe to assume it is trimmed just as the edges of the other armour components are. If one piece of plate armour was fitted with a cop-

⁸⁴ Williams, *The Knight and the Blast Furnace*, 57.

⁸⁵ Iron Documents, 85.

⁸⁶ Emir O. Filipović, "Viteške svečanosti u Budimu i učešće bosanskih predstavnika" [Festivities Held in Buda in 1412 and the Participation of Bosnian Magnates], *Spomenica akademika Marka Šunjića (1927-1998)*, ed. Dubravko Lovrenović (Sarajevo: Filozofski fakultet Sarajevo, 2010), 300–301. Hrvoje allegedly displayed the missal before his tent during the grand knightly festivities hosted by King Sigismund in Buda in 1412, suggesting the armour depicted in the illumination reflects an actual set he owned, one he valued highly enough to present before European magnates, where he was even mistaken for the King of Bosnia.

⁸⁷ It is generally accepted that the Missal was finished between 1403 and 1404, however Hrvoje is shown with an augmented coat of arms which also displays the two tailed red lion rampant of Sigismund's house Luxembourg. During 1403–1404, Hrvoje was supporting the Angevin claimant, king Ladislaus of Naples who was at war with Sigismund. It is likelier the Missal was made after the battle of Dobor in 1408 when Sigismund defeated the Bosnian nobility and Hrvoje swore allegiance to Sigismund, who confirmed his existing titles and estates and granted additional ones. Displaying the Missal during the knightly festivities before Sigismund showing the arms of Luxembourg would also make sense as he was trying to please his old enemy and now his new king. See footnote 93 and Amer Sulejmanagić, "Grbovi Vukčića Hrvatinića" [Heraldry of Vukčić Hrvatinić], *Povijesni prilozi* 48 (2015): 52–53.

⁸⁸ Mokrović, "Bizantski i zapadni stil na minijaturama Hrvojeva misala," 505; Mirsad Sijarić, *Cold-steel weapons from Bosnia and Herzegovina in the archaeology of the high and late mediaeval periods* (Sarajevo: Univerzitet u Sarajevu; Zemaljski muzej Bosne i Hercegovine, 2014), 14; Amer Sulejmanagić, "Novac Hrvoja Vukčića Hrvatinića" [Coins of Hrvoje Vukčić Hrvatinić], *Numizmatičke Vijesti* 54 (2012), no. 65: 70.

per alloy, its counterpart, as well as most edges of the other plates would almost certainly have been decorated to match. The presence of a decorative strip suggests added expense as it required more labour and costly materials, indicating that the buyer likely had higher purchasing power.⁸⁹ In art, copper alloy trim is typically depicted on high-status figures, whether contemporary, historical, legendary, or saintly warriors.⁹⁰ Considering the titles and riches of Hrvoje, and the alleged display of the Manuscript before his tent for king Sigismund and others powerful nobles, it is safe to assume he used and owned that suit of armour.⁹¹ All of this suggests that the cuisse could have been used by a prominent local noble or by an individual in the service of a powerful lord.

⁸⁹ Dupras "Armourers," 100; As Dr Goll has noticed throughout his extensive work on extant armours, most decorated armour pieces are of higher quality which by itself makes those pieces costlier to make. Goll, "Iron Documents," 122.

⁹⁰ To mention a few examples: Illuminations of scenes from the Arthurian legend depicting knights of the round table "BNF Arsenal 3479 Legends of the Holy Grail (Part 1)," Manuscript Miniatures, accessed 25. 3. 2025, <https://manuscriptminiatures.com/4209/8897#image>; See figs 5.1 and 5.4 for more examples.

⁹¹ Manuscript illuminations are often made following a template and are not necessarily portraying locally worn attire. Among scholars, there is a consensus that most illuminations in the Missal were based upon or inspired by various templates and artworks. The composition, influences and similarities of Hrvoje's knightly portrait were compared with a few earlier and later examples; the allegory of the Sun portraying king Sigismund in *Bellifortis* of Konrad Kyeser (made about the same time, 1402–5), the relief depicting St Chrysogonus on choir stalls from St Francis' church in Zadar (1394) might have been used as inspiration for the composition. Later depictions in art; Orlando's column (1418) as well as depictions of SS Chrysogonus and Demetrius on the Ugljan polyptych (ca. 1450) show similarities in face and hair. However, the attires of all the mentioned depictions are different and the style depends on where, when and by whom was that depiction made. Different versions of *Bellifortis* show the same characters differently armoured and dressed depending on when they were made. The Budapest version illuminated between 1411–1413, depicts the Sun without wearing any armour, or it is well hidden under a jupon. Other versions from the 1430s and later usually show obvious armour being worn, however in different style according to the fashion at the time. This is the case with Orlando's column and the Ugljan polyptych which show contemporary armour for their times. The authors were depicting armour they see in their surroundings and often those which they consider opulent, as the characters depicted represent the emperor, a legendary warrior or warrior saints. SS George and Chrysogonus are both often portrayed in high-end armour of the time; on the Ugljan polyptych, as well as Dijon altar (1390s) the armours of the saints are also decorated with copper alloy edges. As Mokrović has noticed, the closest analogy for Hrvoje's armour is on Mengelo's St George from 1394 (see fig 5.4) made in Dalmatia and Zadar in 1394., however lacking the decorations, showing minor differences in armour, most being obscured by a surcoat. As the Missal was made for a specific person who wanted to display his own opulence, it is likely this armour existed and was decorated with copper alloy applications along its edges, as portrayed in the Missal. Sijarić, *Cold-steel weapons from Bosnia and Herzegovina*, 14; Mokrović, "Bizantski i zapadni stil na minijaturama Hrvojeva misala," 532; Ema Mezrak, "O uzorima minijaturiste Hrvojevog misala" [On the Models of the Miniaturist of Hrvoje's Missal], *Bosna Franciscana* 44 (2016): 20–21; Emil Hilje, "Zidne slike u južnoj apsidi crkve Sv. Krševana – prijedlog za Ivana Petrova iz Milana" [Wall Paintings in the Southern Apse of St Chrysogonus' Church: Proposal for an Attribution to Giovanni di Pietro from Milan], *Ars Adriatica* 7 (2017): fig 16.

Conclusion

A comparative analysis was conducted with depictions of armour in art and extant cuisses preserved in various museums and private collections. Through the use of Dr Goll's typology and comparative methodology of morphological, constructive and decorative elements of the cuisse, it was possible to confirm authenticity, narrow down the possible area of production and date the cuisse to the late 14th or early 15th century (ca. 1380–1410). The paper stresses the importance of this find for the study of late medieval archaeology and medieval arms and armour in Croatia, as this is the first significant piece of late medieval armour to be found and published in present-day Croatia. Archaeological finds of armour are very rare and this cuisse is the only other archaeologically found copper alloy decorated cuisse from this period, other than the one preserved in The Metropolitan Museum in New York. The rediscovery of such a rare and unique item highlights the importance of continual reevaluation and study of museum collections.

FIGURES



Fig. 1.1. Frontal view of the CHM cuisse (inv. no. HPM/PMH-1859), Croatian History Museum, Zagreb (photo by Ivana Asić, Croatian History Museum)/ **Fig. 1.2** Archaeological drawing of the CHM cuisse (drawing by Miljenka Galić, Archaeological Museum in Zagreb)



Fig. 2.1 Interior view of the CHM cuisse / **Fig 2.2** Detail: interior view of the upper part of the CHM cuisse (photos by Ivana Asić, photographer of the Croatian History Museum)



Fig. 3 Different angles of the CHS12 left cuisse, Schloss Churburg, Schulderns (photos by Dr Matthias Goll)



Fig. 4.1 Interior view of the CHS12 left cuisse, Schloss Churburg, Schulderns (photo by Dr Matthias Goll) / **Fig 4.2** Interior view of the right cuisse from Churburg (1450–1460), Kelvingrove Art Gallery, Glasgow (photo by Dr Matthias Goll)



Fig. 5.1 Detail: Saint George killing the Dragon on the Altarpiece of the Crucifixion from the Chartreuse de Champmol by Jacques de Baerze (1390–1399) Musée des Beaux-Arts de Dijon, France (photo by Daniel Burger) / **Fig. 5.2** Detail: Fresco from St Barnabas church (early 15th c.) Vižinada, Croatia / **Fig. 5.3** Detail: Hrvoje Vukčić in Hrvoje's Missal (Topkap Sarayı müzesi, Istanbul, fol. 244v) (1404–1407) / **Fig. 5.4** Detail: Menegelo Ivanov de Canali, St George, "Triptych of Our Lady of Varoš" (early 15th c.) Permanent display in SICU, Zadar

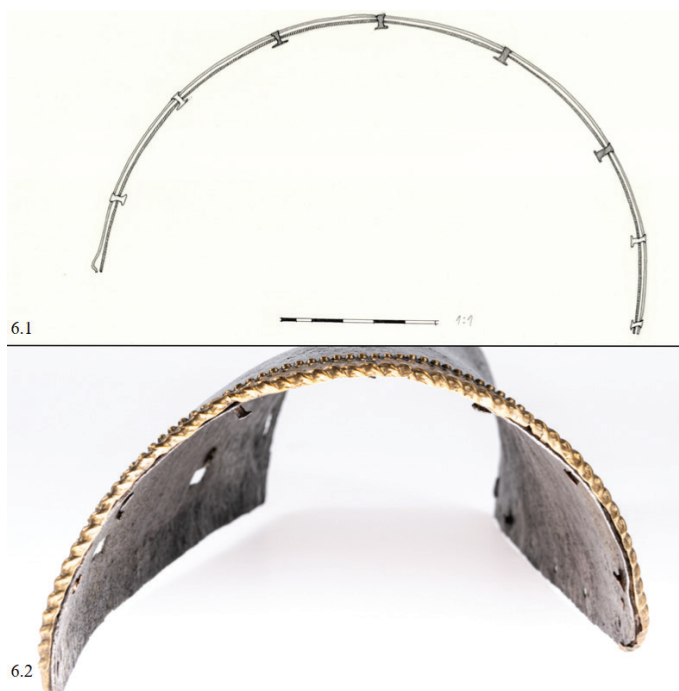


Figure 6.1 Archaeological drawings of the CHM cuisse copper alloy application and rivets (drawings by Miljenka Galić, Archaeological Museum, Zagreb) / **Fig. 6.2** Top view of the upper part of the CHM cuisse (photo by Ivana Asić, photographer of the Croatian History Museum)



Figure 7.1 Big toe side and small toe side of the CHM cuisse (photos by Ivana Asić, Croatian History Museum) / **Fig. 7.2** Archaeological drawings of CHM cuisse sides (drawings by Miljenka Galić, Archaeological Museum, Zagreb)



Figure 8.1 Archaeological drawing of copper alloy application (drawing by Miljenka Galić, Archaeological Museum, Zagreb) / **Fig. 8.2-3** Details: copper alloy application of the CHM cuisse (Ivana Asić, Croatian History Museum)



Figure 9.1 Detail of a 13th c. (?) processional cross in SICU, Zadar / **Fig. 9.2** Detail of the late 14th c. processional cross in Treasury of the Gold and Silver of Nin (photos by the author)



Figure 10.1 Bascinet helmet visor, Archaeological Museum, Veliko Tarnovo (photo by Dr Matthias Goll) / **Figs. 10.2-10.3** Gauntlet, Museo Nazionale del Bargello, Florence (photos by Dr Matthias Goll)



Fig. 11.1 Copper alloy application fragment, private collection (photo by Andreas Müller) / **Fig. 11.2** Gauntlet copper alloy application fragment, Museo Archeologico Medioevale di Attimi, Faedis (photo by Dr Matthias Goll)



Fig. 12.1 Detail: CHS13 gauntlet, Schloss Churburg, Schulderns (photo by Pavel Alekseychik, Medieval Advisor ©) / **Fig. 12.2** Detail: Gauntlet, Museo Nazionale del Bargello, Florence (photo by Dr Matthias Goll) / **Fig. 12.3** Detail: Lyle bascinet, Royal Armouries, Leeds / **Fig. 12.4-5** Details: left cuisse and bascinet, The Metropolitan Museum of Art, New York



Fig. 13.1 Detail: Montpellier bascinet, Musée Languedocien, Montpellier (photo by Jean-Marc Ebert „Réchignac”) / **Fig. 13.2** Detail: Gauntlets, Wallace Collection, London (photo by: Dr Matthias Goll) / **Figs. 13.3-13.4.** Details: CHS13 bascinet and arms, Schloss Churburg, Schulderns (photos by Pavel Alekseychik, Medieval Advisor ©)

Unpublished Sources

Croatia – Croatian History Museum, Zagreb (CHM) – Inventar arheološkog odjela narodnoga muzeja u Zagrebu. Historička zbirka, inv. no. 1859, 235.

Croatia – Archaeological Museum, Zagreb – Dossier Siscia, Sisak 1851 – 1935, 42/25.

Published Sources and Literature

“Altarpiece of St George.” Victoria and Albert Museum. Accessed 28. 2. 2024, <https://collections.vam.ac.uk/item/O17807/altarpiece-of-st-george-altarpiece-master-of-the/?carousel-image=2023NN8046>.

Andrić, Stanko. „Rijeka Sava kao protuturski bedem (do pada Bosne)” [The Sava river as a bulwark against the Turks (until the fall of Bosnia)]. In *Rijeka Sava u povijesti. Zbornik radova znanstvenog skupa održanog u Slavonskom Brodu 18-19. listopada 2013.*, edited by Branko Ostajmer, 205–236. Slavonski Brod: Hrvatski institut za povijest, Podružnica za povijest Slavonije, Srijema i Baranje, Slavonski Brod, 2015.

Andelić, Pavao. “Zanimljivi primjerci srednjovjekovnog oružja iz okoline Bileće” [Noteworthy Examples of Medieval Weapons from the Vicinity of Bileća]. *Tribunia* 6 (1975): 73–81.

Aralica, Tomislav. “Maglajske basinete” [The Maglaj Basinets]. *Hrvatski vojnik* 4 (1994), no. 62: 118.

“Armor.” The Metropolitan Museum of Art. Accessed 23. 7. 2023, <https://www.metmuseum.org/art/collection/search/23205>. “Bacinet - The Lyle Bacinet - Late 14th Century.” The Royal Armouries. Accessed 20. 3. 2024, <https://royalarmouries.org/collection/object/object-500>.

Bezić Božanić, Nevenka. *Artists and Craftsmen from 9th to 19th Century in Dalmatia*. Split: Ministarstvo culture Republike Hrvatske, 1999.

Bojanovski, Ivo. “Stari grad Maglaj – istraživački i konzervatorski radovi 1962. i 1963. g.” [The Old Town of Maglaj: Research and Conservation Works in 1962 and 1963]. *Naše starine* 10 (1965): 61–97.

“Book fitting.” Portable antiquities scheme. Accessed 4. 4. 2024, <https://finds.org.uk/database/artefacts/record/id/975749>.

Bošković, Dora. “Slatkovodni nalazi u zbirci hladnog oružja Hrvatskoga povijesnog muzeja u Zagrebu” [Freshwater Finds in the Collection of Edged Weapons of the Croatian History Museum in Zagreb]. In *Jurišićev zbornik. Zbornik radova u sjećanja na Mariju Jurišića.*, edited by Luka Bekić, 98–133. Zagreb: Hrvatski restau-ratorski zavod; Međunarodni centar za podvodnu arheologiju u Zadru, 2009.

Bošnjak, Leon. "Medieval knobbed maces of the Arms and Armour Collection of the Croatian History Museum." In *History of Antique Arms. Researches 2020: A Collection of Scientific Papers from the Fourth International Conference on Weapons which took place in Kyiv, Ukraine on November 3-4, 2020.*, edited by Denys Toichkin, 38–74. Kyiv: Institute of History of Ukraine; National Academy of Sciences of Ukraine, 2023.

Budak, Neven; **Raukar**, Tomislav. *Hrvatska povijest srednjeg vijeka* [Croatian Medieval History]. Zagreb: Školska knjiga 2006.

"Closed cuisses," Manuscript Miniatures. Accessed 25. 9. 2023, <https://manuscriptminiatures.com/search?tag=3415#results>.

Čoralić, Lovorka. *Put, putnici, putovanja – ceste i putovi u srednjovjekovnim hrvatskim zemljama* [Road, Travellers, Travellings: Roads and Routes in Medieval Croatian Lands]. Zagreb: AGM, 1997.

Doračić, Damir. "Observations during laboratory studies." In *Swords of the Chivalric Period in Croatia. Swords of the High and Late Middle Ages from the Arms Collection of the Croatian History Museum*, 32–39. Zagreb: Hrvatski povijesni muzej, 2009.

Dowen, Keith. "The introduction and development of plate armour in medieval western Europe c. 1250-1350." *Fasciculi Archaeologiae Historicae* 30 (2017): 19–28. DOI: 10.23858/FAH30.2017.002.

Dupras, Nickolas. "Armourers and their Workshops. The Tools and Techniques of Late Medieval Armour Production," volume 1. PhD diss., The University of Leeds, 2012.

Filipović, Emir O. "Viteške svečanosti u Budimu i učešće bosanskih predstavnika" [Festivities Held in Buda in 1412 and the Participation of Bosnian Mag-nates]. *Spomenica akademika Marka Šunjića (1927-1998)*, edited by Dubravko Lovrenović, 285–306. Sarajevo: Filozofski fakultet Sarajevo, 2010.

Filipović, Emir O. *Viteštvo u srednjovjekovnoj Bosni* [Chivalry in Medieval Bosnia]. Zagreb: Plejada, 2024.

Goll, Matthias. "Iron Documents. Interdisciplinary studies on the technology of late medieval European plate armour production between 1350 and 1500." PhD diss., Heidelberg University, 2014. Accessed 8. 12. 2021 DOI: 10.11588/heidok.00017203.

Gotić, Kristian; **Mađar**, Nikolina; **Uroda**, Nikolina. *Varvaria / Breberium / Bribir: Historical Layers Revealed*. Zagreb: Hrvatski povijesni muzej, 2019.

Grgić, Marijan. *Zlato i srebro Zadra i Nina* [The Gold and Silver of Zadar and Nin]. Zagreb: Turistkomerc, 1972.

Hilje, Emil. "Zidne slike u južnoj apsidi crkve Sv. Krševana – prijedlog za Ivana Petrova iz Milana" [Wall Paintings in the Southern Apse of St Chrysogonus' Church: Proposal for an Attribution to Giovanni di Pietro from Milan]. *Ars Adriatica* 7 (2017): 99–112. DOI: <https://doi.org/10.15291/ars.1379>.

Jakšić, Nikola; **Tomić**, Radoslav. *Umjetnička baština zadarske nadbiskupije – Zlatarstvo* [The Artistic Heritage of the Archdiocese of Zadar: Goldsmithery]. Zadar: Zadarska nadbiskupija, 2004.

Jones, Toby; **Nayling**, Nigel. "The Newport Medieval Ship, Wales, United Kingdom." *The International Journal of Nautical Archaeology* 42 (2013), no. 1: 1–40. DOI: 10.1111/1095-9270.12053.

"Karaskovo." Szent Laszlo. Accessed 12. 2. 2024, <https://www.szentlaszlo.com/gallery.en.kraskovo.php>.

Kekez, Hrvoje. "Preskočiti rijeku: geostrateško značenje skela na rijeci Savi" [Crossing the River: The Geostrategic Significance of Ferries on the Sava River during the Time of the House of Babonić at the End of the 13th and Beginning of the 14th Century]. In *Rijeka Sava u povijesti. Zbornik radova znanstvenog skupa održanog u Slavonskom Brodu 18-19. listopada 2013.*, edited by Branko Ostajmer, 105–125. Slavonski Brod: Hrvatski institut za povijest, Podružnica za povijest Slavonije, Srijema i Baranje, Slavonski Brod, 2015.

Klaić, Vjekoslav. *Povijest Hrvata: od najstarijih vremena do svršetka XIX stoljeća*, knjiga druga [History of the Croats: From the Earliest Times to the End of the Nineteenth Century: Book Two]. Zagreb: Nakladni zavod Matice Hrvatske, 1988.

Kovačević, Marijana. "Zlatari Pavao i Stjepan Petrovi iz Kotora – majstori gotičkih ophodnih križeva iz Nina, Božave, Ugljana i Kali?" [Goldsmiths Pavao and Stjepan Petrov of Kotor – Masters of Gothic Processional Crosses from Nin, Božava, Ugljan and Kali?]. *Ars Adriatica* 4 (2014): 125–154.

Lukšić, Tugomir. *The Splendour of Zadar Treasuries. Religious Art in the Archdiocese of Zadar 4th – 18th centuries*. Zagreb: Muzejsko-galerijski centar, 1990.

Mezrak, Ema. "O uzorima minijaturiste Hrvojevog misala" [On the Models of the Miniaturist of Hrvoje's Missal]. *Bosna Franciscana* 44 (2016): 17–50.

Mokrović, Ljiljana. "Bizantski i zapadni stil na minijaturama Hrvojeva misala" [Byzantine and Western Styles in the Miniatures of Hrvoje's Missal]. *Slovo* 60 (2010): 530–531.

"Palatine Miklós Garai." Effigies and Brasses. Accessed 25. 3. 2025, <https://effigie-sandbrasses.com/1081/4137#image>.

Petricioli, Ivo. "Prilozi izučavanju srednjovjekovnog zlatarstva u Zadru" [Contributions to the Study of Medieval Goldsmithery in Zadar]. *Radovi filozofskog*

fakulteta u Zadru. *Razdio historije, arheologije i historije umjetnosti* 2 (1963), no. 1: 132–146. DOI: <https://doi.org/10.15291/radovihahu.1946>.

Petrović, Đurđica. *Dubrovačko oružje u XIV veku* [Weapons of Dubrovnik in the Fourteenth Century]. Beograd: Vojni muzej, 1976.

Radman-Livaja, Ivan; **Vukelić**, Vlatka. *Blago rijeke Kupe = Thesaurus Colapis fluminis: arheološka istraživanja Kupe kod Siska prije 1. svjetskog rata* [Thesaurus Colapis Fluminis – The Treasure of the Kupa River: Archaeological Excavations of the Kupa near Sisak before WWI]. Zagreb: Arheološki muzej, 2012.

Richardson, Roland Thomas. “The medieval inventories of the Tower armouries 1320–1410.” PhD diss., University of York, 2012.

“Riembeslag.” *Doorzoek de collectie van het Rijksmuseum van Oudheden*, Rijksmuseum van Oudheden. Accessed 20.3.2024, <https://hdl.handle.net/21.12126/189517>.

Sijarić, Mirsad. *Cold-steel weapons from Bosnia and Herzegovina in the archaeology of the high and late mediaeval periods*. Sarajevo: Univerzitet u Sarajevu; Zemaljski muzej Bosne i Hercegovine, 2014.

Strong, Doug. *Surviving Examples of Early Plate Armour 1300-1430*, volume I: *Bascinet*s. Wheaton: Freelance Academy Press, 2018.

Sulejmanagić, Amer. “Novac Hrvoja Vukčića Hrvatinića” [Coins of Hrvoja Vukčić Hrvatinić]. *Numizmatičke Vijesti* 54 (2012), no. 65: 54–85.

Sulejmanagić, Amer. “Grbovi Vukčića Hrvatinića” [Heraldry of Vukčić Hrvatinić]. *Povijesni prilozi* 34 (2015), no 48: 33–70.

Šercer, Marija. *Staro oružje na motki* [Old Polearms]. Zagreb: Hrvatski povijesni muzej, 1972.

Škrivanić, Gavro A. *Oružje u srednjovjekovnoj Srbiji, Bosni i Dubrovniku* [Weapons in Medieval Serbia, Bosnia, and Dubrovnik]. Beograd: Naučno delo, 1957.

Temesváry Ferenc. *Fegyverkincsek, díszfegyverek*. Budapest: Corvina/Halikon kiadó, 1982.

Topić, Nikolina. “Inventory of finds and multiphase cemetery by fort Sokol in Konavle.” *Archaeologia Adriatica* 13 (2019): 107–251. DOI: 10.15291/archeo.3302.

Tucker, Doran. “The preeminence of the Milanese armor industry.” Bachelor’s thesis, The Pennsylvania state university, 2018.

“Voit von Rieneck.” *Effigies and Brasses*. Accessed 25. 3. 2025, <https://effigiesandbrasses.com/864/4470>.

Williams, Allan. *The Knight and the Blast Furnace. A history of the Metallurgy of Armour in the Middle Ages and the Early Modern Period*. Boston; Leiden: Brill, 2003.

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Jedinstveni kasnosrednjovjekovni bedreni oklop pronađen kod Siska: analiza, datacija i identifikacija

Sažetak

Rad donosi analizu kasnosrednjovjekovnog dijela pločastog oklopa za bedro lijeve noge, koji je pronađen u Savi 1911. godine kod sela Gušće blizu Siska. Nalaz je svojedobno pogrešno datiran u 18./19. stoljeće, što je objavljeno u jednom radu iz 2009. Uslijed toga malo je pozornosti bilo posvećeno njegovoj stvarnoj važnosti. U ovom radu primjenjuje se komparativna metodologija u analizi morfoloških, dekorativnih i konstruktivnih elemenata, koji se uspoređuju s onima sačuvanih primjeraka oklopa, potkrijepljena tipologijom pločastog oklopa dr. Golla, onodobnim likovnim prikazima i povijesnim kontekstom kako bi se precizno odredio i datirao ovaj iznimno rijedak i jedinstven arheološki nalaz. Rad započinje kratkim uvodom i donosi podatke o prvotnom otkriću predmeta i njegovoj sudbini nakon iskapanja. Budući da ne postoji arheološki kontekst nalaza, rad pruža povijesni kontekst relevantan za mjesto pronalaska. Nakon kratkog pregleda povijesti uporabe i izučavanja srednjovjekovnih oklopa u Hrvatskoj detaljno su predstavljeni i analizirani fizički elementi oklopa, pri čemu ih se uspoređuje sa sačuvanim primjercima radi potvrde autentičnosti i preciznijeg datiranja. Posljednji dio rada usredotočen je na dekorativnu obradu, uz navođenje poznatih analogija slično ukrašenih sačuvanih oklopa i umjetničkih prikaza, kao i na dekorativni stil koji upućuje na moguća mjesta proizvodnje i uporabe takvog ukrašenog oklopa.

Ključne riječi: pločasti oklop, bedreni oklop, zlatarstvo, srednji vijek, arheologija, vođeni nalaz, Sisak, bakrena slitina, dekoracija

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