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A Glimpse into a 15th-Century Goldsmith's Workshop in Šibenik*

Pogled u šibensku zlatarsku radionicu iz 15. stoljeća

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ABSTRACT

This paper examines the goldsmithing practices of Stjepan Ivanov Skočibuha – a prominent 15th-century goldsmith from Šibenik – based on his 1444 estate inventory, which includes a detailed inventory of his goldsmith workshop, likely located in the northeastern part of Šibenik, similar to other goldsmith workshops of the time. By analysing the tools, materials, and objects listed in the inventory, along with other archival sources, the operational structure of his workshop has been partially reconstructed, revealing some of the goldsmithing techniques he employed and the types of items he produced. The paper also addresses the challenges in attributing medieval goldsmiths' works, particularly due to the shared use of stamping moulds among craftsmen. This is evidenced by the sale of Skočibuha's tools after his death, as well as other documents showing that different goldsmiths used the same equipment. Furthermore, the paper explores the goldsmiths' apprenticeship system and the transmission of knowledge in 15th-century Šibenik, highlighting the importance of training in the continuity of the craft.

Keywords: estate inventory, medieval goldsmith's workshop, goldsmithing tools, goldsmithing techniques, 15th century, goldsmith Stjepan Ivanov Skočibuha, Croatia, Dalmatia, Šibenik

SAŽETAK

U radu se istražuje zlatarsko djelovanje Stjepana Ivanova Skočibuhe – istaknutoga šibenskog zlatara iz 15. stoljeća – na temelju inventara njegovih dobara iz 1444. godine, koji uključuje i popis njegove zlatarske radionice, po svemu sudeći, smještene u sjeveroistočnom dijelu Šibenika, poput nekih drugih zlatarskih radionica. Analizom alata, materijala i predmeta zabilježenih u inventaru, u kombinaciji s drugim arhivskim izvorima, nastoji se rekonstruirati rad njegove radionice te rasvijetliti zlatarske tehnike kojima se koristio i vrste predmeta koje je izrađivao. U radu se također upućuje na izazove pri atribuciji srednjovjekovnih zlatarskih radova zbog prijenosa matrica među obrtnicima, o čemu svjedoči prodaja Skočibuhinih alata nakon njegove smrti, ali i drugi dokumenti iz kojih doznajemo da su se istim alatima koristili različiti zlatari. Osim toga, u radu se istražuje sustav zlatarskog naukovanja i prijenosa znanja u Šibeniku tijekom 15. stoljeća te se ističe značenje naukovanja u održavanju kontinuiteta zlatarskog obrta.

Ključne riječi: popis dobara, srednjovjekovna zlatarska radionica, zlatarski alati, zlatarske tehnike, 15. stoljeće, zlatar Stjepan Ivanov Skočibuha, Hrvatska, Dalmacija, Šibenik

* This paper is a revised and expanded version of an excerpt from my doctoral thesis titled *Šibensko zlatarstvo 14. i 15. stoljeća* (Goldsmithing in Šibenik in the 14th and 15th centuries), defended in 2022 at the University of Zadar.

The Late Middle Ages marked a period of remarkable growth for the art of goldsmithing,[1] which flourished alongside the burgeoning economies of European urban centres. As towns and cities grew, and wealth increasingly accumulated in the hands of affluent families outside the traditional noble and ecclesiastical spheres, the demand for luxurious goods – especially those fashioned from precious metals – grew exponentially.[2] This period witnessed a "democratisation" of goldsmithing, as items once reserved for the elite became accessible to a broader segment of society. Consequently, the production of goldsmithing works, particularly secular pieces, increased substantially, reflecting the evolving tastes and social aspirations of an increasingly diverse clientele.[3] Although many of these creations have been lost over time, the surviving artifacts still attest to the skill and artistry of medieval goldsmiths. Yet, despite these physical remnants, the names and legacies of these craftsmen have largely faded from memory, along with the intricate techniques and secrets they once mastered.

Our current understanding of the materials and aesthetics employed by medieval goldsmiths is primarily reconstructed from the artifacts that have withstood the passage of time. However, the broader scope of their work – including the variety of objects produced, the tools and techniques used, and the organizational dynamics of their workshops – is often revealed only through meticulous archival research. Some written sources from both earlier and later periods also play a crucial role in deepening our understanding of medieval goldsmithing. For instance, the 12th-century treatise by the monk Theophilus provides foundational insights into the techniques and spiritual dimensions of the craft.[4] Alexander Neckham offers a brief account of a 12th-century goldsmith's workshop,[5] while Benvenuto Cellini's 16th-century treatise describes various methods of working with precious metals, including the possibilities of incorporating gemstones and their imitations made from glass paste and crystal.[6] One of Denis Diderot's renowned encyclopaedias from the 18th century, featuring illustrations of goldsmithing tools by the engraver Robert Bénard, is also useful in visualizing various types of tools.[7] Additionally, pictorial sources from the period provide valuable visual documentation,[8] capturing aspects of goldsmithing that written records may overlook, such as the well-known and frequently reproduced painting of a goldsmith in his workshop by the Flemish painter Petrus Christus (Fig. 1).

In our research of goldsmithing practices in 15th-century Šibenik, we focus on the workshop of Stjepan Ivanov Skočibuha, a goldsmith whose posthumously documented estate inventory provides a rare and detailed snapshot of the contents of his workshop – items, tools, and materials. By analysing this inventory alongside other archival documents, we have aimed to reconstruct the operational framework of his workshop: the tools and equipment he used, the techniques he employed, and the types of objects he produced. This approach not only sheds light on the workings of an individual workshop but also contributes to a broader understanding of the goldsmithing craft in Šibenik during this period.

Goldsmith Stjepan Ivanov Skočibuha (born in the late 14th century – died before 27 August 1443)

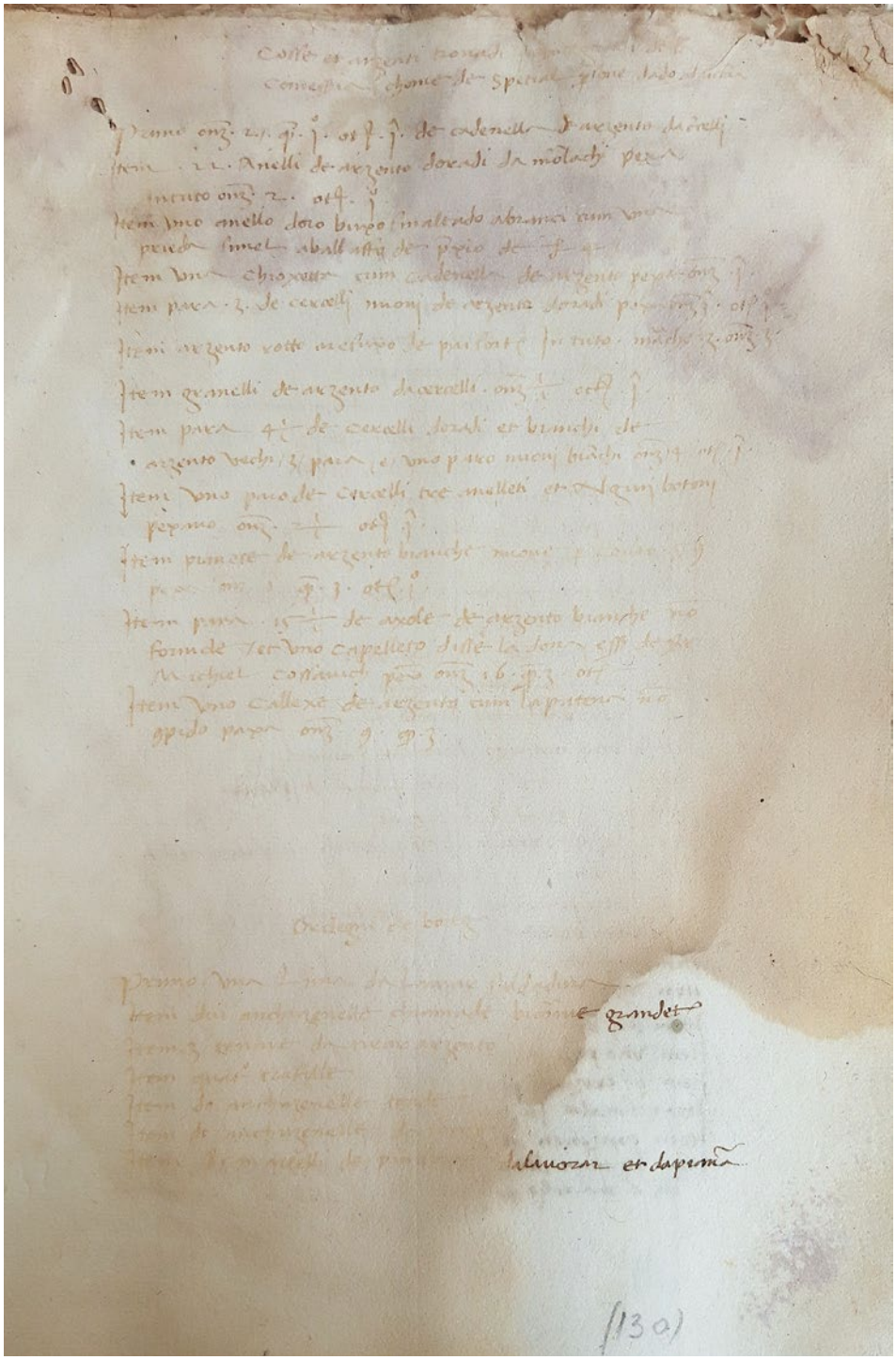
Stjepan Ivanov Skočibuha from Šibenik (*Stephanus Iohannis Scocibucha de Sibenico*),[9] recorded in various archival documents, remained until recently a relatively unknown figure in the study of late medieval Dalmatian goldsmithing. However, between his first mention in 1414 and his death in 1443, he was documented in over 150 archival records, and posthumously in approximately 20 more, making him one of the best-documented goldsmiths in 15th-century Šibenik.[10] These sources have allowed recent research to clarify previous misunderstandings regarding his identity.[11]

1.
Petrus Christus, *A Goldsmith in His Shop*, 1449, Metropolitan Museum of Art (source: https://www.metmuseum.org/art/collection/search/459052)

Petrus Christus, *Zlatar u svojoj radionici*, 1449., Metropolitan Museum of Art

Little is known about the early phase of his life but given his title of master goldsmith acquired by 1414, he was likely born in the late 14th century.[12] The preserved archival records, however, only cover the last thirty years of his life, depicting him as a highly enterprising, successful, and consequently wealthy individual. Alongside Stjepan Milgostov (Milgostić), known as Jajce, with whom he appears in many documents, he was one of the wealthiest goldsmiths in 15th-century Šibenik.

Although he was active in his craft, his wealth extended beyond that, as evidenced by contracts for purchasing, selling, and leasing land, real estate, and commercial properties, as well as the trade and resale of various goods. His posthumous inventory of movable assets and real estate further highlights his financial success, although it is possible that not all his assets were included, as indirectly suggested by a later-dated document.[13] Various archival records indicate that Stjepan owned multiple properties: a house near the main street and a square close to the church of the Holy Trinity,[14] a *muralea* near the church of the Holy Spirit,[15] a house near the main town gate (*in confinibus Porte terefirme*),[16] a house with a courtyard next to Lovre Lucić (possibly in Grebaštica),[17] and many other estates, including arable land, vineyards, olive groves, and more. Additionally, in 1440, he sold his share of a house and a workshop *in Puncta*, which appear to have been located near the church of the



2.
Estate inventory (1444) of goldsmith Stjepan Ivanov Skočibuha from Šibenik, detail of the workshop inventory (HR-DAŠI-263, BŠ, kut. 11/II, Antonio Campolongo, F 11/III, sv. 10/VIIc, fol. 130r.
Photo: Đ. Lakošeljac)

Inventar dobara zlatara Stjepana Ivanova Skočibuhe iz Šibenika, 1444., detalj inventara njegove zlatarske radionice, Državni arhiv u Šibeniku

Holy Spirit.[18] It may not be too presumptuous to suggest that his high social standing is also reflected in his first marriage to Cvita (Florija) Tolimerić, a woman of noble descent, though after her death, he married Margarita, daughter of the stonemason Juraj Grk from Hvar.[19] Stjepan's social status and reputation are further evidenced by the numerous records in which he appears as a witness and trusted figure for many individuals from Šibenik, its district, and the Knin area, where his four known apprentices also originated from.[20]

Besides his financial success and social standing, Skočibuha played a significant role in training future generations of goldsmiths. While no evidence of specific goldsmithing commissions is preserved in the archival sources, several documents clearly indicate that he was actively involved in the trade. He maintained personal and possibly business relations with several goldsmiths from Šibenik, including Stjepan Milgostov (Milgostić), known as Jajce, Ivan Punković, Marin Frane Silvestra from Split, Pavao Jurinić, Petar Herenković from Požega, and Mihovil Vratislavov from Kobilica.[21]

He apparently had no male heir; with Margarita, he had two daughters – Deša and Simoneta – the latter of whom died at a very young age, in the same year as her mother.[22] It seems that Deša inherited all of Stjepan's assets,[23] including commercial venues (*apottece*), which were rented out to other craftsmen by her appointed guardian (*tutor dativus*) until she reached adulthood.[24] This raises questions about the fate of Stjepan's goldsmithing workshop, which will be discussed later.

Among the numerous documents, one stands out for its content and rarity, not only in Šibenik but in a broader context. It is Stjepan's 1444 estate inventory, which, among other things, includes the inventory of his goldsmith workshop (Fig. 2).[25] Although the medieval statutes of Dalmatian communes required drawing up estate inventories for the deceased,[26] only a few goldsmiths' inventories have been found in the preserved archival records, and even fewer include detailed listings of items in their workshop (*in bottega*).[27] Unfortunately, late medieval goldsmith workshop inventories are rarely preserved, even in Europe.[28] This is a significant loss, as they – alongside statutory regulations, apprenticeship contracts, goldsmithing commissions, and surviving artefacts – are invaluable historical sources for studying the craft. As estate inventories illustrate the material wealth of a town's inhabitants, goldsmiths' workshop inventories are crucial for understanding the inner workings of the goldsmithing trade. Accordingly, this study aims to provide insight into the only known late medieval goldsmith's workshop in Šibenik, whose inventory is preserved in archival sources.

Stjepan Skočibuha's estate inventory (1444)

According to archival documents, Stjepan passed away between 7 and 27 August 1443 without a will.[29] However, despite the provisions of the Šibenik Statute,[30] the inventory of his assets was not recorded until between 2 and 19 May 1444.[31] This inventory is the earliest and most detailed of the three surviving 15th-century estate inventories of Šibenik goldsmiths. Apart from Stjepan's inventory, only those of the goldsmiths Stjepan Petrov (1444) and Pavao Derljanović (1459) have survived; however, neither includes a list of goldsmithing items and tools found in the *bottega*. Stjepan Petrov's inventory, for instance, collectively lists forty tools, such as anvils (*anchuzene*), hammers (*martelli*), and other iron tools used in goldsmithing (*altri ferri da lauorar de orexe*). In Pavao's case, it is noted that all workshop items were assigned to his apprentice (*Tuta masarizia de so mastiere de boteza fo asignada alo so discipulo*).[32]

In the first section of Skočibuha's estate inventory, the movable properties in his house are listed, followed by the inventory of his workshop, and finally, certain plots of land, vineyards, arable fields, and gardens.[33] As previously mentioned, these may represent only a portion of the goldsmith's total assets. Nevertheless, the detailed inventory of his workshop provides valuable insight into the tools and materials he used in his craft, as well as the types of items he produced, which will be discussed in the following sections.

"*Cosse et arzenti trouadi in botega*"[34]

Three folios of Skočibuha's estate inventory are dedicated to the contents of his goldsmithing workshop. The inventory begins with various items and works (*cosse et arzenti*) owned by the goldsmith, including pieces commissioned by clients, followed by a detailed list of his tools (*ordegni*).

The workshop inventory opens with a "silver chain of earrings" (*cadenella de arzento da cercelli*)[35] – likely a chain of interconnected silver earrings – weighing 2 ounces, 1 quarter, and 1 eighth of an ounce, approximately 70.80 grams.[36] Also listed are 22 gilded silver rings intended for the Morlachs (*anelli*[37] *... da Morlachi*), with a total weight of 2 ounces and 1 eighth of an ounce (63.35 g). Next, there is a gold ring with enamel in a recess and a stone resembling a balas ruby (*anello doro buxo smaltado ... cum una prieda simel a ballasso*),[38] valued at 4 libra. Additionally, a small cross with a silver chain (*chroxetta cum cadenella*),[39] weighing 1 ounce (29.81 g), and three pairs of new gilded silver earrings (*cercelli*) with a total weight of 1 ounce and 1 eighth of an ounce (33.53 g) are recorded. Other notable items include bulk silver (*arzento rotto a refuxo*),[40] broken and probably set aside for remelting, measured at 3 marks and 3 ounces, totalling an impressive 804.93 grams. There is also a smaller portion of silver granules for earrings (*granelli*[41]*... da cercelli*), weighing half an ounce and 1 eighth of an ounce (18.63 g). Four and a half pairs of gilded and "white" (ungilded?) silver earrings (*cercelli doradi et bianchi de arzento*) are also recorded, with a total weight of 4 ounces and 1 eighth of an ounce (122.97 g). Of these, three pairs are described as "old" (*uechi*), while one pair of "white" earrings was new (*nuoui bianchi*). Further entries include one pair of earrings, three small rings (*anelleti*), and some buttons (*botoni*).[42] Their material is not specified, but their combined weight was 2 and a half ounces and 1 eighth of an ounce (78.25 g). There were also 59 new, flat, "white" silver buttons called *pianete*,[43] with a total weight of 1 ounce, 3 quarters, and 1 eighth of an ounce (55.89 g), 15 and a half pairs of "white" plain silver clasps (*axole*[44] *de argento bianche non fornide*), and a cap belonging to Sir Mihovil Košavić, weighing 16 ounces and 3 quarters of an ounce (499.34 g). Finally, the largest goldsmith item in the workshop was an unfinished silver chalice with a paten (*calexe*[45] *de arzento cum patena non compido*), weighing 9 ounces and 3 quarters of an ounce (290.66 g). With this entry, the list of goldsmith items in Stjepan's workshop concludes, followed by the inventory of his tools.

"*Ordegni de botega*"[46]

Following the listing of goldsmith items, the inventory provides a detailed description of various tools. It begins with a file for soldered joints (*lima da limar saldadura*),[47] followed by two larger bicorn anvils (*anchuzenelle bicornie grande*),[48] three pairs of tongs for drawing silver (*tenaye da tirar arzento*),[49] and four perforated plates for drawing wire, also known as drawing plates (*trafille*).[50] The next listed items are two smaller round anvils (*anchuzenelle tonde*)[51] and two anvils for embossing, thinning, or removing excess material (*da sbazar*),[52] along with eight types of hammers for "working" and flattening (*martelli ... da lauorar et da pianura*).[53] Other tools include a smaller anvil with a crest (*anchuzenella cum vna arma*),[54] another with a round head for flattening dish bottoms (*anchuzenella cum la testa tonda de drezar i fondi de le taze*),[55] and three pairs of shears (*cixore*).[56] Following these, there are a large and a small pair of plates (*piastre*) made of unknown material, a large broken hammer (*martello*),[57] and two hammers called *mazuoli*[58] – possibly special wooden or metal mallets.

The workshop also contained three bricks or bars "for pouring/casting silver" – probably iron or steel ingots hollowed in the middle to form a channel into which molten metal was poured (*canalli da butar arzento*)[59] – two stamping moulds (*stam-*

pe da stampar),[60] five worn-out files (*lime da limar triste*),[61] and three smaller anvils for stamping (*anchuzenelle da stampir*),[62] likely stake anvils. Additional tools included eight old and broken pincers (*tenaiuoli*)[63] of little value, six worn-out pipes of various sizes (*canelle triste*),[64] and eight different damaged tools referred to as *butunaduri*.[65] Five assorted punches (*ponzoni*),[66] eight different quality marks (*pezi de marcho*),[67] a soldering tool (*stagnador*),[68] and two additional punches are also noted: one with the mark •S• and another with *vna foretta* (?).[69] There were also two chisels for cutting (*ciselli da taier*),[70] two pairs of broken *cinaiuoli*,[71] and a long-horned bicorn anvil (*bicornia lunga*).[72]

For some reason, a door knocker (*bathocio*)[73] is included among the tools, followed by a "handle for turning the stone" (*manego da uoltar la muola*),[74] likely referring to a handle used for turning a sharpening stone wheel. A small box containing various pieces of lead (*piombo*)[75] is also listed, followed by a sharpening stone (*prieda da aguar*)[76] and several other stones with some *copoleti* in a container (*algune priede in vno bossolo cum puochi copoleti*).[77] Additionally, six tools called *vanadure*,[78] several thick metal needles (*pontaruoli*),[79] and some iron tools or objects of little to no value are noted (*feri de puocho o ouer nisun valor*), as well as a crossbow (*balestra*)[80] and a psalter (*libreto da Salmi*). The inventory also includes a bundle of copper wires (*mazeto de fil de rame*),[81] two brushes (*brustie*),[82] and a piece of touchstone for testing the quality of silver and gold (*pezo de parangon*).[83] It further lists six objects called *crozuoli*[84] – possibly vessels in which gold and silver were melted, also known as crucibles – a box containing enamel (*smalto*),[85] and 24 smaller letter punches (*ponzoneti de letterine*).[86]

One notable entry is a "pair of scales" with weights (*paro de balanze cum el marchio*)[87] weighing 18 ounces and 3 quarters, which at the time were in the possession of a goldsmith named Nikola. In the workshop, there was also a ducat weight with scales and several carats (*pexon da ducato cum le balanze et alguni carati*).[88] Additionally, two larger anvils – one square and one round (*anchuzenelle grande, vna quadra*[89] *et vna tonda*) – are listed, along with more hammers (*martelli*), another perforated plate for drawing wire (*trafilla*), and one *bruniur*[90] (maybe a burnisher?).

Next, a wooden basin (*caynello de legno*)[91] with two *vanadure*,[92] a drawing compass (*compasso*),[93] and pointed pincers (*tenaya da ponta*)[94] are recorded, followed by 8 ounces of lead (*piombo*), cuttlefish bones (*ossi de seppe*)[95] worth 12 soldi, and one *tornello*[96] without a tip. There was also another anvil for flattening dish bottoms (*anchuzene da drezar fondi de le taze*),[97] as well as a small table for counting money (*tauolella da nombrar danari*),[98] two worn-out small boxes (*cassellete*) of little value, worn-out goldsmith shears (*cesora*),[99] and a wooden cross (*croxe de legno*). Finally, the last items in the workshop inventory are three worn-out containers (*conche*),[100] a pair of bellows for stoking the fire (*paro de mantexi*),[101] two small pincers for "working silver" (*tenagliele*[102] *da lauorar arzento*), and an anvil with two large "beaks" (*anchuzenella da dui bechi*[103] *grandi*).

However, these were not all the tools, as in the goldsmith's house there were 73 additional pieces of various tools placed in a pillowcase (*instrumenti 73 de piu raxon consignadi*) and two hammers with some *spazadine de botega*.[104]

This inventory provides an invaluable record of the objects, tools, and materials in Stjepan Skočibuha's workshop, offering critical insights into the equipment and resources accessible to a 15th-century goldsmith whose works have either not survived or remain unidentified among the preserved pieces. By examining these items, we can understand not only the range of items the workshop was capable of producing, but also the techniques and craftsmanship involved. The following section will provide some insights into the organization and operational dynamics of Stjepan's workshop, with a focus on the key tools and methods employed in his goldsmithing practice.

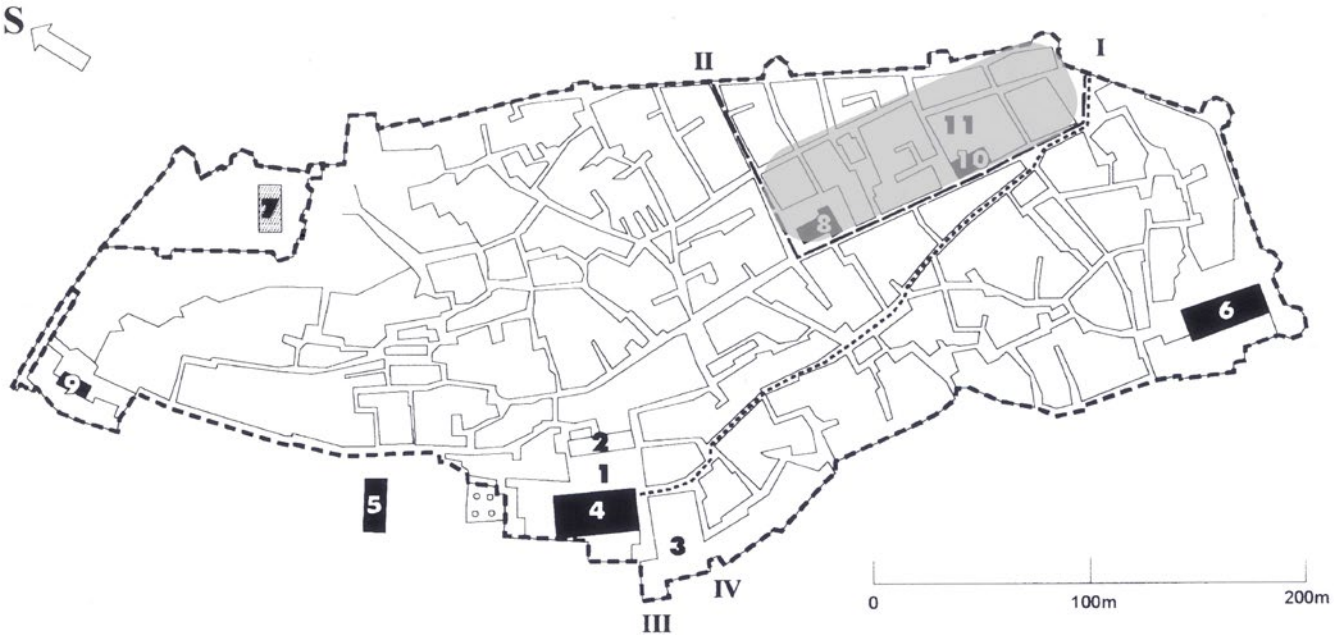
The location, equipment, and operation of Stjepan's goldsmith workshop

Although a document from 7 September 1463 reveals that Stjepan owned several commercial premises (*apothece*), which were leased to other craftsmen after his death,[105] his 1444 inventory does not specify the location of his own workshop. It is certain that it was not the property *in Puncta*, near the church of the Holy Spirit, as this was sold to Toma de Mirsa in 1440.[106] During his lifetime, Stjepan likely operated a single goldsmith workshop with an adjoining store where he practiced his craft, while his other commercial venues were probably rented out to other craftsmen. Since the family house near the church of the Holy Trinity – identified by a street and square near the church – is listed in his inventory,[107] it is highly likely that his workshop was situated on the ground floor of his residence. In fact, on 13 July 1446, this house was specifically referred to as the *domus habitationis* of his widow and daughters, although it was later damaged by fire between 23 October 1455 and 22 May 1459.[108]

This location would align with archival evidence suggesting the placement of other documented goldsmith workshops in 15th-century Šibenik. However, while approximately thirty documents from the Šibenik archives mention goldsmith workshops (*apoteca*, *appoteca*, *apotheca*, *apotecha*, *statio*), only a few provide the spatial clues needed to map their locations within the town's fabric. According to the known records, some workshops were situated near the Great Gate (*in contracta Porte magne Sibenici*),[109] while others were near the churches of the Holy Trinity (*in contrata Sancte Trinitatis*)[110] and the Holy Saviour (*in contrata Sancti Saluatoris*).[111] In addition, the *appoteca* of Stjepan Ivanov Skočibuha was once located *in Puncta*,[112] close to the church of the Holy Spirit. These workshops were predominantly situated along one of the town's two main thoroughfares, stretching from the Great Gate towards the church of the Holy Trinity, where a perpendicular street descends towards the Milk Gate (*Portas a lacte*) (Fig. 3). Archival records referring to goldsmith workshops *super strata magistra*[113] support this conclusion, indicating their location along major street and their integration into the vital currents of urban life.

In medieval Europe, including Dalmatian towns, there was a notable tendency to cluster goldsmiths in particular areas, often around key gathering points or along the busiest urban routes. In Venice, goldsmiths were concentrated around the Rialto;[114] in Padua, at the level of the portico of the Palazzo del Podestà, in Piazza della Frutta;[115] in Paris, they were selling their goods on the bridge over the Seine; in Cologne, they were near the cathedral; in Lübeck, close to the city market; and in Antwerp, near the town hall.[116] Dalmatian archival sources document goldsmith streets in Zadar (*Contrata aurificum*, *Ruga aurificum*),[117] Split (*ruga deli oresi*),[118] and Dubrovnik (*Ruga aurificium*).[119] In 15th-century Šibenik, there was evidently no such named street, but the known workshops were located in the northeastern part of the town, either directly along the *strata magistra* or just above it.

These workshops were typically situated on the ground floors of houses, featuring at least one large window facing the street.[120] This design allowed ample natural light to enter, which was essential for the detailed work required in goldsmithing.[121] Part of the workshop often served as a shop, with the windows functioning as display areas to showcase crafted goods. This type of spatial organization was likely present in Stjepan's workshop as well. While not explicitly described, it would have included a furnace[122] for melting metals and bellows made from ram skins for stoking the fire – as depicted in Niklaus Manuel's painting from 1515 (Fig. 4) – as well as a workbench, a three-legged stool for seating, and a wooden stump with anvils for shaping, as shown in the 15th-century engraving by the Master of Bileam (Fig. 5).[123] From Robert Bénard's 18th-century engravings, we learn that stumps, like anvils, could



1 Plathea Communis
2 Logia Communis
3 palatium Communis / Carceres

Ecclesia:

4 cathedralis Sancti Iacobi
5 Sancti Dominici
6 Fratrum Minorum, Sancti Francisci
7 Sancti Michaelis
8 Sanctae Trinitatis
9 Sanctae Catherinae
10 Sancti Salvatoris
11 Hospitalis Sanctae Mariae

I Portas Magnas terrae firmae Sibenici
II Portas a lacte
III Molum sub Palatio
IV Bicharia

strata qua tendit a plathea Communis usque ad portas magnas terrae firmae Sibenici

[strata qua tendit] a dictis portis [magnas terrae firmae Sibenici] sursum versus Sanctam Trinitatem usque ad portas a lacte

murus civitatis

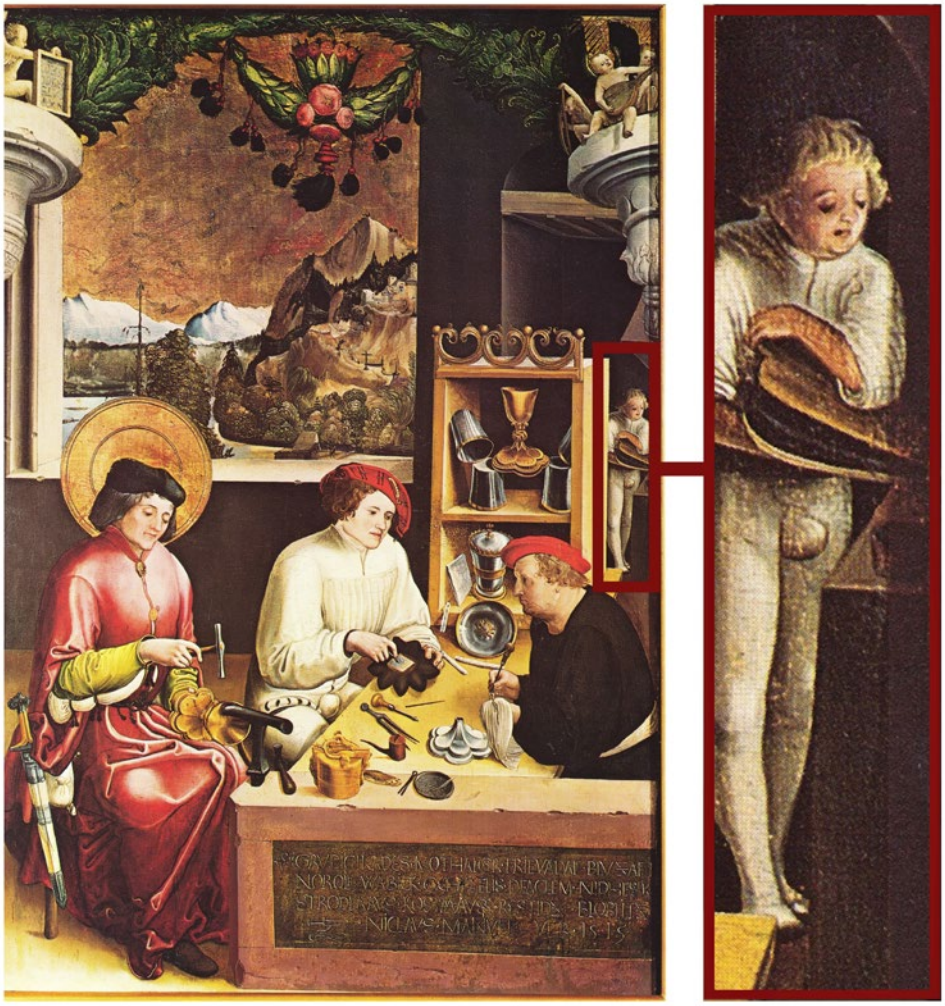
3.
Public buildings, churches, urban spaces, and gates of medieval Šibenik mentioned in the provisions of the Statute (with the marked location of goldsmith workshops indicated in gray) (source: DANKO ZELIĆ, Gradski statut kao izvor za povijest urbanog razvoja Šibenika, *Radovi Instituta za povijest umjetnosti*, 19 /1995/, 39)

Javne zgrade, crkve, prostori i vrata srednjovjekovnog Šibenika spomenuti u odredbama Statuta (sa smještajem zlatarskih radionica označeno sivom bojom)

come in various shapes and sizes.[124] Although a wooden stump is not mentioned in Stjepan's inventory, the numerous anvils listed must have been positioned somewhere in order to work on them. The same goes for the workbench, although only a small table for counting money was documented.

Goldsmithing required a detailed understanding of the physical properties of various materials and their processing techniques, as well as a wide range of tools (*instrumenta/ferramenta artis aurificarie*).[125] To create objects from gold and silver, these metals first had to be melted at high temperatures in the furnace. In some cases, the molten material was poured into *canalli da butar arzento*, of which there appear to have been three in Stjepan's workshop. We can assume that these were ingots, hollowed in the centre to form channels for pouring molten gold and silver into specific shapes and forms.

Smaller cast items, as well as silver, gold, and copper plates, were shaped using anvils and various hammers (Fig. 6, Fig. 7, Fig. 8).[126] Over centuries, these tools had been



4.
Niklaus Manuel, *St Eligius in the Workshop*, 1515, Kunstmuseum, Bern / detail of the apprentice with bellows (https://commons.wikimedia.org/wiki/File:Eligius_1515.jpg)

Niklaus Manuel, *Sv. Eligije u radionici*, 1515., Kunstmuseum, Bern / detalj s prikazom naučnika s mijehom

refined to meet the goldsmiths' specific needs. Stjepan's workshop contained 16 anvils of different shapes and sizes,[127] each designed for particular functions, with an essential spike for securing them onto a wooden stump.[128] For example, anvils with two horns (*bicornie* or *caccianfuori*) were, according to Giuseppe Boerio, used for making figures or working with decorative engraving.[129] Stjepan's workshop inventory mentions one anvil of unknown shape with a crest, and two anvils *da sbazar* (?),[130] possibly used for embossing or thinning and flattening metal, likely by employing controlled hammering or pressing techniques.[131] Alternatively, they may have been employed for trimming or removing excess material (filing or deburring). This technique was crucial in the final stages of refining a piece, ensuring smooth edges and eliminating any unwanted material left from casting or shaping. In this process, various files would have been used, as depicted on the table in the Master of Bileam's engraving. A few other anvils had distinct shapes, round or square, suited for completely different purposes.[132] From Stjepan's workshop inventory, we learn that one round anvil and another of unknown shape were used for flattening the bottoms of the *taze* – a type of tableware that researchers identify as bowls, shallow bowls, or cups.[133] Based on the modest descriptions in the Šibenik archival records, the items in question were likely late medieval silver cups – similar to those preserved in the Zagreb and, in greater numbers, in the broader areas of Serbia and Bosnia and Herzegovina (Fig. 9) – but also bowls and trays.[134] Based on the accompanying examples from other places, we

can infer that *taze* were produced in various dimensions and designs: large and small, gilded and ungilded, with or without lids, decorated with reliefs, engravings, enamel work, or left plain, as also recorded in the Šibenik archival sources.[135] It is possible that some of the intricate relief decorations on these vessels were crafted using anvils designed for embossing (*sbalzar*), possibly like those found in Stjepan's workshop. To achieve such detailed decorations, a variety of hammers would have been used,[136] each serving a specific purpose, whether for fine engraving or for shaping the metal into its final form. Alongside anvils, these hammers were indispensable tools in the goldsmith's workshop, allowing the craftsman to create both functional and decorative elements with precision. On the other hand, some hammers were reserved for "rougher work," such as thinning and flattening metal plates.

In his work, Stjepan must have utilized the soldering technique to seamlessly join metal components, by applying a soldering material.[137] This process involved heating a soldering iron to red-hot temperatures, skilfully melting the alloy and guiding it into the joints to create a strong, precise bond while preserving the delicate metalwork. To refine the soldered joints, goldsmiths relied on specialized files designed for smoothing and finishing the metal. Additionally, Stjepan may have employed hard scrub brushes to remove any burnt marks for a clean and polished appearance. In the final stages of his work, he likely used burnishers – specialized tools designed to smooth and polish metal surfaces without the need for abrasive materials. Typically made from hard, smooth substances like steel, agate, or hematite, burnishers would have been essential for achieving the lustrous, refined finish that enhanced the beauty of the finished pieces.

Given the presence of a bundle of copper wires and five drawing plates in Stjepan's workshop – similar to those depicted in the lower left corner of the engraving by Master of Bileam – we can reasonably assume that Stjepan was drawing, or thinning, his own copper, silver and gold wires. Drawing plates were flat, rectangular tools made of hardened steel, with holes of varying sizes through which metal was drawn to reduce its thickness.[138] These plates were essential for producing fine, uniform wires used in the creation of sophisticated jewellery and decorative metalwork. For this task, the goldsmith likely used three pairs of tongs specifically designed for drawing silver. Additionally, he employed various other types of tongs and pincers, at least ten in total, for handling different tasks such as "working silver" and manipulating materials during the crafting process.[139]

In Stjepan's workshop inventory, a small lathe and a drawing compass are also listed. The latter, typically used for precise measurements and marking, played a crucial role in his goldsmithing work. With its adjustable metal legs – one pointed for scribing and the other for drawing circles or arcs – the compass allowed Stjepan to accurately measure distances and lay out designs on metal surfaces. This precision tool was essential for ensuring the symmetry and detailed craftsmanship needed for fine jewellery and metalwork. Stjepan's compass was probably similar to the one depicted on the table above the six-lobed shape – possibly the base of a chalice – in the 15th-century engraving by the Master of Bileam.

We can assume that Stjepan sharpened his tools, particularly shears and chisels for cutting metal, chisels for engraving, and thick metal needles for making holes, using a small sharpening stone or possibly a sharpening stone wheel operated by a handle. This attention to maintaining the goldsmithing tools sharp and precise would have been essential for the intricate and demanding work required of a master.

Stjepan also decorated his work with punches, including those featuring letters, likely used for inscriptions. The most prominent among these was the punch marked •S•, probably his maker's mark. This detail holds particular significance, as it reveals that 15th-century goldsmiths in Šibenik personalized their creations, although no

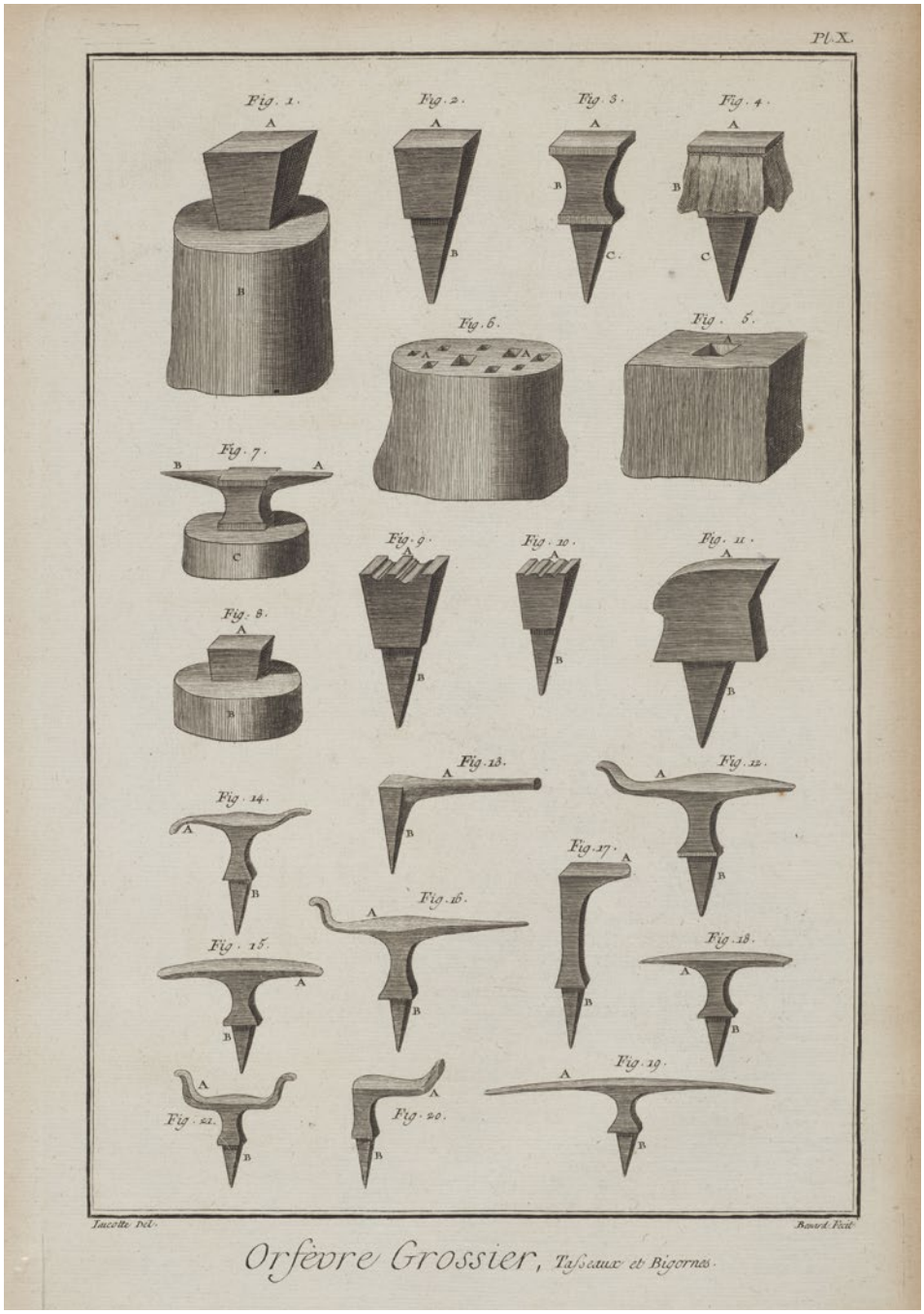
5.
Master of Bileam (attributed to), *St Eligius in His Workshop*, 1440–1460, Rijksmuseum, Amsterdam (https://www.rijksmuseum.nl/en/collection/RP-P-OB-963)

Majstor Bileama (atribuirano), *Sv. Eligije u svojoj radionici*, 1440. – 1460., Rijksmuseum, Amsterdam

surviving examples confirm this practice. In addition to his maker's mark, Stjepan also appears to have marked his works with quality marks, using punches that indicated the quality of the gold and silver used. He also tested the quality of gold and silver using a special type of stone known as the touchstone. This practice underscores the precision and professionalism expected in his craft, highlighting the rigorous standards goldsmiths adhered to in ensuring both the authenticity and quality of their materials.

Stjepan meticulously weighed both raw materials and finished pieces using specialised scales, which were crucial in ensuring precision and value in his work. His inventory mentions a "pair of scales" with weights measuring 18 ounces and 3 quarters, then in the possession of another goldsmith named Nikola. Additionally, Stjepan's workshop contained a ducat weight with scales and several carat weights, likely similar to the Harsdorfer gold and gem scale from 1497 (Fig. 10) or the one depicted in Petrus Christus's 1449 painting. These tools were indispensable for goldsmiths, allowing them to carefully measure gold, silver, and gemstones, ensuring the accurate valuation of materials and the precise crafting of jewellery and other valuable items.

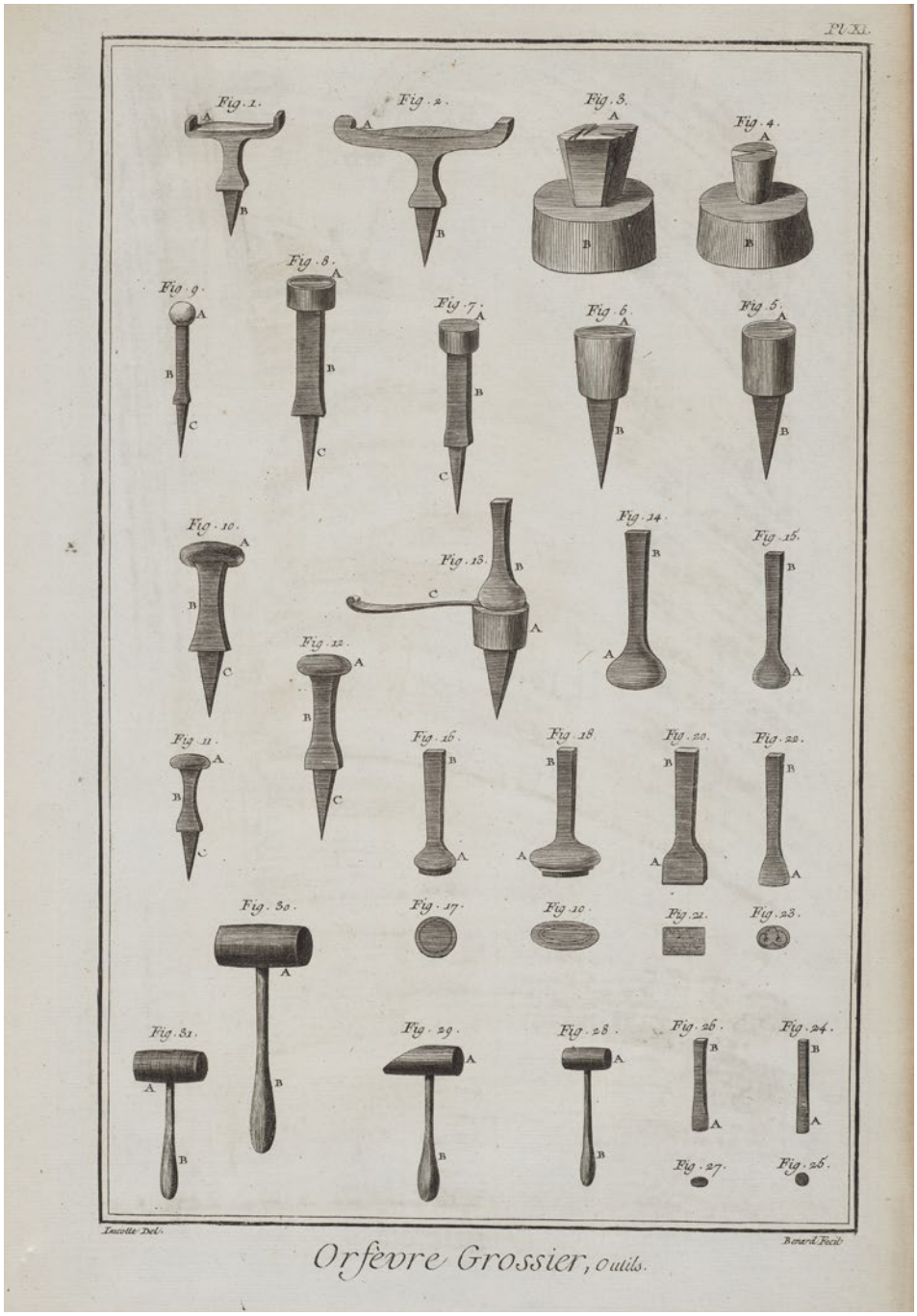
Details about the units of measurement used by Stjepan are revealed through the recorded goldsmith works found in his workshop, which also offer insight into the types of items he crafted. From these records, we can discern that he produced a variety of jewellery, including silver and gilded earrings, gold and silver rings, and silver chains with crosses, as well as functional-decorative items like buttons, *pianete*, and clasps. He was also skilled in producing tableware (*taze*) and liturgical vessels, such as chalices and patens, and possibly even processional crosses. The mention of a wooden cross in the inventory suggests it could have been the base for a processional cross, onto which silver or copper plates – embellished with relief, engraving, or enamel – were to be affixed.



6.
Robert Bénard after Jacques Raymond Lucotte, *Goldsmiths' Anvils and Bickerns* (*Orfèvre Grossier*, Pl. X), in: *Encyclopédie, ou dictionnaire raisonné des sciences, des arts et des métiers, Volume 8* (ed. Denis Diderot), Paris, 1771. Harvard Art Museums/Fogg Museum, Richard Norton Memorial Fund (Photo © President and Fellows of Harvard College, 2017.174.10)

Robert Bénard prema Jacques Raymond Lucotte, *Zlatarski nakovnji i dvorogi nakovnji*, u: *Encyclopédie, ou dictionnaire raisonné des sciences, des arts et des métiers, Volume 8* (ur. Denis Diderot), Pariz, 1771. Harvard Art Museums/Fogg Museum, Richard Norton Memorial Fund

Furthermore, the presence of two moulds for stamping, some enamel, silver granules for decorating earrings, stones, and gilded works indicates his proficiency in techniques such as stamping, enamelling, granulation, stone setting, and gilding. At the time, gilding was performed using mercury (fire gilding), a technique producing harmful fumes that had detrimental effects on the health of goldsmiths.[140] Stjepan likely produced small cast decorations using cuttlefish bone casting method,[141] a simple yet effective technique where designs were carved into the soft bone and filled with molten metal. This method allowed goldsmiths to create intricate details in small decorative pieces. The easy accessibility of cuttlefish bones made this technique both practical and efficient for artisans.



7.
Robert Bénard after Jacques Raymond Lucotte, *Goldsmiths' Tools* (*Orfèvre Grossier*, Pl. XI), in: *Encyclopédie, ou dictionnaire raisonné des sciences, des arts et des métiers, Volume 8* (ed. Denis Diderot), Paris, 1771. Harvard Art Museums/Fogg Museum, Richard Norton Memorial Fund (Photo © President and Fellows of Harvard College, 2017.174.11)

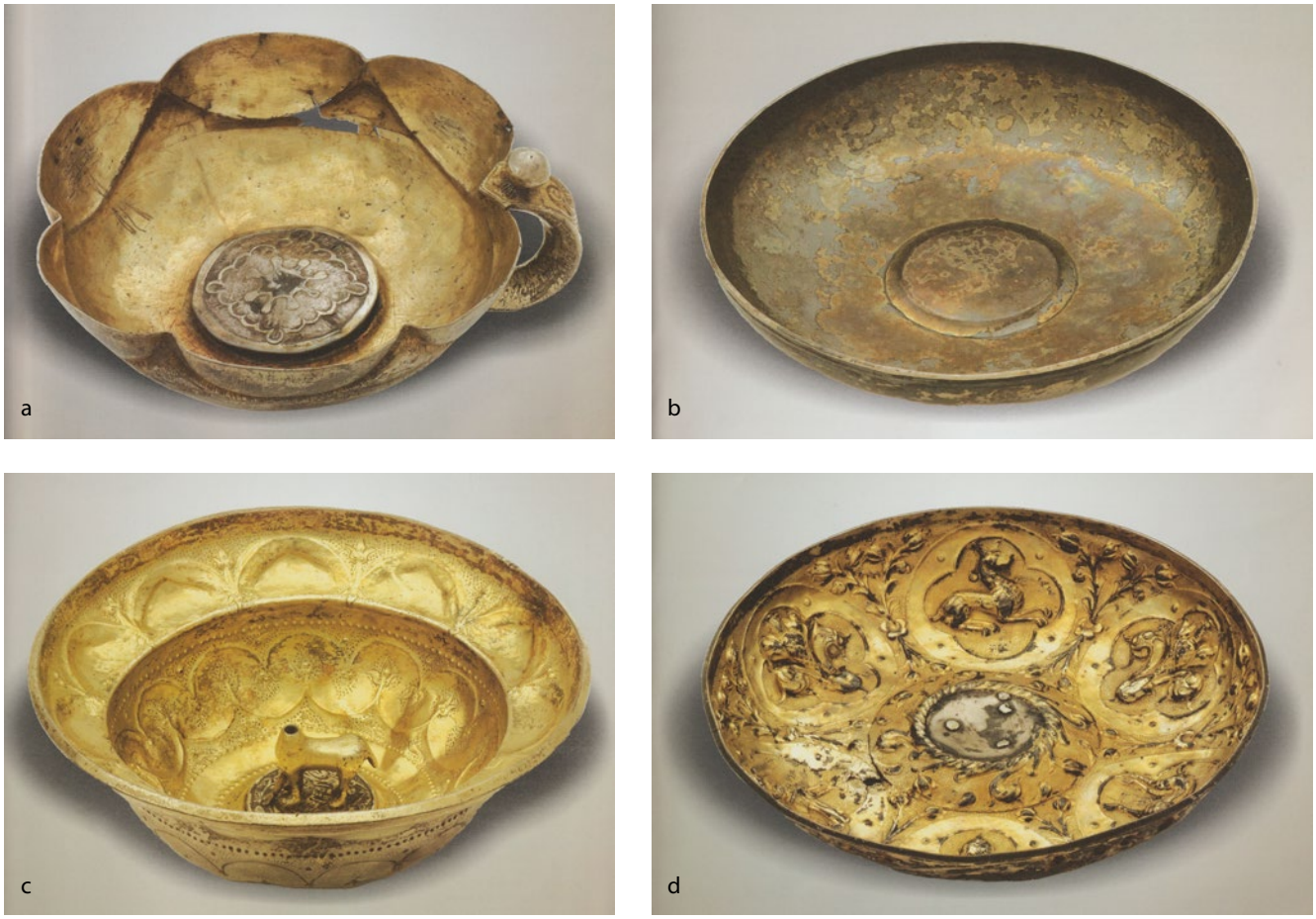
Robert Bénard prema Jacques Raymond Lucotte, *Zlatarski alati*, u: *Encyclopédie, ou dictionnaire raisonné des sciences, des arts et des métiers, Volume 8* (ur. Denis Diderot), Pariz, 1771. Harvard Art Museums/Fogg Museum, Richard Norton Memorial Fund

We know with certainty that Stjepan passed on his knowledge of materials, tools, and techniques to his apprentices in his workshop, teaching them goldsmithing skills over varying periods. Among those who refined their craft under his mentorship were Kršul Ratkov Mičić from Knin, Ivan Ruscijev Slavčević from Otavice in Petrovo Polje, Šimun Vučkov Gojković from Šibenik, and Petar Valentinov from Knin.[142] The transmission of knowledge from one generation to the next was vital for the survival and growth of the craft. In the absence of formal educational institutions for training craftsmen during the 15th century – whether in European or Dalmatian towns and cities – young apprentices were trained directly in the workshops of master goldsmiths.[143]

8.
Robert Bénard after Jacques Raymond Lucotte, *Goldsmiths' Tools* (*Orfèvre Grossier*, Pl. XII), in: *Encyclopédie, ou dictionnaire raisonné des sciences, des arts et des métiers, Volume 8* (ed. Denis Diderot), Paris, 1771. Harvard Art Museums/Fogg Museum, Richard Norton Memorial Fund (Photo © President and Fellows of Harvard College, 2017.174.12)

Robert Bénard prema Jacques Raymond Lucotte, *Zlatarski alati*, u: *Encyclopédie, ou dictionnaire raisonné des sciences, des arts et des métiers, Volume 8* (ur. Denis Diderot), Pariz, 1771. Harvard Art Museums/Fogg Museum, Richard Norton Memorial Fund

Since the medieval communal authorities of Šibenik did not directly interfere in the training of apprentices,[144] this process was governed by existing customs and traditions. Despite the almost six-hundred-year gap, some contracts for apprentice training have survived, allowing us to piece together a mosaic of goldsmithing practices.[145] Apprenticeship was a path taken solely by boys, usually between eight and twelve years old, while those slightly older may have already had some training in goldsmithing and joined a master for further refinement of their craft or for work.[146] Leaving the comfort and care of their families, these young apprentices were placed into the household of a master goldsmith for "training and service" under the watchful eyes of the



9.
a) Silver gilded bowl, late 14th – early 15th centuries, Belgrade City Museum; b) Silver bowl, 15th century, collection of Vitor Ristović; c) Silver gilded bowl from Dobri Dol near Pirot (Serbia), second half of the 15th century, National Museum, Belgrade; d) Silver gilded bowl, late 15th century, Museum of Applied Art, Belgrade (source: MILA GAJIĆ /note 133/, 093, 095, 105 and 109)

a) Srebrna pozlaćena čaša, kasno 14. – rano 15. stoljeće, Muzej grada Beograda; b) Srebrna čaša, 15. stoljeće, kolekcija Vitora Ristovića; c) Srebrna pozlaćena čaša iz Dobrog Dola blizu Pirota (Srbija), druga polovina 15. stoljeća, Narodni muzej u Beogradu; d) Srebrna pozlaćena čaša, kasno 15. stoljeće, Muzej primenjene umetnosti u Beogradu

master and his family. In return, the masters were obligated to provide the apprentices with food, clothing, and instruction in the craft's mysteries. Upon completion of the contract, the masters were also expected to provide their trainees with a new set of clothes, goldsmithing tools, and sometimes even a wage. Though it must have been difficult for parents to entrust a child as young as eight or twelve into the care of acquaintances or even strangers, they were, in doing so, ensuring their child's survival in difficult times, providing them with food and shelter.[147] For the boys, living under other people's roof and abiding by their rules was surely a daunting experience, and tensions with their masters were not uncommon. Young Šimun Vučkov Gojković, for instance, fled from Stjepan after three years of apprenticeship. Thirteen months later, his mother returned him to continue his training, with the condition that he make up for the lost time. While this hands-on training might seem harsh or even inhumane from a modern perspective, it was essential for preserving the techniques and traditions that ensured the survival of the craft.

Since Stjepan, by all accounts, had no male heir to inherit his business, later sources indicate that the appointed guardian of his daughter Deša sold the goldsmithing tools to Bartul Domankušević, another goldsmith who also held a two-year lease on one of Stjepan's workshops.[148] We can assume that the moulds for stamping were included in this sale, which generally highlights the problem of attributing goldsmith works based solely on identical decorations. Pieces created using the same moulds could easily have been produced by different craftsmen, making it difficult to determine whether a particular item was crafted by one or the other goldsmith.

10.
Harsdorfer gold and gem scale, 1497, Germanisches Nationalmuseum, Nuremberg (source: JOHN CHERRY / note 4/, 71)

Harsdorferova vaga za zlato i dragulje, 1497., Germanisches Nationalmuseum, Nuremberg

This complexity is further enhanced by the fact that some goldsmiths rented out their workshops, including all tools, to other masters, or left their equipment, presumably with various moulds, to their successors through wills.[149] This raises important questions about the challenges of determining authorship, as moulds were evidently passed from one goldsmith to another, blurring the distinctions between their individual works.

Conclusion

While recent archival research has somewhat enriched our understanding of Šibenik's late medieval goldsmiths' workshops, a complete reconstruction of their organisation and operation remains elusive. The archival sources, though invaluable, are only partially preserved and provide limited insight into the much more complex nature of the craft. Notably, private legal relations documented in notarial records represent only one of many factors that influenced the operation of medieval goldsmiths' workshops, making it difficult to fully grasp the complexity of the craft from a contemporary perspective. Nevertheless, despite the scarcity of records, these sources, together with the surviving artefacts, provide crucial insights into certain aspects of the 15th-century goldsmiths' workshops in Šibenik.

The study of Stjepan Ivanov Skočibuha's life and goldsmithing practice, based on his 1444 estate inventory and other archival records, sheds light on the craft of goldsmithing during this period. As none of Stjepan's works have been preserved or identified among surviving pieces, his goldsmithing activity can only be traced through the archival documentation that records some aspects of his practice. The sale of his tools to Bartul Domankušević after his death highlights the difficulties in attributing medieval goldsmith pieces, as shared tools and moulds could have been used by multiple craftsmen. Despite these challenges, the archival sources and artefacts offer important glimpses into the operational structure of a medieval goldsmith's workshop, and the transmission of knowledge within the craft. This study, though limited by the available evidence, enhances our understanding of medieval goldsmithing as a vital part of Dalmatian urban life.

APPENDIX 1

2 May 1444 – 19 May 1444: Estate inventory of the goldsmith Stjepan Ivanov Skočibuha from Šibenik[150]

(fol. 128r)

Inuentarium bonorum
quondam magistri Stefani quondam Iohannis aurificis de Sibenico Scocibucha.

M°CCCC°XLIIII^to, indictione VII^a, die secundo mensis maii. Coram spectabile et generoso viro domino Antonio de Cha de Pesaro honorabile comite et capitaneo ciuitatis et districtus Sibenici, sedente cum sua curia in logia magna communis Sibenici comparuit ser Bartholus quondam ser Iohannis Sporcich ciuis Sibenici, dicens se fuisse per regimen Sibenici institutum comissarium alicuius asserti testamenti quondam magistri Stefani aurificis quondam Iohannis de Sibenico loco comissariorum ipsius asserti testamenti qui refutauerunt comissariam et velle facere inuentarium de bonis dicti quondam magistri Stefani, prout scit secundum iuris ordinem se teneri, petens venerabile signum sacre crucis huic folio apponi in signum inuentarii fiendi. Qui spectabilis dominus comes et capitaneus intellecta dicta petitione mandauit cum sua curia michi Antonio Campolongo cancellario communis Sibenici ut predictum venerabile signum sancte crucis huic folio apponere deberem, quod et ego feci exequens eius mandatum.
[…] […]

(fol. 130r)

Cosse et arzenti trouadi in botega
si de la comessaria chome de spetial persone dado a lauorar (?)

Primo onze 2 quarto I° otaua I^a de cadenella de arzento da cercelli.
Item 22 anelli de arzento doradi da Morlachi pexa intuto onze 2 otauo I°.
Item vno anello doro buxo smaltado abranci cum vna prieda simel a ballasso de prexio de
libre 4.
Item vna chroxetta cum cadenella de arzento pexa onza I^a.
Item par 3 de cercelli nuoui de arzento doradi pexa onza I^a otauo I°.
Item arzento rotto a refuxo de piu sorte in tuto marche 3 onze 3.
Item granelli de arzento da cercelli onza ÷ octaua I^a.
Item para 4 ÷ de cercelli doradi et bianchi de arzento, vechi 3 para e vno paro nuoui bianchi
onze 4 otaua I^a.
Item vno paro de cercelli, tre anelleti et alguni botoni pexano onze 2 ÷ otaua I^a.
Item pianete de arzento bianche nuoue per conto 59, pexa onza I^a, quarta 3, otauo I°.
Item para 15 ÷ de axole de argento bianche non fornide et vno capelleto disse la dona esse de
ser Michiel Cossauich pexano onze 16 quarta 3 otaua —.
Item vno calexe de arzento cum la patena non conpido paxa onze 9 quarta 3.

Ordegni de botega
Item vna lima da limar saldadura.
Item dui anchuzenelle chiamade bicornie grande.

Item tre tenaye da tirar arzento.
Item quatro trafille.
Item do anchuzenelle tonde.
Item do anchuzenelle da sbazar (?).
Item 8 martelli de piu sorte da lauorar et da pianura.

(fol. 130v)
Item vna anchuzenella cum vna arma.
Item vna anchuzenella cum la testa tonda de drezar i fondi de le taze.
Item tre cixore.
Item dui para de piastre, vno paro grande laltro pizolo.
Item vno martello grande roto et dui mazuoli.
Item tre canalli da butar arzento.
Item do stampe da stampar.
Item 5 lime da limar triste.
Item 3 anchuzenelle da stampir.
Item 8 tenaiuoli tristi et roti de puocho vallor.
Item 6 canelle triste grande e pizole.
Item 8 butunaduri de piu sorte tristi.
Item 5 ponzoni de piu sorte.
Item 8 pezi de marcho.
Item vno stagnador.
Item dui ponzoni vn ·S· e vna foretta (?).
Item dui ciselli da taier.
Item dui para de cinaiuoli rotti.
Item vna bicornia lunga.
Item vno bathochio da porta.
Item vno manego da uoltar la muola.
Item vna scatola con certe forme de piombo.
Item vna prieda da aguar.
Item algune priede in vno bossolo cum puochi copoleti.
Item 6 vanadure dui da lauorar.
Item altri pontaruoli e feri de puocho o ouer nisun valor.
Item vna balestra.
Item vno libreto da Salmi.
Item vn mazeto de fil de rame.
Item dui brustie.
Item vno pezo de parangon.
Item 6 crozuoli pizoli.
Item smalto in vna scatola.
Item ponzoneti de letterine in suma 24.
*Item in man de maistro Nicolo orenexe I*º *paro de balanze cum el marcho pexan onze 18 quarta 3.*

(fol. 131r)
Item vno pexon da ducato cum le balanze et alguni carati.
Item dui anchuzenelle grande vna quadra et vna tonda.
Item martelli.
Item vna trafilla et vno bruniur.
Item vno caynello de legno et dui vanadure.
Item vno compasso (*dapo* – prekriženo) *cum vna tenaya da ponta.*
Item libre 8 de piombo.

Item ossi de seppe per soldi 12.
Item vno tornello senza ponta.
Item vno anchuzene da drezar fondi de le taze.
Item vna tauolella da nombrar danari.
Item do cassellete triste e de puocho vallor.
Item vna cesora trista.
Item vna croxe de legno.
Item tre conche triste.
Item vno paro de mantexi.
Item dui tenagliele da lauorar arzento.
Item vna anchuzenella da dui bechi grandi.
[…] […]

(fol. 132)

Die XVIIII^o^ mensis maii, 1444^to^, indictione VII^a^. Actum ad bancum sub turri iuxta ripam maris Sibenici. Coram prefato spectabile domino comite et capitaneo Sibenici et eius curia sedente loco predicto comparuit ser Bartholus quondam ser Iohannis Sporcich, ciuis Sibenici, comissarius institututus (!) *per regimen Sibenici testamenti suprascripti quondam magistri Stefani aurificis quondam Iohannis de Sibenico et presentauit inuentarium suprascriptum per eum factum de bonis dicti quondam magistri Stefani cum protestationibus addendi addenda et subtrahendi subtrahenda saluo omni suo iure et cetera, dicens insuper quod omnia et singula bona dicti inuentarii fuerunt et sunt in custodia, gubernationem et administrationem done Margarite relicte dicti quondam magistri Stefani et penes eam in manibus suis presentibus ad predicta ser Petro de Chiudis et ser Gaspare Iurissich, testibus.*

(HR-DAŠI-263, BŠ, kut. 11/II, Antonio Campolongo, F 11/III, sv. 10/VIIc, fol. 128–132)

NOTES

[1] The presence of numerous late medieval goldsmith items in European and international museums, private collections, and churches, alongside the scholarly publications that analyse them, offers clear evidence of this.

[2] Thus, Ronald W. Lightbown notes a significant increase in the demand for jewellery across European towns and cities during the 15th century (RONALD W. LIGHTBOWN, *Mediaeval European Jewellery: With a Catalogue of the Collection in the Victoria & Albert Museum*, Victoria & Albert Museum, 1992, 383).

[3] For a more detailed discussion on medieval secular goldsmith items, see: RONALD W. LIGHTBOWN, *Secular Goldsmiths' Work in Medieval France: A History*, London, 1978; RONALD W. LIGHTBOWN (as in n. 2); SUSAN MOSHER STUARD, *Gilding the Market: Luxury and Fashion in Fourteenth-Century Italy*, Philadelphia, PA: University of Pennsylvania Press, 2006; MARIJANA KOVAČEVIĆ, *Umjetnička obrada plemenitih metala u 14. stoljeću u Zadru*, doctoral thesis, Zagreb, 2010, 759–872; ĐURĐINA LAKOŠELJAC, *Šibensko zlatarstvo 14. i 15. stoljeća*, doctoral thesis, Zadar, 2022, 480–523, 633–723.

[4] See: THEOPHILUS, *Theophili, Qui et Rugerus, Presbyteri et Monachi, Libri III de Diversis Artibus: Seu Diversarum Artium Schedula – Essay Upon Various Arts in Three Books by Theophilus, Called Also Rugerus, Priest and Monk, Forming an Encyclopaedia of Christian Art of the Eleventh Century* (transl. R. Hendrie), London, 1847, 195 ff. The dating of Theophilus's treatise is variously cited in scholarly literature. Cf. MILAN PELC, *Horacije Fortezza – šibenski zlatar i graver 16. stoljeća*, Zagreb – Šibenik, 2004, 30; JOHN CHERRY, *Medieval Goldsmiths*, London: The British Museum Press, 2nd ed. 2011, 9; MANLIO LEO MEZZACASA, *Divine Splendour – Relics, Reliquaries and Liturgical Vessels in Venice ca. 1300–1475*, Padua, 2019, 37; MATEJA JERMAN, *Liturgijski predmeti od plemenitih metala od 1400. do 1800. godine na području nekadašnje Pulske biskupije*, doctoral thesis, University of Zadar, 2020, 110, 120, 132, 144, 433.

[5] URBAN T. HOLMES, *Daily Living in the Twelfth Century, Based on the Observations of Alexander Neckam in London and Paris*, Madison, WI: The University of Wisconsin Press, 1966, 142.

[6] BENVENUTO CELLINI, *I trattati dell'oreficeria e della scultura* (ed. C. Milanesi), Florence, 1857.

[7] DENIS DIDEROT, LOUIS-JACQUES GOUSSIER, ROBERT BÉNARD, *Encyclopédie, ou Dictionnaire raisonné des sciences, des arts et des métiers. Recueil de planches, sur les sciences, les arts liberaux, et les arts méchaniques, avec leur explication, Septieme livraison, ou huitieme volume,* Paris, 1771 (available at: https://bibnum.institut-defrance.fr/ark:/61562/mz2140, accessed 5 June 2024).

[8] JOHN CHERRY (as in n. 4), 9.

[9] In the archival sources, his name is recorded in different forms: *Stephanus quondam Iohannis de Sibenico*, *Stephanus quondam Iohannis*, *Stefanus quondam Iohannis*, *Stephanus Iohannis*, *Stefanus quondam Iohannis de Sibenico Scocibucha*, *Stephanus Scocibucha*, *Stefanus Scocibuha*, *Stefanus dicti Scocibucha*, *maistro Stephano quondam Zuane Schozibucha orixi*. The listed name variations are given in the nominative case, although in the sources they are mostly found in oblique cases.

[10] ĐURĐINA LAKOŠELJAC (as in n. 3), 53–65, 519–707, 819–828. The transcripts of all the archival documents presented in this paper can be found in the same doctoral thesis, available at: https://dr.nsk.hr/islandora/object/unizd%3A8094, accessed 1 June 2024.

[11] Around the same time, three goldsmiths named Stjepan (Stjepan Nikolin Ungar, Stjepan Milgostov Milgostić, known as Jajce, and Stjepan Ivanov Skočibuha) were active in Šibenik. They were erroneously believed to be the same person, which led to their identities being merged in some scholarly publications. For more information, see: ĐURĐINA LAKOŠELJAC (as in n. 3), 34–35.

[12] Most of Šibenik's archival material from the 14th and early 15th centuries has been lost, with only a few small volumes of notarial records preserved. As a result, no information could be found about that period of Stjepan's life.

[13] This refers to a court ruling dated 7 September 1463, which mentions additional goldsmith *apottece* and land in the Vrana area, which were not included in the 1444 inventory. Since Stjepan's estate was managed by his underage daughter Deša's guardian, it is possible that some of the assets were acquired posthumously. This document also notes Deša's marriage to Marinelo, son of the painter Dujam Marinov Vučković from Split. See: Državni arhiv Šibenik (hereafter: HR-DAŠI-263), Bilježnici Šibenika (hereafter: BŠ), kut. 16/III, Karatus Vitale, F 15/Vb2, fol. 95–99.

[14] He may have built this house on a plot next to his land, purchased from the priest Disman Kremšić, chaplain of the church of the Holy Trinity, on 22 March 1418. Several later documents mention Stjepan's house near that church, which suffered fire damage before 22 May 1459, as it is described as *domum seu locum combustum*. HR-DAŠI-263, BŠ, kut. 3/I, Mihovil pok. Ivana, sv. 3/Ic, fol. 27'; HR-DAŠI-263, BŠ, kut. 11/IV, 11/V, Ante Campolongo, F 10/III, fol. 87'; HR-DAŠI-263, BŠ, kut. 16/IV, Karatus Vitale, F15/IIb, fol. 136; HR-DAŠI-263, BŠ, kut. 17/I, 17/II, 17/III, Ilija Banjvarić, F 13/a5, fol. 199'.

[15] Is it the house structure consisting only of outer (perimeter) walls, recorded after Stjepan's death as the house of his heirs in the area of the church of the Holy Spirit, on the way to the church of the Holy Trinity? In one instance in my dissertation, I mistakenly cited the wrong church titular (Holy Trinity), but the document clearly states *in contrada de Santo Spirito*. The churches are, in any case, only a short distance from one another. See the documents in: ĐURĐINA LAKOŠELJAC (as in n. 3), 24, 55, 62, 63, 252 (note 701), 182 (note 52), 249 (note 684).

[16] HR-DAŠI-263, BŠ, kut. 10, 11/I, Martin Ferro, F D, fol. 18.

[17] In the goldsmith's 1444 inventory, a house with a courtyard near Lovre Lucić is listed, though the location is not specified. However, as some of his lands in Grebaštica are mentioned both before and after this entry, it is likely the house was located there. Further evidence comes from the 1463 inventory of Antun Butčić, which records a *sedille cum poduorniza* belonging to the heirs of the goldsmith Stjepan Skočibuha. HR-DAŠI-263, BŠ, kut. 16/II, Karatus Vitale, F 15/IVb/6, 272', 274, 275'; HR-DAŠI-263, BŠ, kut. 11/II, Ante Campolongo, F 11/III, sv. 10/VIIc, fol. 128–132. In the latter document, the entry is located on fol. 132.

[18] He shared this house with Radoslava, widow of Stanko Tolimerić, the father of his first wife, Cvita. A document dated 28 April 1498 confirms that the area called *Puncta* was located near the church of the Holy Spirit, where the house of Andrija Cimaturić was situated. HR-DAŠI-263, BŠ, kut. 10, 11/I, Ante Campolongo, F 10/Ig, fol. 155'; HR-DAŠI-263, BŠ, kut. 23/II, Martinus Campellis de Gaivanis, sv. 26/IIIb, fol. 96.

[19] Cvita passed away at an unknown date, but on 21 May 1442, she was referred to as deceased (JOSIP KOLANOVIĆ, *Spisi kancelarije šibenskog kneza Fantina de cha de Pesaro 1441–1443,* Šibenik, 1989, 372–373). Margarita was first mentioned as Stjepan's wife, or rather his widow, in his estate inventory from May 1444 (Appendix 1 in this publication), but the date of their marriage remains unknown. Later, she remarried the shoemaker Petar Gojčić. Biskupijski arhiv Šibenik (hereafter: HR-BAŠ-18/1), Biskupska kurija (hereafter: BK), kut. 2, Antonio Campolongo, F 2, fol. 141'.

[20] Apprentices will be discussed later in this paper.

[21] For more details on the mentioned goldsmiths, see: ĐURĐINA LAKOŠELJAC (as in n. 3), 34–48, 66–70, 78–79, 91.

[22] HR-DAŠI-263, BŠ, kut. 11/IV, 11/V, Ante Campolongo, F 10/III, fol. 87'; HR-DAŠI-263, BŠ, kut. 11/IV, 11/V, Ante Campolongo, F 10/III, fol. 225'; HR-DAŠI-263, BŠ, kut. 11/II, Ante Campolongo, F 11/III, sv. 10/VIIe, fol. 11'; HR-DAŠI-263, BŠ, kut. 11/II, Ante Campolongo, F 11/III, sv. 10/VIIe, fol. 16; HR-DAŠI-263, BŠ, kut. 16/III, Karatus Vitale, F 15/Vb2, fol. 95–99.

[23] We cannot be entirely certain of this, as Stjepan died without a will (*obiisse abintestato*), but the documents suggest it. We learn that Stjepan died intestate from a document dated 7 September 1463. HR-DAŠI-263, BŠ, kut. 16/III, Karatus Vitale, F 15/Vb2, fol. 95–99 (entry on fol. 95).

[24] See note 23.

[25] See Appendix 1 in this paper.

[26] *Statut i reformacije grada Trogira / Statutum et reformationes civitatis Tragurii* (ed. Ivo Strohal), 1915, Reformacije, Knjiga II, cap. 36, 240–241; *Knjiga Statuta, zakona i reformacija grada Šibenika* (eds. Željko Krnčević, Gojko Lambaša), Muzej grada Šibenika, 2nd ed. 2019 (Liber Qvintus, Cap. XV / Knjiga peta, Poglavlje XV, 157); *Zadarski statut sa svim reformacijama odnosno novim uredbama donesenima do godine 1563.* (eds. Josip Kolanović, Mate

Križman), Zadar, 1997, 362–363; *Statut grada Splita – Splitsko srednjovjekovno pravo* (ed. Antun Cvitanić), Split, 1998, 488–489. Given that an estate inventory had to be drawn up after the death of every adult individual, the original quantity of such documents must have been quite large. However, only a small portion of medieval estate inventories has survived to the present day.

[27] For example, in the Šibenik archival records, only the estate inventories of goldsmiths Stjepan Petrov (1444) and Pavao Derljanović (1459) have been found. In Zadar, the inventories of Petar Lukin, known as Turko (1380), Pribislav Stojšin, known as Antiquo (1391), and Nikola Radaković from Bar (1452) have been discovered, while in Split, that of Vlatko Petković Sanković (1449) has survived. However, only in the cases of Antiquo and Nikola Radaković were the goldsmithing tools, materials, and items listed in greater detail. See: GIUSEPPE PRAGA, Oreficeria e incisione in Dalmazia a mezzo il Quattrocento, *Archivio storico per la Dalmazia*, anno IX, vol. XVI, sv. 94 (1934), 477–483; STJEPAN ANTOLJAK, *Miscellanea,* Zadar, 1950–1952, doc. No. 12; ROBERT LELJAK, *Inventari fonda Veličajne općine zadarske Državnog arhiva u Zadru, godine 1325.–1385.*, vol. 1, 2006, 304–305; MARIJANA KOVAČEVIĆ (as in n. 3), 78–79, 108; TONIJA ANDRIĆ, *Život u srednjovjekovnom Splitu – svakodnevica obrtnika u 14. i 15. stoljeću*, Zagreb – Split, 2018, 72, 101, 102 (note 525), 169, 225 (note 1311), 244 (note 1431), 257 (note 1575), 258; ĐURĐINA LAKOŠELJAC (as in n. 3), 829–831 (Appendix 4), 836–839 (Appendix 8).

[28] I am aware of only a few such inventories: the inventory of the Dijon goldsmith Thomassin de Béthisy from 1453 (JOSEPH GARNIER, *Les anciens orfèvres de Dijon*, Dijon: Lamarche, 1889, 39–46), the inventory of the Belgian jeweller Haquinet Hierche from 1485 (AMAURY LOUYS DE LA GRANGE, LOUIS CLOQUET, *Études sur l'art à Tournai et sur les anciens artistes de cette ville*, vol. 2, Tournai, 1888, 322–324) and the inventory of the goldsmith Elzéar d'Ecclesia from Draguignan in France, from 1498 (FRÉDÉRIC MIREUR, Inventaire de la boutique d'un orfevre de Draguignan en 1498, *Bulletin archéologique du comité des travaux historiques et scientifiques*, Janvier, 1885, 486–496). Referring to the publication by La Grange and Coloquet, Ronald W. Lightbown also mentions the inventory of the goldsmith Simon Savary from Tournai (RONALD W. LIGHTBOWN /as in n. 2/, 383). However, in my understanding, Simon Savary was not a goldsmith, but a wealthy citizen of Tournai, whose 1477 inventory listed a significant number of goldsmith's works. Thanks to an anonymous reviewer, I have also become aware of several Italian documents, such as an inventory of the goldsmith Alessandro de Polis from Mantua, dated 1487 (ANNA MARIA LORENZONI, La casa con laboratorio di un orefice mantovano del XV secolo attraverso l'inventario post mortem dei suoi beni, *Civiltà mantovana*, Ser. 3, 47, /2012/, 61–80), and three inventories from Paduan goldsmiths: Dorino (1428), Bartolomeo Bianco (1437), and Marco Baldi (1468) (GIULIA CHIAROT, *L'arte orafa a Padua: Opere, tecniche e norme dal Medioevo al Rinascimento*, Padua: Il Prato, 2001, 66–77, 118, 120, 122–124).

[29] As far as we know, he was last recorded alive on 7 August 1443, and by 27 August, he was noted as deceased. HR-DAŠI-263, BŠ, kut. 10, 11/I, Ante Campolongo, F 10/Ig, fol. 166; HR-DAŠI-263, BŠ, kut. 12, Frane i Petar de Serenis, F 5, fol. 18.

[30] The drawing up of inventories of deceased individuals was supposed to begin within twenty days of their death (*Knjiga Statuta…*, /as in n. 26/).

[31] See note 25.

[32] See the transcripts in: ĐURĐINA LAKOŠELJAC (as in n. 3), 829–831, 836–839.

[33] During the 15th century, the measure used for land area in the Šibenik region was the *gonjaj* or *gonaj*, which measured 788.48 m² until 1436, and 851.252 m² thereafter (ZLATKO HERKOV, Stare šibenske mjere, in: *Knjiga Statuta, zakona i reformacija grada Šibenika* (ed. Slavo Grubišić), Šibenik, 1982, 395–396). Given that the area is specified for only half of the properties in the goldsmith's estate inventory, it is not possible to determine the total area (in square meters) of vineyards, land, land with vines, arable fields, and gardens. However, by adding the known figures and multiplying them by the *gonjaj* measurements, we calculate an area of 64 *gonjaj*, which corresponds to approximately 4.5 to 5.5 hectares. Considering the omitted data, it may be concluded that the total area of the goldsmith's holdings was significantly larger. See: ĐURĐINA LAKOŠELJAC (as in n. 3), 62, 827–828.

[34] See Appendix 1 in this paper. Special thanks to Nikola Vuletić, PhD, Full Professor, Anita Bartulović, PhD, Associate Professor, and Sofija Sorić, PhD, Assistant Professor, for their help in translating certain terms.

[35] It is unlikely that this refers to a simple chain made of ordinary links, as the scribe would likely have used a different term. Although it cannot be entirely ruled out that *cercelli* may also have been a different type of paired jewellery, as suggested by an anonymous reviewer, the word *cercelli* in Šibenik archival documents most likely denotes earrings, as it does in 15th-century documents from other Dalmatian towns. See: NIKOLA JAKŠIĆ, Naušnice s tri jagode u Muzeju hrvatskih arheoloških spomenika, *Prilozi povijesti umjetnosti u Dalmaciji* 23 (1983), 73; NIKOLA JAKŠIĆ, Kasnosrednjovjekovno groblje kod crkve Sv. Spasa u Vrh Rici, *Starohrvatska prosvjeta*, Ser. III, 23 [1996], 166, 168; IVNA ANZULOVIĆ, Nakit na zadarskom području u povijesnim izvorima od 13. do konca 16. st., *Radovi Zavoda za povijesne znanosti HAZU u Zadru*, 48 (2006), 204–206, 213; IVNA ANZULOVIĆ, Ukrasno uporabni predmeti na zadarskom području u povijesnim izvorima od 13. do konca 16. st., *Radovi Zavoda za povijesne. znanosti HAZU Zadru*, 49 (2007), 248; MARIJANA KOVAČEVIĆ (as in n. 3), 821–831; GORAN BUDEČ, Inventar dobara šibenskog patricija ser Jurja Kamenarića iz 1451. godine, *Zbornik Odsjeka za povijesne znanosti Zavoda za povijesne i društvene znanosti Hrvatske akademije znanosti i umjetnosti*, 28 (2010), 86, 92–93; GORAN BUDEČ, *Svakodnevni život stanovnika Šibenika u drugoj polovini XV. stoljeća u zrcalu inventara i oporuka s posebnim osvrtom na razinu materijalne kulture*, doctoral thesis, Zagreb, 2013, 312–315; ĐURĐINA LAKOŠELJAC (as in n. 3), 674–684.

[36] The calculations were based on weights provided by Zlatko Herkov. The Venetian mark (*marco di Venezia*) weighed 238.499 grams, an ounce (*onza*) 29.812248 grams, a quarter (*quarta*, *quarto*) 7.453062 grams, a denaro 1.2422024 grams, a carat (*caratus* / *charatus*) 0.2070304 grams, and a grain (*granum*) 0.0517577 grams. See: HERKOV, *Mjere Hrvatskog primorja s osobitim osvrtom na solne mjere i solnu trgovinu*, Rijeka, 1971, 81.

[37] See: GIUSEPPE BOERIO, *Dizionario del dialetto veneziano,* Venice, 1856, 35 (*anèlo*).

[38] See: GIUSEPPE BOERIO (as in n. 37), 57 (*balasso*), 666 (*smaltà*; *smaltada*; *smaltàr*; *smalto*); MICHELE BRUNELLI, *Dizsionario Xenerałe de ła Łéngua Vèneta e łe só varianti*, Bassano del Grappa, 2006, 23 (*buxo*).

[39] See: GIUSEPPE BOERIO (as in n. 37), 210 (*crosèta*), 413 (*cadèna*; *caèna*).

[40] See: GIUSEPPE BOERIO (as in n. 37), 45 (*arzento*), 413 (*refùso*), 585 (*roto*).

[41] See: GIUSEPPE BOERIO (as in n. 37), 314 (*granèlo*).

[42] See: GIUSEPPE BOERIO (as in n. 37), 95 (*botòn*).

[43] See: GIUSEPPE BOERIO (as in n. 37), 502 (*pianèta*); GIULIA CHIAROT (as in n. 28), 142 (*pianete*).

[44] See: GIUSEPPE BOERIO (as in n. 37), 46 (*asola*).

[45] See: GIUSEPPE BOERIO (as in n. 37), 119 (*càlese*; *calice*)

[46] See Appendix 1 in this paper.

[47] See: GIUSEPPE BOERIO (as in n. 37), 371 (*lima*), 372 (*limàr*), 593 (*saldaùra / saldadùra / saldatura*); GIULIA CHIAROT (as in n. 28), 141 (*lima*), 144 (*saldatura*).

[48] See: GIUSEPPE BOERIO (as in n. 37), 32 (*ancùzena*), 34 (*ancuzenèla*), 314 (*grando*). Bicorn anvils of various dimensions and shapes are shown in Fig. 6 (labelled as Fig. 7, Fig. 12–21) and Fig. 7 (labelled as Fig. 1–2) in this paper. In Fig. 6, a stump for securing bicorn anvils is also depicted (labelled as Fig. 6).

[49] The word *tanaja / tenaja / tanàgia* (Italian *tenaglia*) means "tongs" or "pincers", while the verb *tiràr* can be interpreted differently depending on the context. In this case, it likely refers to drawing (thinning) silver and gold wires. For further explanations of these terms, see: GIUSEPPE BOERIO (as in n. 37), 734 (*tanàgia*), 750–752 (*tiràr*); MICHELE BRUNELLI (as in n. 38), 103 (*tanaja / tenaja*), 105–106 (*tirar*).

[50] See: GIUSEPPE BOERIO (as in n. 37), 761 (*trafila*), 762 (*tranfila*).

[51] See: GIUSEPPE BOERIO (as in n. 37), 755 (*tondo*); MICHELE BRUNELLI (as in n. 38), 107 (*tóndo*). Round anvils can be seen in Fig. 7 (labelled as Fig. 5–8) in this paper.

[52] The ink is quite faded, so I am not entirely sure of the accuracy of this reading, but it is likely a misspelling of *da sbalzàr*, *da sbassàr* or *da sbàvar*. See: GIUSEPPE BOERIO (as in n. 37), 605 (*sbalzàr*), 606 (*sbassàr*), 607 (*sbàvar*).

[53] See: GIUSEPPE BOERIO (as in n. 37), 43 (*arma*).

[54] The term *martelli da lauorar* likely refers to hammers used for general hammering, while *martelli da pianura* were probably specialised hammers used for flattening metal. See: GIUSEPPE BOERIO (as in n. 37), 400 (*martèlo*), 502 (*pianadòr*; *pianàr*).

[55] See: GIUSEPPE BOERIO (as in n. 37), 248 (*drezzàr / drizzàr*), 279 (*fondo*), 743 (*testa*), 755 (*tondo*). The meaning of the word *taza* in Šibenik's archival sources will be discussed later in this paper. This type of tableware may have been crafted on anvils similar to those shown in Fig. 6 (see note 51).

[56] The word *cixore* was not found in Boerio's dictionary, but it likely refers to a cutting tool, specifically shears (Latin *cisoria*), which in Venetian are called *cesòre* or *cisòre*. See: GIUSEPPE BOERIO (as in n. 37), 161 (*cesòre / cisòre*). GIULIA CHIAROT (as in n. 28), 140 (*caesoria*).

[57] See: GIUSEPPE BOERIO (as in n. 37), 400 (*martèlo*).

[58] See the meaning of the words *magio*, *mazza*, *mazzola*, and *mazzolo* in: GIUSEPPE BOERIO (as in n. 37), 382, 406, 407. Mallets are shown in Fig. 7 (labelled as Fig. 28–31) in this paper.

[59] See: GIUSEPPE BOERIO (as in n. 37), 126 (*canal*), 110 (*butàr – parlando di metalli, gettare o fondare*); ANNA MARIA LORENZONI (as in n. 28), 72 (*canale*); GIULIA CHIAROT (as in n. 28), 140 (*canale*).

[60] See the meaning of the words *stampa*, *stampo*, and *stampàr* in: GIUSEPPE BOERIO (as in n. 37), 700; ANNA MARIA LORENZONI (as in n. 28), 75 (*stampas*).

[61] As previously mentioned, *lime da limar* are "files for filing" and the adjective *triste* likely indicates that they were worn out or in poor condition.

[62] *Anchuzenella* is actually *ancuzenèla*, which refers to a long-horned anvil for stamping (*per stampir*). See: GIUSEPPE BOERIO (as in n. 37), 34 (*ancuzenèla*), 700 (*stampàr*).

[63] It is uncertain whether *tenaiuoli* refers to pincers but based on its similarity to the Italian word *tenaglia*, it may denote small pincers.

[64] Probably worn-out channels.

[65] I am aware that sets for fastening clothes were called *botonadura/botonatura/bottonatura*, so the mentioned tools may have been used for making buttons (*botuni*). On the other hand, according to Boerio, the word *botonaor* refers to a type of chisel used for working on grooves and hollowed surfaces (GIUSEPPE BOERIO /as in n. 37/, 95 /*botonadúra*; *botonaòr*/).

[66] See: GIUSEPPE BOERIO (as in n. 37), 523 (*ponzùa*). Different types of punches are shown in Fig. 7 in this paper (labelled as Fig. 16–23, Fig. 24–27).

[67] The term *pezi de marcho* in this case likely refers to punches for marking the quality of gold and silver, rather than weights (*marco*). See and compare the meaning of the words in: GIUSEPPE BOERIO (as in n. 37), 57 (*balànza – marco … il contrapeso*), 396–397 (*marca – marchio*), 397 (*marco – marco dela staliera*).

[68] It is probably a soldering tool, also called *saldadòr* and *saldatoio*. See: GIUSEPPE BOERIO (as in n. 37), 593; FRANCESCO CHERUBINI, *Vocabolario mantovano-italiano*, Milan, 1827, 152 (*stagnador*).

[69] Given that the ink is faded, there is a possibility that the word has not been read correctly.

[70] The same as *tagièr* and *tajer* (Italian *tagliere*). See: GIUSEPPE BOERIO (as in n. 37), 732; MICHELE BRUNELLI (as in n. 38), 103.

[71] Since I am not familiar with the meaning of this term, I was unable to determine what kind of tools or objects it refers to.

[72] See note 48. This type of long-horned anvil may be depicted in Fig. 6 (labelled as Fig. 19) in this paper.

[73] See: GIUSEPPE BOERIO (as in n. 37), 70 (*batòchio*).

[74] See: GIUSEPPE BOERIO (as in n. 37), 393 (*mànego*), 420–421 (*mola*), 801 (*voltàr*).

[75] See: GIUSEPPE BOERIO (as in n. 37), 511 (*piombo*).

[76] The word *prieda* is not listed in the Venetian dialect dictionaries known to me, but I assume that in this case, it refers to sharpening stones. Although it is written as *prieda da aguar*, it is likely meant to be *prieda da guàr*, which could be interpreted as a sharpening stone for goldsmith tools (sharpening wheel). See the meaning of the word *guàr* in: GIUSEPPE BOERIO (as in n. 37), 320.

[77] I assume that in this case, the word *priede* refers to stones used for decorating goldsmith works. This is supported by the fact that the *priede* were in some sort of container (*bossolo*) together with objects called *copoleti*. In scholarly literature, it is still not entirely clear whether *copoleti* / *copoletti* / *capoletti* were a type of buttons or decorative ribbons. See: LUCIANO BUSATTO, Pre' Anzolo d'Anzolo de Muran, nodaro e al presente capelan de Maherne, *L'Esde: fascicoli di studi e di cultura*, 14 (2019), 179; ELISA TOSI BRANDI, *Il sarto tra Medioevo e prima Età moderna a Bologna e in altre città dell'Emilia Romagna*, dottorato di ricerca, Università di Bologna, 2012, 160. On the meaning of the word *bòssolo*, see: GIUSEPPE BOERIO (as in n. 37), 93; GIULIA CHIAROT (as in n. 28), 140 (*bussolus*).

[78] I have not determined the meaning of the word *vanadura* / *vanadure*.

[79] *Pontaruoli* are *pontariòli* (Italian *punteruolo*). See: GIUSEPPE BOERIO (as in n. 37), 521 (*pontariòl*).

[80] See: GIUSEPPE BOERIO (as in n. 37), 58.

[81] See: GIUSEPPE BOERIO (as in n. 37), 271 (*filo*), 407 (*mazzèto*), 550–551 (*rame*).

[82] https://www.dialettando.com/dizionario/detail_new.lasso?id=2656, accessed 29 June 2024.

[83] It likely refers to a hard stone used for testing the quality of silver, known as *pietra del paragone* or *pietra di paragone*, for which a distorted form of the word, *parangon*, was sometimes used. See: GIUSEPPE BOERIO (as in n. 37), 471 (*paragòn*), 508 (*piera*; *piera del toco o de paragòn*); ANNA MARIA LORENZONI (as in n. 28), 74 (*parangonus*); GIULIA CHIAROT (as in n. 28), 141 (*parangonum*).

[84] ANNA MARIA LORENZONI (as in n. 28), 73 (*crosolis*, *crosollus*, *crosolus* – crogiuolo).

[85] See: GIUSEPPE BOERIO (as in n. 37), 666 (*smalto*); GIULIA CHIAROT (as in n. 28), 142 (*smalto*).

[86] See: GIUSEPPE BOERIO (as in n. 37), 367 (*lètera*), 523 (*ponzùa*); GIULIA CHIAROT (as in n. 28), 141 (*ponzoni a literis*).

[87] In this case, the word *marchio* likely should not be interpreted as marks (*marca – marchio*), but rather as a weight (*marco*). See: GIUSEPPE BOERIO (as in n. 37), 57 (*balànza – marco … il contrapeso*), 396–397 (*marca – marchio*), 397 (*marco – marco dela staliera*).

[88] *Pexon* almost certainly refers to weight, as the word *pexa* is used multiple times in the same inventory to clearly indicate weight, and in the Venetian dialect, the word *péxo* (Italian *peso*) means "weight". It also seems that the word *carati* refers to weights used for measuring in carats, indicating a weight measure, which should be distinguished from the *carats* used to denote the purity of gold. See the meaning of individual words in: MICHELE BRUNELLI (as in n. 38), 77 (*péxo*); GIUSEPPE BOERIO (as in n. 37), 137 (*caràto*), 249 (*ducàto*).

[89] The different square anvils are shown in Fig. 6 (labelled as Fig. 1–4 and Fig. 8–10) in this paper.

[90] The meaning of the word *bruniur* has not been determined, but it may refer to a tool called *imbrunidòr* (Italian *brunitoio*, *brunitore*), which was used for smoothing and polishing, that is, a burnisher. See: GIUSEPPE BOERIO (as in n. 37), 326 (*imbrunidòr*). In the inventory of the goldsmith Nikola Radaković from Bar, the tool *brunador* is listed, which Giuseppe Praga interpreted as a *brunitoio* (GIUSEPPE PRAGA /as in n. 27/, Documento); GIULIA CHIAROT (as in n. 28), 140 (*brunitor*).

[91] See: GIUSEPPE BOERIO (as in n. 37), 116 (*cainèlo*), 365 (*legno*).

[92] See note 78.

[93] See: GIUSEPPE BOERIO (as in n. 37), 184 (*compasso*).

[94] See: GIUSEPPE BOERIO (as in n. 37), 520 (*ponta*) 734 (*tanàgia*); MICHELE BRUNELLI (as in n. 38), 79 (*pónta*), 103 (*tanaja/tenaja*).

[95] See: GIUSEPPE BOERIO (as in n. 37), 458 (*osso*), 645 (*sepa*).

[96] The word *tornèlo* in the Venetian dialect refers to a wooden handle, a tool typically used by dyers. It is possible that *tornello* in this context denotes a small, hand-operated tool for the rotation or manipulation of smaller objects, such as rings or chains, during the creation process. Alternatively, *tornello* might be a type of small lathe (*tornìo* in Venetian) (GIUSEPPE PRAGA / as in n. 27/, Documento). For the meaning of these terms, see: GIUSEPPE BOERIO (as in n. 37), 758 (*tornèlo; tornìo; torno*); ANNA MARIA LORENZONI (as in n. 28), 76 (*tornellum*); GIULIA CHIAROT (as in n. 28), 142 (*torneleto*).

[97] See note 55.

[98] See: GIUSEPPE BOERIO (as in n. 37), 217 (*danàro*); https://www.treccani.it/vocabolario/ricerca/tavolella/, accessed 29 June 2024. I have not found the word *nombrar* in Venetian dialect dictionaries, but it may be related to the Italian *numerare*, which can also mean "to count."

[99] See: GIUSEPPE BOERIO (as in n. 37), 161 (*cesòre* ili *cisòre*).

[100] See: GIUSEPPE BOERIO (as in n. 37), 186 (*conca*); ANNA MARIA LORENZONI (as in n. 28), 72 (*concham*).

[101] Equivalent to the Venetian *màntese* or the Italian *mantice*. In the Venetian dialect, the word *fola* is used for this type of bellows. See: GIUSEPPE BOERIO (as in n. 37), 278 (*fola*), 395 (*màntese*); ANNA MARIA LORENZONI (as in n. 28), 74 (*mantichos*); GIULIA CHIAROT (as in n. 28), 141 (*mantice*).

[102] See note 49.

[103] See: GIUSEPPE BOERIO (as in n. 37), 73 (*beco*).

[104] See: ĐURĐINA LAKOŠELJAC (as in n. 3), 824.

[105] From this document, we learn that one of the goldsmith's houses, including its workshop, was leased and renovated by the goldsmith Matej Marinov Pomenić; the house was leased for a minimum of three years, and the workshop for a minimum of five years. Additionally, Bartul Domankušević, another goldsmith, held a two-year lease on one of Stjepan's workshops. It is also noted that, at some point, one of the workshops was rented out to a painter for one year. Unfortunately, the court ruling only provides an approximate timeframe during which these properties might have been leased (1443–1458), that is, from Stjepan's death until Deša reached adulthood. See note 13.

[106] See note 18.

[107] See note 10 (Appendix 3 in the literature referenced there).

[108] HR-BAŠ-18/1, BK, kut. 2, Antonio Campolongo, F 2, fol. 141'; HR-DAŠI-263, BŠ, kut. 16/IV, Karatus Vitale, F15/IIb, fol. 136; HR-DAŠI-263, BŠ, kut. 17/I, 17/II, 17/III, Ilija Banjvarić, F 13/a5, fol. 199'.

[109] HR-BAŠ-18/1, BK, kut. 2, Antonio Campolongo, F 2, fol. 138'; HR-DAŠI-263, BŠ, kut. 16/III, Karatus Vitale, F 15/Vf, fol. 65–65'; HR-DAŠI-263, BŠ, kut. 18/I, Cristoforo q. Andree, F a, fol. 56.

[110] HR-DAŠI-263, BŠ, kut. 10, 11/I, Ante Campolongo, F 10/Ib, fol. 44'–45; HR-DAŠI-263, BŠ, kut. 10, 11/I, Ante Campolongo, F 10/Id, fol. 111.

[111] HR-DAŠI-263, BŠ, kut. 17/I, 17/II, 17/III, Ilija Banjvarić, F 13/f, fol. 57; HR-DAŠI-263, BŠ, kut. 21/III, Gregorio q. Lorenzo, sv. b, fol. 122'.

[112] HR-DAŠI-263, BŠ, kut. 10, 11/I, Ante Campolongo, F 10/Ig, fol. 155'.

[113] HR-DAŠI-263, BŠ, kut. 21/III, Gregorio q. Lorenzo, sv. b, fol. 122'; HR-DAŠI-263, BŠ, kut. 21/III, Gregorio q. Lorenzo, sv. b, fol. 12'–13; HR-DAŠI-263, BŠ, kut. 21/III, Gregorio q. Lorenzo, sv. b, fol. 117; HR-DAŠI-263, BŠ, kut. 21/III, Gregorio q. Lorenzo, sv. c, fol. 27; HR-DAŠI-263, BŠ, kut. 21/III, Gregorio q. Lorenzo, sv. d, fol. 31–31'.

[114] PIERO PAZZI, *Il punzoni dell'argenteria e oreficeria veneta*, vol. 1 (Venezia e Dogado), Treviso, 1992, 15.

[115] GIOVANNA BALDISSIN MOLLI, *Fioravante, Nicolò e altri artigiani del lusso nell'eta di Mantegna. Ricerche d'archivio a Padova,* Padua: Il Prato, 2006, 63.

[116] JOHN CHERRY (as in n. 4), 84.

[117] MARIJANA KOVAČEVIĆ (as in n. 3), 605–616 with previous literature.

[118] CVITO FISKOVIĆ, Nekoliko dokumenata o našim starim majstorima, *Vjesnik za arheologiju i historiju dalmatinsku*, 52 (1950), 196.

[119] CVITO FISKOVIĆ, Dubrovački zlatari od XIII do XVII stoljeća, *Starohrvatska prosvjeta*, ser. III, 1 (1944), 156.

[120] Theophilus provides instructions on how to construct a goldsmith's workshop in his treatise. He especially emphasizes how to design the workspace so that all accidentally fallen gold and silver particles are collected in the trench. See: THEOPHILUS (as in n. 4), 208–209.

[121] Commercial premises were not always ideally suited for goldsmithing, as evidenced by a document from 1482, which reveals that Jeronim Franin, a goldsmith from Split, rented a workshop and/or shop in Šibenik near the Great Land Gate. He rented it from Filip Rudatović for an annual sum of fourteen libra. Filip, however, agreed to install, at joint expense, a high-quality, well-lit window suitable for goldsmithing. The term *balconum* is used in the document, but it most likely refers to a large, spacious window that allowed ample light to enter and also served as a display area. See: HR-DAŠI-263, BŠ, kut. 11/VII, Ante Campolongo, F 10/Vd, fol. 21'.

[122] On constructing the furnace and on the bellows, see: THEOPHILUS (as in n. 4), 210–213.

[123] According to Milan Pelc, the listed items were an indispensable part of every goldsmith's workshop. See: MILAN PELC (as in n. 4), 30.

[124] The different forms and sizes of stumps are shown in Fig. 6 (labelled as Fig. 1B, Fig. 5, Fig. 6, Fig. 7C, and Fig. 8B), and in Fig. 7 (labelled as Fig. 3B–4B) in this paper.

[125] Goldsmithing tools are mentioned in twenty-one Šibenik documents from the 15th and early 16th centuries: HR-DAŠI-263, BŠ, kut. 3/I, Mihovil pok. Ivana, sv. 3/Ig, fol. 48'; HR-DAŠI-263, BŠ, kut. 4, 5, 6, 7, Jakov Vukšić, sv. 7/Ia, fol. 90; HR-DAŠI-263, BŠ, kut. 3/I, Mihovil pok. Ivana, sv. 3/Ii, fol. 145; HR-DAŠI-263, BŠ, kut. 3/I, Mihovil pok. Ivana, sv. 3/In, fol. 65'; HR-DAŠI-263, BŠ, kut. 3/III, Baptist de Ponte, sv. 3b, fol. 69'; HR-DAŠI-263, BŠ, kut. 16/III, Karatus Vitale, F 15/Vb2, fol. 95–99; HR-DAŠI-263, BŠ, kut. 3/I, Mihovil pok. Ivana, sv. 3/Ij, fol. 103'; HR-DAŠI-263, BŠ, kut. 11/IV, 11/V, Ante Campolongo, F 10/II, fol. 93–93'; HR-BAŠ-18/1, BK, kut. 2, Antonio Campolongo, F 2, fol. 182'–183; HR-DAŠI-263, BŠ, kut. 11/IV, 11/V, Ante Campolongo, F 10/III, fol. 242'–243; HR-DAŠI-263, BŠ, kut. 18/I, Cristoforo q. Andree, F i, fol. 16'–17; HR-DAŠI-263, BŠ, kut. 16/IV, Karatus Vitale, F 15/IIg, fol. 2; HR-DAŠI-263, BŠ, kut. 16/IV, Karatus Vitale, F 15/IIc, fol. 87'; HR-DAŠI-263, BŠ, kut. 31, 32, Iohannes Lupis, sv. 31b (1518–1531), fol. 90; HR-DAŠI-263, BŠ, kut. 22, Daniel Campolongo, sv. 12c1, fol. 26–26'; HR-DAŠI-263, BŠ, kut. 23/IV, Martinus Campellis de Gaivanis, sv. 26/IVa, fol. 8–8'; HR-DAŠI-263, BŠ, kut. 23/IV, Martinus Campellis de Gaivanis, sv. 26/IVc, fol. 226'–227; HR-DAŠI-263, BŠ, kut. 30/VIII, Frane i Donat Tranquillo, sv. a (1514–47), fol. 229–229'; HR-DAŠI-263, BŠ, kut. 11/II, Ante Campolongo, F 11/III, sv. 10/VIIc, fol. 128–132; HR-DAŠI-263, BŠ, kut. 11/II, Ante Campolongo, F 11/III, sv. 10/VIIc, fol. 140–141; HR-DAŠI-263, BŠ, kut. 16/II, Karatus Vitale, F 15/IVb/5, fol. 224'–225.

[126] The different forms of anvils are shown in Fig. 6 (labelled Fig. 1–21) and Fig. 7 (labelled Fig. 1–12) in this paper. Mallets and hammers are depicted in Fig. 7 (labelled Fig. 28–31) and Fig. 8 (labelled Fig. 1–15).

[127] Teophilus briefly discussed the various shapes of anvils. See: THEOPHILUS (as in n. 4), 212–213.

[128] See note 124.

[129] See: GIUSEPPE BOERIO (as in n. 37), 34 (*ancuzenèla*) (*ancuzenèta*). *Ancuzenèla* should be differentiated from *ancuzenèta*, which means "small anvil."

[130] See note 52.

[131] I am uncertain which of the listed techniques this refers to, as the ink is quite faded; however, it is likely a misspelling of the term *da sbalzàr*, *da sbassàr*, or *da sbàvar*. See note 52.

[132] Round and square anvils are depicted in Robert Bénard's engraving. See Fig. 6 in this paper.

[133] For more details on this type of tableware, see: CVITO FISKOVIĆ, Dubrovački zlatari od XIII do XVII stoljeća, *Starohrvatska prosvjeta*, ser. III, 1 (1949), 189, 194–196, 213, Appendix 17, Appendix 52; MARIAN WENZEL, A Bosnian Kingdom Metalworking Tradition, *Peristil*, 27–28 (1984–1985), 5–39; EMIL HILJE, Nekoliko bilješki o zadarskom zlatarstvu XIV. stoljeća, *Radovi Zavoda povijesnih znanosti HAZU u Zadru*, 38 (1996), 48; MILA GAJIĆ, *Srebrne čaše poznog srednjeg veka u Srbiji / Silver Bowls from the Late Middle Ages in Serbia*, Belgrade, 2010, 1–263; MARIJANA KOVAČEVIĆ (as in n. 3), 767–774; GORAN BUDEČ (as in n. 35), 75; ARIJANA KOPRČINA, Prilog poznavanju bosanskih hanapa, *Radovi Instituta za povijest umjetnosti*, 35 (2011), 55–64; GORAN BUDEČ (as in n. 35), 164; TONIJA ANDRIĆ, *Život u srednjovjekovnom Splitu – svakodnevica obrtnika u 14. i 15. stoljeću*, Zagreb – Split, 2018, 177, 269 (note 1680); ĐURĐINA LAKOŠELJAC (as in n. 3), 635–640. There is more extensive literature on this type of tableware, which, however, could not be studied in detail for the purposes of this paper. Additional bibliographic references can be found in the previously cited works.

[134] One Šibenik document describes a "beautiful drinking taza," while another records a larger number of "tazas for various purposes," suggesting that this term did not exclusively refer to cups. This interpretation is further supported by the higher prices and larger dimensions of certain examples. See: HR-DAŠI-263, BŠ, kut. 16/II, Karatus Vitale, F 15/IVb/5, fol. 239'–241'; ĐURĐINA LAKOŠELJAC, Zlatarski radovi profane namjene u inventarima dobara šibenskih plemića Martina i Jurja Kamenarića, *Vjesnik dalmatinskih arhiva*, 1 (2020), 111, 126 (entry No. 83).

[135] See: ĐURĐINA LAKOŠELJAC (as in n. 3), 635–640. Not a single piece has survived to the present day.

[136] Teophilus briefly discussed the various shapes of hammers. See: THEOPHILUS (as in n. 4), 214, 215.

[137] See: THEOPHILUS (as in n. 4), 240–243, 270–274.

[138] See: THEOPHILUS (as in n. 4), 214, 215.

[139] Pincers are shown in the hand of one of the apprentices in the Master of Bileam's engraving (Fig. 5).

[140] In 15th-century Šibenik documents, mercury for gilding is referred to as *argento vivo* and *arzento vivo.* HR-BAŠ-15, BNC, kut. 16, Računi 1433.–1454., sv. 11, fol. 9; HR-BAŠ-15, BNC, kut. 16, Računi 1433.–1454., sv. 11, fol. 93.

[141] Cuttlefish bone is still used for this purpose. See in: CARLES CODINA, *Goldsmithing & Silver Work – Jewelry, Vessels & Ornaments*, New York: Lark Books, 2007, 52.

[142] HR-DAŠI-263, BŠ, kut. 3/I, Mihovil pok. Ivana, sv. 3/Ic, fol. 29'; HR-DAŠI-263, BŠ, kut. 3/I, Mihovil pok. Ivana, sv. 3/Ii, fol. 145; HR-DAŠI-263, BŠ, kut. 3/I, Mihovil pok. Ivana, sv. 3/In, fol. 65'; HR-DAŠI-263, BŠ, kut. 3/III, Baptist de Ponte, sv. 3b, fol. 69'.

[143] TONIJA ANDRIĆ, Položaj obrtničkih naučnika i pomoćne radne snage u Splitu sredinom 15. stoljeća, *Zbornik Odsjeka za povijesne znanosti Zavoda za povijesne i društvene znanosti HAZU*, 29 (2011), 127.

[144] According to the 1367 Statute of Split, all master craftsmen, including goldsmiths, were required to have at least one apprentice in training (*Statut grada Splita…* /as in n. 26/, 67, 902). However, no such regulation is recorded in the medieval statute of Šibenik.

[145] Eighteen apprenticeship contracts have been found in 15th-century Šibenik notarial records. See: ĐURĐINA LAKOŠELJAC (as in n. 3), 181 (note 42), 234 (note 525), 238 (note 560), 268 (note 796), 190 (note 140), 191 (note 141), 241 (note 590), 205 (note 284), 246 (note 648), 272 (note 826), 288 (note 957), 332 (note 1327), 239 (note 997), 365 (note 1641), 366 (note 1648), 368 (note 1658), 393 (note 1854), 327 (note 1284), 760–766. In my dissertation, I mentioned seventeen contracts, but have since found an additional one, bringing the total number of apprenticeship or training contracts in Šibenik to nineteen. 4 July 1492: *… Actum Sibenici … Ibique magister Petrus Matigeuich aurifex locauit magistro Andree Lalich aurifici ciui, presenti et conducenti, Stephanum filium suum etatis annorum XII uel circa … in discipulum ad artem aurificum pro annos quatuor proxime futuros. Qui Stephano promisit esse fidelis, legalis, obediens … non facere furtum .... Et versa vice idem magister Andreas promisit tenere dictum Stephanum apud se pro discipulo pro dicto tempore, tractare eum humane et prendere* (?) *eum victus et vestitus condecenter et docere artem sue* (…) *et in fine dicti temporis dare eidem vestimenta* (…) *et pro eius mercede ducatos duodecim* (…)

(In margin): *1493, die martis 8* (…) *Ibique partes suprascripte de plano cancellatione instrumenti suprascripti volentes se esse in statu pristino et quod vna pars non* (…) p*ossit petere uti altera.*

(Arhiv Hrvatske akademije znanosti i umjetnosti u Zagrebu / hereafter: AHAZU/, II b 29, fol. 107r). This refers to Stjepan, son of the Šibenik goldsmith Petar Matejev (Matijević), known as Farzonić, who was probably sent to Venice in 1488 for a seven-year goldsmithing apprenticeship with a jeweller from Zadar. However, he appears to have cut his time in Venice short and returned to Šibenik, where his father arranged for him to complete a four-year apprenticeship with Andrija Cvitin Cimaturić Lalić, a renowned local goldsmith, but even this document was annulled after only eight months. Given that Stjepan was around twelve years old in 1492, we can infer that he left for Venice when he was only eight.

[146] The contract form was identical in both cases, making it difficult to definitively distinguish between apprenticeship contracts and those for further training or employment. However, in instances where contracts were made for a shorter duration (ranging from 2 to 4 years) with slightly older boys, it can be assumed that they had already completed part of their apprenticeship with another goldsmith.

[147] ZDENKA JANEKOVIĆ RÖMER, *Rod i grad – Dubrovačka obitelj od XIII do XV stoljeća*, Dubrovnik, 1994, 112.

[148] See note 13.

[149] HR-DAŠI-263, BŠ, kut. 22, Daniel Campolongo, sv. 12c1, fol. 26–26'; HR-DAŠI-263, BŠ, kut. 23/IV, Martinus Campellis de Gaivanis, sv. 26/IVc, fol. 226'–227; HR-DAŠI-263, BŠ, kut. 16/II, Karatus Vitale, F 15/IVb/5, fol. 224'–225.

[150] Since the inventory is exceptionally extensive, for the purposes of this study, we are providing only the transcript of the inventory of his goldsmith's workshop. The complete transcript can be found in: ĐURĐINA LAKOŠELJAC (as in n. 3), 819–828, Appendix 3.