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# The Crossbow of Count Ulrich V of Württemberg

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In 1904 the Metropolitan Museum acquired the arms and armor collection of Maurice de Talleyrand-Périgord, duc de Dino (1843–1917), one of the foremost arms collectors in nineteenth-century Paris.<sup>1</sup> Among the highlights of almost five hundred objects was the collection's only crossbow, dating from the mid-fifteenth century, which is not only notable as a rare survival of its kind but also distinguished for its unusually elaborate use of carved ivory inlay (Figures 1, 2). Moreover, heraldry and inscriptions incorporated into the decoration identify both the crossbow's original owner, Count Ulrich V of Württemberg (1413–1480), as well as the year in which it was made, 1460—information rarely known for any fifteenth-century object.

The crossbow first received scholarly attention when its owner at the time, the noted British arms and armor scholar and collector Charles Alexander, baron de Cosson (1846–1929), presented a paper (published in 1893) to the Society of Antiquaries of London.<sup>2</sup> In what appears to be the first publication devoted entirely to a single crossbow (and the first on this type and method of construction), Baron de Cosson recognized the weapon's historical and art-historical significance and also correctly identified the heraldry and, thus, the object's original owner. Since then, however, relatively little has been written about the crossbow, and most authors have drawn primarily on de Cosson's article rather than on firsthand examination of the object.<sup>3</sup> More than a century after the Metropolitan's acquisition of the crossbow, this article offers a reassessment of the important weapon, including new information concerning the identity of the crossbow's maker and the symbolism of some parts of its intricate decoration.<sup>4</sup>

For more than two hundred years, up to the end of the fifteenth century, when firearms eventually became increasingly accurate, crossbows remained the most powerful hand-held weapons to be used widely in both warfare and civilian life. They were often required equipment in con-

tracts of military service and in those between co-owners of castles,<sup>5</sup> and often possession of a crossbow was a condition for acquiring citizenship in early modern cities. Abundant evidence is available for the crossbow's use as a hunting weapon, and it was a favorite diplomatic gift, especially among the nobility. The recreational use of the crossbow, its appearance in proverbs, and references in urban and regional laws concerning the possession and carrying of it further attest to this weapon's importance and prominent position in daily life.<sup>6</sup>

Despite their long period of use, early crossbows—those dating from before about 1500—are relatively rare, and our knowledge about them still has significant gaps.<sup>7</sup> Ironically, it is precisely the weapon's once-widespread presence that now makes it so difficult to identify the regional or even national origin of surviving examples and prevents us from dating these more precisely than to the first or second half of the fourteenth or fifteenth century. The main construction and general appearance of crossbows does not appear to have changed considerably during the course of the fifteenth century, to judge from our limited knowledge. To complicate matters, crossbow makers appear to have traveled extensively, as did their products, thus contributing to the dissemination and, at the same time, the diluting of particular styles. These factors may explain the similar appearance of crossbows depicted in fifteenth-century art throughout western Europe. Although contemporary documents do sometimes refer to regional styles or weapons made in particular centers (or at least thought to have been made there by contemporaries taking inventory), their distinguishing features are not known.<sup>8</sup> Equally limited is our understanding of workshop practices, techniques, and division of labor, even of those makers in official employment.<sup>9</sup> The scant documentary evidence available suggests that ordinary crossbow makers of the fifteenth century made both the bow and the stock, leaving the production of any metal parts to a member of the metalworking guilds, such as a blacksmith.<sup>10</sup> The marking of crossbows with an arsenal or maker's sign does not appear to have been a widespread



1. Probably Heinrich Heid von Winterthur (recorded in Stuttgart 1454–60). Crossbow of Ulrich V, Count of Württemberg (1413–1480), 1460. Horn, tendon, birch bark, wood, ivory, bone, antler, hemp, iron (steel?), copper alloy, pigments; 28¼ x 25¾ in. (71.8 x 65.4 cm), 6 lbs. 9 oz. (2972 g). The Metropolitan Museum of Art, Rogers Fund, 1904 (04.3.36)

requirement or custom before the sixteenth century (unless the surviving body of unmarked crossbows is not representative),<sup>11</sup> and as a result, it has, to date, been impossible to attribute a single surviving fifteenth-century weapon to a known crossbow maker with any certainty.<sup>12</sup>

Finally, we do not know the extent to which crossbow makers collaborated with specialized artists to produce the most elaborately decorated weapons. Pictorial evidence indicates that most fifteenth-century crossbows were decorated to some extent. The simplest form included a stock with at least some inlay of horn, bone, or even ivory, and a bow covered with printed or painted ornament (see Figures 3 and 16). Although a substantial number of illustrious individuals may have owned crossbows, which would have been lavishly embellished with all conceivable types of decoration (such as painting, inlay, engraving, and relief carving), fewer than a dozen examples are known to survive today.<sup>13</sup> Most of these include personalized ornament in the form of heraldry, but only two extant fifteenth-century crossbows—the present example and another in the Metropolitan's collection that is dated 1489 and was made for Matthias Corvinus (1443–1490), king of Hungary—appear to bear a date with the year of manufacture as well as heraldry identifying the original owner.<sup>14</sup>

## THE CROSSBOW AND ITS DECORATION

Ulrich von Württemberg's crossbow has two main parts, each with additional components: the bow (which presumably was originally accompanied by its bowstring, as well as an iron loop, or *stirrup*, to assist in the spanning, or drawing back of the bowstring, but both parts were already miss-

ing when this example was first published);<sup>15</sup> and the stock (or *tiller*), with its release mechanism composed of a *nut* and trigger (in contemporary documents usually referred to as a *key*). When used, the crossbow was held with the bow at the front. The projectile, a bolt (or *quarrel*), would be placed on the weapon's upper side, and the rear left side of the stock would rest against the right cheek, or on the right shoulder (for a right-handed person).

The dimensions of Ulrich's crossbow<sup>16</sup> classify it as a model known in Germany as a *Halbe Rüstung* (literally, "half-size equipment"), a standard size for western European crossbows.<sup>17</sup> Nevertheless, its elaborate decoration identifies it as an extraordinary example of its kind that would probably have been used primarily for hunting and during ceremonial occasions rather than in warfare.

The sturdy bow has a convex back (facing the target) and a flat belly (facing the user), and tapers toward either end (the *nock*), each of which is shaped to accommodate the loop in a bowstring. X-ray examination shows the bow to be made up of the following components (arranged from belly to back, and all presumably held together with animal glue): a backing of what appears to be wood,<sup>18</sup> followed by several layers of horn, and a final layer of tendon, giving the back its convex shape. The entire surface of the bow was once covered in at least two layers of birch bark, making it more resistant to moisture, but today only small areas of the outer bark covering remain around either nock as well as underneath the binding that joins the bow to the stock. These remaining areas of bark are decorated with a dense pattern of light dots on a black ground (Figure 4), although now-missing central areas of the back and belly may have included more elaborate decoration.<sup>19</sup> The object's method

2. The crossbow of Ulrich V (Figure 1), seen from below





3. Master of the Sebastian Diptych. *The Martyrdom of Saint Sebastian*, ca. 1470–80 (detail showing a group of archers). Oil on linden wood, 11 $\frac{7}{8}$  x 8 $\frac{5}{8}$  in. (30 x 22 cm). Gemäldegalerie, Staatliche Museen zu Berlin (1689). Photograph: Bildarchiv Preussischer Kulturbesitz/Art Resource, New York. Note the light brown tillers, the bone (or ivory?) facing of the upper side, and the painted bows on both weapons, as well as the depiction of spanning the crossbow with a cranequin on the left.



of construction, illustrated by a cross section from a fifteenth-century bow in the Metropolitan's Arms and Armor collection (Figure 5), was presumably introduced to Europe from the East, probably during the twelfth century or earlier.<sup>20</sup> Owing to their construction, such bows are known today as "composite bows," but in contemporary documents they are usually referred to simply as "horn bows." Extremely powerful and far superior to earlier wood examples, composite bows became the dominant crossbow type from the fourteenth century until the end of the fifteenth.<sup>21</sup> A looped hemp binding (the *ties*) secures the present bow to the stock, but although the bow is contemporary with the tiller, there are certain indications that the bow, like the nut, may be a later replacement: the ties appear to have been replaced, and there is an additional string support on either side between tiller and binding (see Figure 6); no traces can be found of the usual leather binding for the iron stirrup; and the horizontal cutout in the tiller appears to have been made for a bow that was larger than the present one, which apparently had to be secured by two (probably modern) wood wedges, the lower of which is now missing.<sup>22</sup>

The slender tiller, which appears to be made of a relatively soft wood, probably birch,<sup>23</sup> has flattened under and upper sides, and is fitted with a horizontal cutout at the front to accommodate the bow. The forward portion (fore-end) is rectangular in cross section, and fitted frontally with a vertical rivet extending through its entire height in order to prevent the cracking of the tiller from the strain of spanning and releasing the bow. At its center, the fore-end is pierced horizontally with a hole (the *bridle hole*) for the ties. A pronounced step, or *shoulder*, separates the fore-end from the convexly oval midsection, which contains a simple lock mechanism. Behind its center, the tiller is fitted with a pair of lugs (which are, in fact, the ends of a single iron bolt passing horizontally through the stock). These lugs provide sup-



4. Detail of Figure 1, showing the fragmentary covering of decorated birch bark at the left nock of the bow. Note also the small modern *R* added in pencil, an indication that the bow was at some point removed from the tiller and is possibly a replacement.



5. Cross section of a fifteenth-century composite bow. Whalebone or horn. The Metropolitan Museum of Art (X.800). The core of this bow does not contain any wooden backing like that in the bow of Figure 1 but is instead made up of layered strips of horn. The surface of each layer is deeply hatched or engraved with parallel lines (giving in profile a "toothed" appearance) in order to strengthen the bonding of the glued components. The same method was apparently employed for the inlays of horn, bone, and ivory in the stock.

port for the spanning device, which in fifteenth-century Germany was often a *Winde*, or crank drive (known in English as a *rack* or *cranequin*; see Figure 3).<sup>24</sup> The rear half of the tiller is of slender shape tapering to a blunt end. Its cross section has the form of an asymmetrical triangle (standing on its shortest side) with slightly convex sides.

The lock mechanism is of the simple one-axis variety and is made up of two elements: the cylindrical nut, probably made from antler, which is a later replacement (Figure 7),<sup>25</sup> and the trigger. The latter, an iron bar of inverted Z-shape, pivots around an internal axis so that it acts as a lever with its internal upper forward part engaging the nut, while the larger lower part runs parallel to the underside of the tiller. The entire length of the trigger protruding from the underside is covered frontally with copper alloy.<sup>26</sup>

The elaborate decoration of the tiller consists of inlays of horn and ivory set flush into recesses cut into the stock. The figurative elements contained in the carved ivory panels were designed to be read when the crossbow is held upright. The entire upper side is faced with ivory, following the contours of the tiller, except for the very front, where a square bone section is probably a repair made during the crossbow's working lifetime. Inlays of dark horn frame the areas around the nut, the spanning lugs, and the bridle hole, which is decoratively cut in a floral shape (Figure 8). Although ornamental in appearance, these inlays also serve to reinforce areas of the tiller that come under particular strain when the crossbow is used. The butt end of the tiller was also once covered, presumably by a piece of horn, bone, or ivory (now lost). In addition to the ivory facing of the tiller's upper side, the crossbow's main decoration consists of four panels of carved ivory: one on either side, a corresponding one on the underside, and an additional one of different shape on the underside of the rectangular forward section of the tiller.

The upper ivory facing is left almost entirely without decoration to avoid any visual distraction for the user or physical obstruction for the bolt. Aside from the slightly raised and notched *bolt guide* carved into the front of the replaced bone panel, which is functional rather than decorative, there are only two simple elements of ornament. On the forward section, the part on which the bolt would rest (known as the *chase* or *gutter*), is a small rectangular field filled with a shallowly carved floral pattern against a blackened ground.<sup>27</sup> Just behind the nut, Christ's monogram, *ih̄s*, is engraved in Gothic script; the small hole behind the seat of the nut originally served to secure a curved strip of horn, the bolt clip (now lost), which would have extended over the nut and held a bolt in position before discharge (see Figure 9).

The ivory panels on either side of the tiller (Figures 10, 11) are each of elongated lancet shape, with their carved



6. Fore-end of Ulrich V's crossbow (Figure 1), showing the ties and the details of decoration. Note also the square bone panel at the front and the later string support between the fore-end and the binding.



7. Midsection of Ulrich V's crossbow (Figure 1), showing the nut (a modern replacement, probably dating from the second half of the sixteenth century) and details of the decoration, including the *ih̄s* monogram behind the nut



8. Detail of the right side of the "shoulder" of Ulrich V's crossbow (Figure 1), showing the horn inlay around the bridle hole



9. Detail of Ulrich V's crossbow (Figure 1), showing the upper side of the midsection and fore-end. The only decoration consists of the *ihs* monogram behind the seat of the nut and the rectangular field containing floral decoration at the front of the chase.



decoration consisting of, top to bottom: a coat of arms; a sun-shaped frame encircling the protruding axis of the trigger; and an inscribed, zigzagging banderole, which issues from the hand of a human figure standing on a baluster-like pedestal in the panel's lower pendentive. Incised lines bor-

dering the main edges of the banderole, as well as some of the initial letters, show traces of red pigmentation.<sup>28</sup>

The carved panel on the tiller's right side (Figure 10) depicts, at the top, the arms of Württemberg,<sup>29</sup> heraldically facing to the right (dexter):<sup>30</sup> *Or, three Stag's Antlers fesswise in pale Sable. Upon a barred Helm, a Bugle-Horn Gules, garnished and stringed Or, issuant from the mouth three Ostrich Feathers alternately Gules, Argent and Sable, mantled Gules and Or.*<sup>31</sup> In the lower part is shown the figure of a man, clad in mid-fifteenth-century civilian dress; from his raised left arm rises a zigzagging scroll, containing the following Latin inscription and year in Gothic minuscules:

Gloria • / in excelsis / • deo • Et • / in • terra • / pax •  
ho / minibus / • bone • vo / luntatis / • Lauda / m9 •  
te • / Bene / dictin9 / • te • / 1460<sup>32</sup>

Except for the year, the inscription is a quote from the Gospel of Luke 2:14, the angels' announcement of the birth of Christ to the shepherds: "Gloria in excelsis deo et in terra pax hominibus bonae voluntatis. Laudamus te. Benedictimus te." (Glory be to God in the highest, and on earth peace to men who enjoy His good will. We praise thee. We bless thee.)

The carved panel on the opposite, or left, side (Figure 11) depicts, at the top, the arms of Savoy, likewise facing dexter: *Gules a Cross Argent. Upon a barred Helm, a Lion's Head Or between two Wings Argent, mantled Gules doubled Argent.* Beneath it, a zigzagging banderole carries another Latin inscription in Gothic minuscules. In contrast to the panel on the right side, however, the scroll issues from the raised left arm of a woman in mid-fifteenth-century dress. It is also longer and hence rendered in a double zigzag—so that the inscription is to be read from the bottom upward and back down again—with the year given in Roman numerals:

O / ma / ria • gra / cio / sa • D / ei • mr • ge / ne / rosa • /  
Diga • / laude / • gloriosa • / Sis • / pro • / nobis • sp /  
ecio / sa • / ad[?] m • cccc / • lx •

The words form the four lines of a rhyming verse from a prayer or hymn to the Virgin Mary:

O Maria graciosa	O gracious Mary,
Dei mater generosa	Generous mother of God.
Digna laude gloriosa	Worthy of glorious praise.
Sis pro nobis speciosa	Be beautiful (to behold) for us.
[Anno/Anno domini?]	In the year/In the year of
MCCCCLX	[the Lord] 1460 <sup>33</sup>

The verse, though obviously a prayer to and praise for Mary, is unfortunately too generic to be identified with a liturgical context or a particular text, from which it may have been copied or quoted.<sup>34</sup>

The shape of the carved panel on the underside of the tiller is similar to that of the side panels, but it has a cutout along its center to frame an opening for the trigger. This cutout is bordered on either side by stylized floral decoration in the form of a chain of heart-shaped leaves, and to the rear by a stylized lily. The entire forward section of the panel is occupied by an S-shaped banderole carrying an intriguing inscription in Hebrew letters (see Figure 19), which will be discussed in detail below.

The last of the carved ivory panels, although shorter than the previous examples, runs the entire length of the underside of the tiller's forward section and terminates at the shoulder section in a cruciform finial (Figure 12). The finial contains what appears to be a cross crosslet or cross potent, from which issue two oak leaves, reaching into the main field and forming a pedestal for a figure of Saint Michael. The haloed and winged archangel is shown in a long tunic (an alb?), over which he is wearing what seems to be a richly embroidered chasuble. In his right hand, he holds a pair of scales, each containing a small human figure, while he raises a sword with his left hand. This pose reverses those of most comparable contemporary examples, which show the sword in the saint's right hand and the scales in the other (Figure 13).<sup>35</sup> Here his upright wings mirror the pointed shape of the Gothic trefoil arch above, on top of which are two square fields containing quatrefoil tracery; the forward remainder of this panel is left plain, without any carving.

In addition to the horn and carved-ivory inlays, almost the entire surface of the tiller (with the exception of the sides of the forward section) is embellished with a lightly engraved floral pattern that has been filled with a dark masticlike substance. This decoration includes an outline around each of the ivory panels, which, except for the one depicting Saint Michael, are adorned with small leaves reminiscent of the crockets of Gothic tracery. The floral pattern includes several blossoms, including stylized fleurs-de-lis and pomegranates, as well as geometrical figures, such as knots, quatrefoils, arrows or bolts, and a six-pointed star. Although de Cosson and subsequent writers identified this ornament as Italian, or at least "of Italian influence,"<sup>36</sup> there is in fact nothing specifically Italian (or even specifically mid-fifteenth century) about this type of decoration, for which comparisons can easily be found across western Europe in media ranging from textiles and furniture decoration to book illuminations and early prints.<sup>37</sup>

In addition to the heraldry, it is the extent of decoration that attests to the high status of this crossbow's former owner. Ivory was a rare and costly raw material that only wealthy patrons could afford. It was usually worked by specialized craftsmen, and to judge from the few surviving weapons of the period, the lavishness of the carved ivory on this early example was exceptional. In fact, current research suggests



10. Panel of carved ivory inlaid into the left side of the stock of Ulrich V's crossbow (Figure 1), depicting the arms of Württemberg with a Latin inscription below



11. Panel of carved ivory inlaid into the right side of the stock of Ulrich V's crossbow (Figure 1), depicting the arms of Savoy with a Latin inscription below



12. Panel of carved ivory inlaid into underside of the fore-end of Ulrich V's crossbow (Figure 1), showing the figure of Saint Michael (probably reversed). Note also the modern support between the stock and the binding.

13. Master of the Liesborn Altarpiece. *Saint Michael*, ca. 1470. Cologne or the Netherlands. Oil on oak panel, 33 $\frac{7}{8}$  x 12 $\frac{1}{2}$  in. (86 x 31.8 cm). Westfälisches Landesmuseum für Kunst und Kultur, Münster (381LM). This is a more typical depiction of a Saint Michael, with a sword in his right hand and scales (identical to those on the crossbow; see Figure 12) in his left.



that this weapon appears to be one of only three known fifteenth-century examples with such extensive use of carved ivory, and (as will be discussed below) the earliest dated crossbow to survive.

#### ULRICH VON WÜRTTEMBERG AND HIS CROSSBOW MAKER HEINRICH HEID

The arms in the tiller's decoration were identified by de Cosson as those of Ulrich V, "the Much-Beloved," count of Württemberg, and those of his third wife, Margaret of Savoy

(1420–1479), whom he married in 1453 (Figures 14, 15).<sup>38</sup> Following this identification, it has been the traditional assumption that the crossbow must have belonged to Count Ulrich: not one writer on the subject has raised the possibility of his wife as the owner. Fifteenth-century accounts do occasionally mention women who enjoyed hunting, although the full extent of their participation is rarely described or shown. The vast majority of contemporary references to women hunting pertain to falconry or the stag hunt, and the relatively small number of extant images of such subjects would suggest that the weapon most commonly used by women was the bow.<sup>39</sup> The placement of the





14, 15. Ludwig Fries (Master of the Sterzing Altar). *Ulrich V with His Three (Successive) Wives: Margarethe of Kleve (1416–1444), Elisabeth of Bayern-Landshut (1419–1451), and Margaret of Savoy (1420–1479)*. Side wings from an altar (central panel lost). Stuttgart(?), ca. 1470. Tempera on wood, each 31 1/4 x 18 3/4 in. (79.5 x 47.5 cm). Landesmuseum Württemberg, Stuttgart (WLM 13721, 13722). Photographs: Peter Frankenstein, Hendrik Zwiefark. Note the proper coloring (*tinctures*) of the arms of Württemberg and Savoy.

arms on the tiller also implies that the weapon did not belong to the countess: when the crossbow was in use, the Württemberg coat of arms would—for the most part—have faced outward, fulfilling its heraldic purpose of identifying the owner of the weapon, while the Savoy arms would have faced inward.<sup>40</sup> In light of all these facts, the identification of Count Ulrich as the weapon's owner is undoubtedly correct.

The count of Württemberg was a powerful and influential peer of the Holy Roman Empire, bearer of the Imperial War-Banner (*Reichssturmflagge*), and ruler over a sizable territory in southwestern modern-day Germany, situated between Baden to the northwest and Bavaria to the southeast, with Stuttgart as its main residence. Upon the premature death of their father in 1419, Ulrich and his elder brother Ludwig, both still minors at the time, jointly inherited the county. Since the nineteenth century, historians have generally offered a somewhat negative judgment of

Count Ulrich. His dominant involvement in the Contract of Nürtingen (an agreement between the two brothers that partitioned the county into two separately governed entities in 1441) probably played a role in this overcritical assessment, as well as the disastrous military defeat at the battle of Seckenheim (discussed below) and the fact that it was Ludwig's son who, in 1495, managed to reunite the two counties and have both family and territory elevated to the status of a dukedom. (Ulrich's eldest son, by contrast, was somewhat of a disappointment.) A recent biography, though largely neglecting Count Ulrich's private life, has helped to modify this view.<sup>41</sup> Indeed, seen through the eyes of his contemporaries, Ulrich's life was nothing short of exemplary.

During his reign, the city of Stuttgart witnessed an unprecedented expansion in terms of size and artistic patronage, while Count Ulrich's household and court, with their elaborate festivities such as tournaments, were apparently modeled on examples set by the dukes of Burgundy.<sup>42</sup>





16. Master of the Polling Panels. *Pollinger Kreuzfindungsaltaar*, ca. 1455 (detail from upper left wing showing Duke Tassilo of Bavaria hunting). Oil and tempera on fir, 86¼ x 34½ in. (219 x 87.5 cm). Alte Pinakothek, Bayerische Staatsgemäldesammlung, Munich (1369). Photograph: Bildarchiv Preussischer Kulturbesitz/Art Resource, New York. The crossbow carried by the count's attendant has a light brown tiller and dark inlays (horn or stained bone?); since the tiller and trigger are somewhat longer than those on Ulrich V's weapon (Figures 1, 2), the crossbow appears to be of a slightly earlier type.

The count's policies were governed as much by ideas of chivalry and honor as by diplomacy, foresight, and the pursuit of gains for his house and territory. In open disputes between the houses of Habsburg and Wittelsbach (including their respective allies) during the 1460s, Ulrich sided with Emperor Friedrich III, not only out of loyalty but also to defend political and financial interests of his third wife. In the process, he famously suffered a bitter defeat and subsequent capture at the battle of Seckenheim on June 30, 1462.<sup>43</sup> Lavish spending for all these purposes, including

the enormous ransom that had to be paid for his release (with no support from the emperor), caused financial problems throughout his reign.

Despite these concerns, Count Ulrich's private correspondence and court accounts give ample evidence that he continued to be an avid and passionate huntsman until the very end of his life (he died, in fact, during a hunting visit to his nephew, Count Eberhard).<sup>44</sup> Numerous letters exchanged from 1454 until 1477 between Count Ulrich and his friend and intimate hunting companion Albrecht Achilles, margrave of Brandenburg (1414–1486), speak of joint hunting excursions and reciprocal visits, the mutual lending of dogs, as well as gifts and exchanges of hunting weapons. No detailed description or depictions of these hunts have come down to us, but a near-contemporary altar wing showing a Bavarian duke riding out with his companions (Figure 16) gives a good idea of the appearance of such hunting parties.<sup>45</sup> What may have been rather similar paintings, accompanied by various inscriptions, once adorned the walls of Ulrich's private chamber at one of his residences in Marbach, about twelve miles north of Stuttgart. The paintings are now lost, but several scenes were recorded through rough pen-and-ink sketches and descriptions in a late sixteenth-century manuscript by Simon Studion (1543–1605).<sup>46</sup> One of these (see Figure 17) depicts two dismounted hunters—the one in front, identified as wearing a crimson tunic, is perhaps Ulrich himself—who both aim their crossbows at a stag they have just brought to bay; a banderole half-framing the hunters bears the rather curious inscription “Hürsch / Lasz Dich / nicht verdrieszen / Baldt will / Ich unnszer Jeegen Be / schlüssenn” (Deer, do not be chagrined, I will end our hunting soon).

Three documents relating specifically to artists and craftsmen at Count Ulrich's court give (or gave, since they are now lost) the name of a mid-fifteenth-century crossbow maker in his employment.<sup>47</sup> On November 18, 1454, Count Ulrich appointed a certain Heinrich Heid von Winterthur as his *Armbruster* and *Werkmeister*.<sup>48</sup> Both terms are ambiguous, since *Armbruster* can mean both crossbowman and crossbow maker. Likewise, the term *Werkmeister* (literally, “master of works”) was mainly used for architects and master masons, but contemporary documents suggest that it could also denote a “master of military works,” a person in charge of overseeing the acquisition, production, and maintenance of war-related material that a nobleman or city might possess (in this context, probably the contents of arsenals, especially crossbows and siege engines).<sup>49</sup> Their contracts usually stipulated terms of manufacture, storage, and maintenance of such weaponry, and sometimes stated that the *Werkmeister* was to accompany his employer on campaigns. Heinrich Heid's dual title thus makes it fairly certain that he had assumed not only the position of court crossbow





17. Simon Studion (German, 1543–1605). *Count Ulrich von Württemberg Hunting Bear and Deer* (sketches after lost wall paintings of 1467 from Count Ulrich's private chamber in Marbach Castle). *Vera origo illustrissimæ et antiquissimæ domus Wirtembergicæ...* (1597), fol. 152r (detail). Ink on paper, 12¾ x 8 in. (32.5 x 20.2 cm). Württembergische Landesbibliothek, Stuttgart (Cod. hist. fol. 57)

maker but a place of importance beyond that of a mere craftsman, as well.

Confirmation of Heid's favored position is found in the other two references to documents originally dating from 1460, the same year that the Museum's crossbow was made. The first of these documents,<sup>50</sup> dated January 2, stated that Count Ulrich sold a house "with a winepress and other belongings" in Stuttgart tax-free to his crossbow maker, who was to maintain a workshop there, would receive certain privileges, and had to deliver one crossbow annually to the armory. To judge by the purchase price of 400 gulden, as well as the mention of a winepress and "other belongings," this house must have been somewhat out of the ordinary, since house sales from the same period were usually in the range of about 150 to 250 gulden.<sup>51</sup> The other document, of January 7,<sup>52</sup> appears to have confirmed that this house indeed put too much of a strain on the crossbow maker's purse. Not only was the purchase price given as 500 gulden, but Count Ulrich granted permission for his master mason, Auberlin Jerg, to take over half of the house, which was situated next to that of the painter Matern Maler, for the sum of 250 gulden with the same privileges (freedom from taxation, fees, and similar obligations).<sup>53</sup>

The coincidence of dates, coupled with the absence of any other names of crossbow makers in Stuttgart at that time, strongly suggests that Heinrich Heid von Winterthur was the maker of Count Ulrich's beautiful weapon. If this assumption is correct, the Metropolitan Museum's weapon would be not only the earliest dated crossbow but the earliest one whose maker has been identified.

Although no other documentary evidence has as yet come to light,<sup>54</sup> we may make a few more educated guesses about Heinrich Heid von Winterthur and his work. A recent publication suggests that the six-pointed star contained in the engraved decoration on the tiller may be a Star of David (Figure 18), and thus somehow linked with the inscription in Hebrew letters.<sup>55</sup> This possibility cannot be entirely disregarded. Nevertheless, assuming that Heinrich Heid is indeed the maker of Ulrich's crossbow, a specifically Jewish context for the star and the Hebrew characters is rather unlikely: despite several references to Jews bearing arms, not a single fifteenth-century mention of a Jewish crossbow maker in Germany has been found to date.<sup>56</sup> Moreover, Jewish members of the population are practically always identified as such in official contexts, but none of the three documents identified Heid as a Jew, nor does the name Heinrich appear to have been used among Jews in fifteenth-century Germany.<sup>57</sup> Finally, the tiller's star does not have the appearance of a fifteenth-century mark (it is not a separate, individual sign),<sup>58</sup> and six-pointed stars, even Stars of David, are frequently found as decorative elements in non-Jewish contexts.<sup>59</sup>



18. Detail of the underside of the tiller of Count Ulrich's crossbow (Figure 1), showing a six-pointed star in the engraved decoration

A somewhat more substantial clue to Heinrich Heid's background is the suffix to his name, which implies that he was Swiss and that either one of his immediate ancestors or, more probably, Heinrich himself had emigrated from the city of Winterthur, near Zurich, perhaps at some time in the 1440s. In 1442 Winterthur lost its status as an imperial city and resubmitted to Habsburg rule, which immediately resulted in almost crippling taxation that subsequently prompted many of its inhabitants to leave the city.<sup>60</sup> By 1454, when he was first employed by the count, Heid may have arrived only recently in Stuttgart. Given his dual appointment as the count's crossbow maker and *Werkmeister*, it seems likely, however, that he was already an experienced master craftsman, either in Stuttgart or elsewhere. This assumption is also supported by the fact that, by 1460 at least, Heid had become an accepted equal among court-appointed craftsmen, living next door to the court painter and co-owning a house with the count's master mason. His implied prosperity in 1460 suggests that Heid's employment in Stuttgart from 1454 to at least 1460 was a successful one. After 1460, however, the documents fall silent. Perhaps Heid died, or perhaps the crossbow maker had lost or given up his position in the wake of his employer's defeat and capture at the battle of Seckenheim in 1462.<sup>61</sup> It is also possible, of course, that Heid was simply not mentioned in relevant Württemberg documents anymore, or that those that did mention him have not survived.<sup>62</sup> There is, however, a single reference in a Swiss document of 1490 to a certain "Jakob Heid, son of the crossbow maker Heinrich Heid of Basle,"<sup>63</sup> which could indicate that the master returned to Switzerland.<sup>64</sup>

#### AN ENIGMATIC INSCRIPTION: ITS ORIGINS AND POSSIBLE MEANING

At this point, we return to what is probably the single most outstanding element in the decoration of Count Ulrich's crossbow: the enigmatic inscription in Hebrew characters, contained in an S-shaped banderole on the carved panel on the underside of the stock (Figure 19).<sup>65</sup> It is to be read from the bottom up, and from right to left:

האב ג[?] ח ליעב ה[?] ב הער[?] צ[?] ע

For a long time, this inscription has baffled both art historians and Hebrew scholars. Baron de Cosson submitted the inscription for review by two eminent academics of his day, but although a reading of the characters was offered, de Cosson had to concede that any attempt to further decipher the inscription remained "without success so far as its interpretation is concerned."<sup>66</sup> He concluded that it was probably an attempt to copy Hebrew by an artist who did not speak the language and was placed on the crossbow

"only to impress the ignorant with the vastness of the artist's learning," an opinion he reiterated in his description of the crossbow for the catalogue of the duc de Dino collection.<sup>67</sup> Such inscriptions, in what may be called "pseudo-Hebrew," are indeed found quite frequently in medieval and Renaissance art.<sup>68</sup>

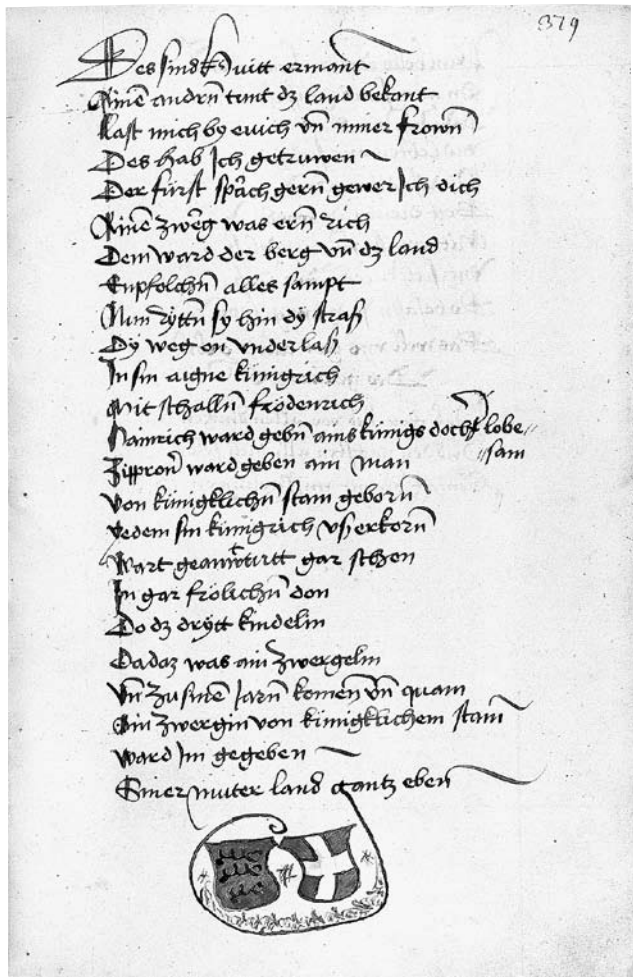
No decisive progress was made in the interpretation of the inscription until 1957, when the corresponding letters of the Western alphabet were added to the transcription below each Hebrew character.<sup>69</sup> This allowed for the inscription to be read phonetically in reverse, from left to right, revealing the following German or Yiddish words: *hab gut lieb hoch herze*.

Professor Bezalel Narkiss at the Hebrew University in Jerusalem confirmed this reading in 1990 but noted that some of the Hebrew letters are not rendered entirely accurately on the crossbow.<sup>70</sup> In 2004, the inscription was studied once more, by Jerold C. Frakes, professor of German and comparative literature at the University of Southern California, for a publication on early Yiddish texts.<sup>71</sup> The question of whether the language is German or Yiddish, already raised by Narkiss, could not be resolved,<sup>72</sup> and Frakes further noted that this reading could actually have different meanings, depending on the form of the verb (indicative or imperative use) and the interpretation of the word *gut*, which may stand for either *Got/Gott* (God) or *gut* (good, well).<sup>73</sup> In addition to these observations, the interpretation of the expression *hoch herze* (literally, "high heart") is of importance in this context. The phrase could be a German expression for "being in high spirits"—more specifically a form of the chivalric virtue and courtly attitude *hoher muot*, or *magnanimitas*<sup>74</sup>—or possibly, although less likely, the reference to a surname.<sup>75</sup> Accordingly, several readings are possible for the phrase, which can be interpreted either as a statement or as an exhortation:



19. Detail of the panel of carved ivory inlaid into the underside of the stock of Count Ulrich's crossbow (Figure 1), showing the cryptogram in front of the trigger (discernible to the right). The inscription is to be read from the lower right to the upper left of the scroll.





[I] hold God dear [and am in] high spirits.  
[Indicative use of the verb; phrase interpreted as a statement]

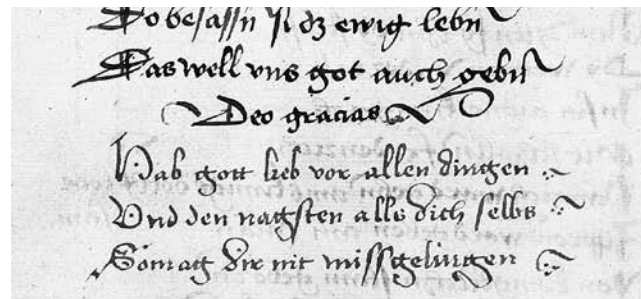
Hold God dear [and be in] high spirits!  
[Imperative use of the verb]

Hold God dear, [you] high spirited [one]!  
[Imperative use of the verb; *hoch herze* interpreted as a salutation]

Hold God dear, Hochherze!  
[Imperative use of the verb; *hoch herze* interpreted as a surname]

Love well [to be in] high spirits!  
[Imperative use of the verb; *gut* interpreted as "good/well" rather than "God"]

None of these readings, alas, can immediately be connected to any of the known mottoes or devices of either the House of Württemberg or the House of Savoy. Apart from his epithet "the Much-Beloved" (*Beneamatus* or *der*



*Vilgeliept*), Count Ulrich is recorded as having used a favorite personal phrase, the virtually untranslatable *Botz nieswurz* or *Gotts nieswurz*,<sup>76</sup> but this peculiar exclamation or oath does not appear to have ever been used as a motto in an artistic and/or heraldic context.<sup>77</sup> Along similar lines, the famous motto of the House of Savoy, *FERT*, which can be read as both a word and an abbreviation and thus offers a variety of possible interpretations,<sup>78</sup> was apparently never used by Countess Margaret during her life in Stuttgart.<sup>79</sup> Thus, neither her family motto nor her husband's dictum offer any relation to the crossbow's inscription.

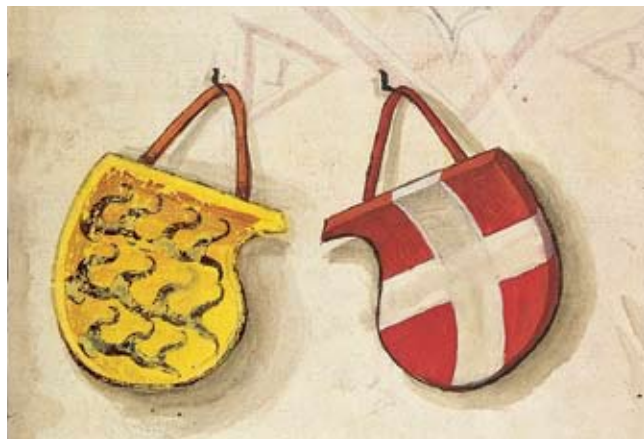
A link can be found, however, with two manuscripts associated with the countess. As countess of Württemberg, Margaret of Savoy has been identified as the patron most likely to have commissioned a number of manuscripts<sup>80</sup> from the workshop of a certain Ludwig Henfflin that was active from at least 1470 until the countess's death in 1479 and probably located in Stuttgart.<sup>81</sup> A number of secular manuscripts from this workshop survive today. Among them are Johann von Tepl's moralistic tale *Der Ackermann aus Böhmen* and the anonymous romance *Friedrich von Schwaben*. Apparently copied by the same scribe, both show not only the familiar pair of arms (Figures 20, 22), with Württemberg and Savoy facing each other *a courtoisie*, but also, at the end of each, a few lines by the scribe himself (known in German as a *Schreiberspruch*, a scribe's slogan).<sup>82</sup> These additions are a variation of the following rhyme (Figures 21, 23):

Hab gott lieb vor allen	Love God above all
dingen	things
(Und den nagsten alls	(and thy neighbor
dich selbs)	as thyself)
So mag dir nit	Then nothing will
missgelingen	go wrong <sup>83</sup>

The partial concordance of the first line with the initial words of the crossbow's inscription confirms that the latter is to be read as an exhortation in German, most likely "Hold God dear [and be in] high spirits!"<sup>84</sup> The fuller manuscript versions also identify the textual source of the phrase, the Gospels of Luke (10:27) and Matthew (22:35–40), both of which deal with the preeminence of the first two commandments among those of the Decalogue. A closer look at the

20, 21. Workshop of Ludwig Henfflin (probably Stuttgart, fl. ca. 1470–79). *Friedrich von Schwaben* (details from the last two pages), ca. 1470. Ink and watercolor on paper, 11 1/2 x 8 in. (29.2 x 20.2 cm). Universitätsbibliothek, Heidelberg, Cod. Pal. germ. 345, a manuscript probably commissioned by Margaret of Savoy, fol. 379r (Figure 20), detail showing part of the text and the arms of Württemberg and Savoy facing each other (*a courtoisie*), and fol. 379v (Figure 21), showing the addition by the scribe, perhaps a kind of signature. The same scribe wrote the manuscript shown in Figures 22 and 23.

22, 23. Workshop of Ludwig Henfflin (probably Stuttgart, fl. ca. 1470–79). Johannes von Tepl, *Der Ackermann aus Böhmen* (two details, one from the second, the other from the last page), ca. 1470. Ink and watercolor on paper, 12¼ x 8⅜ in. (31.1 x 21.2 cm). Universitätsbibliothek, Heidelberg, Cod. Pal. germ. 76, a manuscript probably commissioned by Margaret of Savoy, fol. 1v (Figure 22), detail showing the arms of Württemberg and Savoy facing each other (a *courtoisie*), and fol. 32v (Figure 23), detail showing two additions by the scribe, the second perhaps a kind of signature. The same scribe wrote the manuscript shown in Figures 21 and 22.

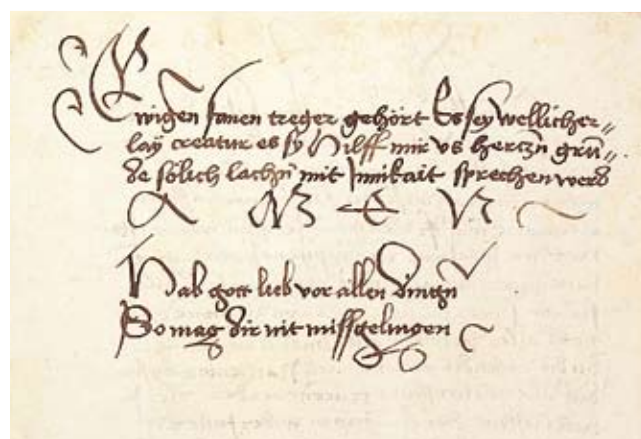


diffusion of this phrase, or close variations, in fifteenth-century literature reveals interesting possibilities as to the origin and meaning of the inscription on our crossbow.

As religious sentiments, the commandments to love God and to love your neighbor are familiar themes frequently found in medieval theological and philosophical writing, and as such, they were most likely also the subject of public sermons. Proponents of Dominican spiritualism such as Master Eckhart (ca. 1260–1328) and his follower Johannes Tauler (ca. 1330–1361) interpreted both biblical passages,<sup>85</sup> and didactic analyses of the Ten Commandments were popular publications, found in many libraries of noble households.<sup>86</sup> During the mid-fifteenth century, the Dominican order underwent a profound and widespread reform in Germany, with the support of both church and nobility (Count Ulrich, for example, founded a Dominican priory in Stuttgart in 1473).<sup>87</sup> These events may account for a renewed interest in Dominican writings at the time.<sup>88</sup>

The last two words of the crossbow's inscription, *hoch herze*, may also be interpreted in the context of Dominican spiritualism. In addition to their possible secular interpretations as *magnanimitas* or “noble heart,” the words could be an interpretation of a passage from Master Eckhart that immediately follows his discussion of the commandment to love God, or “to lift up your head [to God]” (“Erhebe Dein Haupt”).<sup>89</sup> More specifically, the words may be based on a German rendition of *sursum corda* (lift up your hearts), a familiar part of Roman Catholic liturgy since at least the third century.<sup>90</sup> During the fourteenth and fifteenth centuries, the *sursum corda* was also known in German-speaking areas as one of the themes in the theological writings of another Dominican, the famous German mystic and Eckhart disciple Heinrich Seuse (1295/1297–1366).<sup>91</sup> Contemporaries might well have understood a phrase like *hoch herze* as both a chivalric virtue and a religious exhortation.

Sometime during the fifteenth century, variations of the phrase “hab gott lieb vor allen dingen,” together with rhym-



ing second lines of religious or secular content, became more widely known and took on the status of proverbs.<sup>92</sup> Use of the phrase is by no means exclusive to the Württemberg court, but it appears almost solely in manuscripts. Outside the realm of religious writings (but undoubtedly influenced by them), such stanzas are found either as the familiar *Schreibersprüche*, entirely unrelated to the actual content of the manuscript, or they are embedded within the text. One example, which is either another *Schreiberspruch* or an owner's motto—“Hab Gott lieb von allen dingen Oswald Enperger von Eferdingen”—is found in a manuscript, dated 1469, that was probably produced in the southern German or the western Austrian region. As in the Henfflin manuscripts, it is a final addition separate from the text, but here its first line rhymes not with a second line but with the name of the manuscript's scribe or original owner.<sup>93</sup> The above-mentioned courtly romance *Friedrich von Schwaben* actually contains the phrase twice: in addition to the *Schreiberspruch*, the line is paraphrased (in order to fit the rhyme) in the main body of the text, as advice given by the protagonist's dying father to his son (fol. 182v):<sup>94</sup> “Haben lieb vor allen dingen got / Das ist mein lex und mein pott” (Holding God dear above all else / This is my law and commandment).

The appearance of the phrase in romance literature testifies to the extent that it had already become a familiar proverb by the middle of the fifteenth century. This context, though secular, nonetheless remains that of exemplary (Christian) advice or pious exhortation. The phrase is also found, serving a similar end, in several fifteenth-century books on various aspects of military engineering, known in German as *Feuerwerks-* (pyrotechnics) or *Büchsenmeister-* (masters of military works) *Bücher* (books/manuals), that contain advice ranging from the use of weapons and siege engines to recipes for gunpowder. The phrase appears in passages addressing how a “master of military works” should behave in order to be successful. Although sumptuous

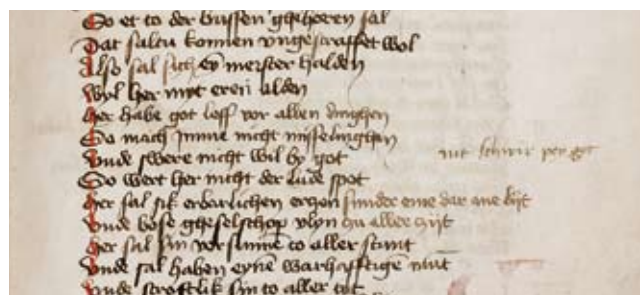


versions of these *Büchsenmeister-Bücher* were occasionally produced for the nobility and city officials, it is today commonly accepted that many of them were training manuals, which apprentices duplicated from their masters' volumes and then used as their own, jealously guarded collections of trade secrets (to which they would add their own experiences and discoveries).<sup>95</sup> One such book, contemporaneous with our crossbow, is an untitled work of about 1450, written (in his own hand) by the Hessian Johannes Bengedans (ca. 1405–after 1451), who worked first in the services of Christopher of Bavaria, union king of Denmark, Sweden, and Norway (1416–1448), and subsequently for the Teutonic Order.<sup>96</sup> On folio 4r, lines 14–17 (Figure 24), Bengedans advises:

Thus a master shall carry himself  
If he wants to grow old honorably  
He shall hold God dear above all else  
Thus nothing will go wrong for him  
And do not swear much by God  
Then you will not become [the center of]  
people's ridicule<sup>97</sup>

Among several other requirements for being a successful *Büchsenmeister*, Bengedans lists modesty, quickness of mind, honesty, versatility, and, last but not least, the ability to read and write (fols. 3v–4v). And although the author refers to himself as “hand gunner” and “master of guns” (terms that he apparently uses synonymously), it is noteworthy that Bengedans nevertheless devotes a considerable amount of text and illustrations, both in his manuscript as well as in a letter requesting employment, to the manufacture of various types of arrows and bolts (Figure 25).<sup>98</sup> In large part these manuscripts were of course faithfully copied generation after generation, but the continued presence of crossbows in these manuscripts nonetheless demonstrates the importance that they still held during the period, even in the life of military engineers whose professional title already reflected the emerging dominance of firearms. It is hardly surprising, then, that the deliberate and (within the profession at least) widespread reproduction of these military manuals also accounts for the lines on ideal behavior to be found in other manuscripts, as, for example, in a slightly later *Feuerwerks-Buch*, dating from the end of the fifteenth century, in which the above passage appears almost verbatim.<sup>99</sup>

It is the context of literary manuscripts—either the artistic endeavors of scribes or the more pragmatic manuals of military engineers—that can be identified as the most probable source for the inscription on the crossbow.<sup>100</sup> Since all such secular examples of the phrase appear in vernacular language, however, why were the words on the crossbow rendered in Hebrew characters, and did they symbolize



24. Johannes Bengedans (German, ca. 1405–after 1451). *Büchsenmeister-Buch*, ca. 1450. Ink and watercolor on paper, 11 5/8 x 7 7/8 in. (29.5 x 20 cm). University Library, Copenhagen, Arnamagnæ Collection, AM 374 fol. (a manuscript written in Bengedans's own hand), detail of fol. 4r, which includes the advice “Thus a master shall carry himself / If he wants to grow old honorably...”



25. Johannes Bengedans. *Büchsenmeister-Buch* (see Figure 24), fol. 49r, showing at the top “How one shall shoot fire with a [crossbow] bolt,” and underneath it “How one shall make a [stationary] block for crossbows to span them with it”

anything beyond their literal meaning of “hold God dear [and be in] high spirits”?

An obvious explanation would be that this enigmatic inscription was actually intended as an enigma or cryptogram. The use of secret codes was, in fact, much more common during the Middle Ages and the Renaissance than is usually assumed.<sup>101</sup> Some of the most frequent forms of enciphering included the scrambling of letters; writing words or phrases partially or entirely in reverse; and substituting letters of the Western alphabet with invented or traditional cryptographic symbols, entire words, and letters from foreign alphabets, and replacing words or phrases with foreign translations, or any combination of these. Although Greek letters appear to have been especially favored, the Hebrew alphabet was also employed, offering the advantage that its

26. Diebold Schilling the Younger (Alsace, before 1460–ca. 1515). *The Conspiratory Congregation of Rotärmler in Front of the Tailors' Guild Hall in Lucerne*, 1513. *Luzerner Bilderchronik* (Lucerne Chronicle; completed 1513), fol. 5. Ink and watercolor on parchment, 15½ x 11¼ in. (39.5 x 28.5 cm). Zentral- und Hochschulbibliothek, Lucerne (Hs S 23). Property of the Korporation Luzern. In the cryptogram in the border, the first four words (left to right) at the top can be deciphered as "HAB GOT LIEB VOR." The inscription continues clockwise.



letters were not only less familiar than the Greek alphabet but also written from right to left.

Indeed, such types of encryption are frequently encountered in *Büchsenmeister-* and *Feuerwerks-Bücher* of the fifteenth century, where they were used to keep any information secret that the author may have deemed sensitive. In one instance, dating from 1428, the variations range from very simple (German words written backward) to more elaborate (Latin text written in Hebrew characters).<sup>102</sup> The last-mentioned practice was continued even after the first German university had included Hebrew in its curriculum in 1471.<sup>103</sup> Similar encryptions were still used in the famous *Housebook* (*Das Mittelalterliche Hausbuch*), a princely manuscript closely related to books on the art of war and military engineering that dates to about 1480.<sup>104</sup>

In at least one instance, we even find the exact phrase *hab got lieb* in encryption in a semi-official manuscript, although it is not a book on military engineering. The illuminated *Lucerne Chronicle* (*Luzerner Bilderchronik*), completed in 1513 by Diebold Schilling the Younger (before 1460–ca. 1515), contains not one but three examples of the

familiar phrase. There, in addition to two near-identical vernacular versions, contained in the frames of two illuminations painted by Schilling himself,<sup>105</sup> it appears in another frame at the beginning of the manuscript (fol. 5) but is hidden through its encryption by means of a cross cipher (Figure 26).<sup>106</sup> At first, it may seem a bit far-fetched to offer a connection between a Württemberg crossbow of 1460 and this illuminated chronicle produced half a century later in Switzerland. After all, both cryptograms might simply have used similar and apparently widely disseminated systems of encryption. Nevertheless, further research reveals links between the manuscript and the crossbow.

The author and illuminator of the Lucerne chronicle was born in Haguenau/Alsace as the son of Hans Schilling (active ca. 1450–69), himself a scribe and illuminator working in a manuscript workshop located in Château Haguenau that was active between about 1425 and 1470. Hans Schilling in fact took over the famous and successful workshop after the initial leadership of Diebold Lauber (active 1440–71). Lauber, although calling himself a “scribe” and once also a “teacher of children” (*lert die kinder*), was primarily a bookseller with excellent diplomatic connections, fostered by the location of his workshop, its commercial activities, and a relative’s position as a messenger for the regional bailiffs (*Landvögte* and *Unterlandvögte* of the Alsace). In an environment such as this, in which manuscript production intersected with the diplomacy and administration of a regional government, we might expect a familiarity with, and application of, cryptography. Although no direct commissions from the Lauber/Schilling workshop for Count Ulrich or his wife have so far been identified, manuscripts from Haguenau were purchased by numerous clients near and far. Among them were members of the Württemberg nobility, closely associated with the court in Stuttgart.<sup>107</sup>

In addition to its use by military engineers and by scholars and scribes for official purposes such as diplomatic communications, cryptography was employed in circumstances where concealment may seem unnecessary, and even playful, to the modern eye.<sup>108</sup> It was used, for example, in various fifteenth-century artworks, to refer inconspicuously to an actual or historical event<sup>109</sup> or person, or to lend sophistication to the artist’s signature. A noted example is the cryptogram in the form of three Hebrew letters found on a panel of the Ghent altarpiece of about 1425–35 (Saint Bavo, Ghent); it has been identified as a phonetic monogram of the altar’s principal painter, Jan van Eyck (ca. 1395–1441).<sup>110</sup> Incidentally, one of the Henfflin manuscripts also shows a use of abbreviations that are to some extent similar to witty cryptograms: on the first folio of the *Ackermann aus Böhmen*, the Savoy arms are shown in a shield of Italian type, surrounded by the four capital letters *I*, *M*, *M*, and *L* (most likely the initials of the four evangelists). Moreover,



some of the curled extensions of letters in the text, in both Tepl's *Ackermann* and the *Friedrich von Schwaben*, contain the small Gothic letters *f*, *m*, and *v* (*u*), abbreviations for *fortuna* (good fortune), Margaret, and Ulrich, respectively.<sup>111</sup>

In conclusion, the enigmatic inscription on Count Ulrich's crossbow can be identified as the encryption of part of a popular phrase, whose immediate origins lie in professional manuscript production. Margaret of Savoy's patronage of manuscripts is a likely cultural environment to have engendered the crossbow's cryptic inscription, with its Hebrew characters amid Latin quotes and sophisticated decoration. In three manuscripts, which can be linked—directly or circumstantially—to the Württemberg court, the phrase was apparently added by the scribe (or illuminator), and we may safely assume that the artist responsible for the crossbow's decoration probably worked among colleagues patronized by Count Ulrich of Württemberg and his wife. In Stuttgart some of these artists apparently lived in close proximity to one another, and Heinrich Heid, as Count Ulrich's court crossbow maker, lived directly among them. Such connections, albeit circumstantial, offer further support to the suggestion that Heid was the maker of our crossbow, although the rather specialized decoration was probably executed by an ivory carver. The inscription may thus be an example, admittedly by very sophisticated means, of displaying an artist's or patron's knowledge and learning. It is possible that the Hebrew alphabet of the "language of God" was regarded as more appropriate for a semipious exhortation. The combination of the encoded phrase with the Latin quote from the Gospel of Luke would also permit the speculation that the crossbow was commissioned by the countess as a Christmas or Epiphany present for her husband, the passionate huntsman. Perhaps the rendition of the inscription in Hebrew letters, in combination with the placement of the Savoy arms, was intended to remind Count Ulrich of his wife and to keep an intimate message hidden from the general gaze when the count, or one of his attendants, carried the weapon in public.<sup>112</sup>

On the other hand, the cryptogram might be interpreted more precisely, in the context of the crossbow maker's military profession. Heinrich Heid not only held the position of court crossbow maker but was also employed by Count Ulrich as his *Werkmeister*, implying that he was in charge of the count's weapons and military machinery. If this interpretation of the term is correct, the cryptogram would have held a more specific meaning. Accepting the requirements set out in the relevant passages of the *Büchsenmeister-Bücher* as professional necessities, we can assume that Heinrich Heid would probably have been able to read and write, possibly even had a basic knowledge of other languages such as Latin and Hebrew, and would have been familiar with cryptography. Given that the German phrase is

often found as an artist's addition, and that cryptograms were occasionally employed for unobtrusive identification purposes, it is quite conceivable that the encrypted inscription on the crossbow is a deliberate addition of its maker. Accordingly, it may be suggested that the cryptogram resembles some sort of signature, and—if this theory is correct—the last two words may possibly even be an encrypted monogram of Heinrich Heid (with *hoch herze* standing for HH, or **H**einrich **H**eid). In the absence of further evidence, however, this hypothesis must unfortunately remain extremely speculative.<sup>113</sup> Whatever the explanation of its inscription may be, Count Ulrich's extraordinary crossbow remains visually and intellectually engaging, and unwilling to give up all of its secrets.

## ACKNOWLEDGMENTS

For generous assistance in the preparation of this article, I am grateful to my colleagues Stuart Pyhrr, Helmut Nickel, Donald LaRocca, Hermes Knauer, Edward Hunter, Stephen Bluto, Marilyn Van Dunk, and Jonathan Tavares of the Department of Arms and Armor; Marjorie Shelley and Yana van Dyke in the Department of Paper Conservation; Marijn Manuels and Richard Stone in the Department of Objects Conservation; Mark Wypyski in the Department of Scientific Research; Barbara Boehm, Melanie Holcomb, and Theo Margelony in the Department of Medieval Art and The Cloisters, and Maryan Ainsworth in the Department of European Paintings. I would also like to thank Juan Trujillo for the beautiful photography of the crossbow and Joanna Ekman for her superb editing.

Furthermore, I am greatly indebted to Peter Rückert, Hauptstaatsarchiv, Stuttgart, for continuous help with difficult archival research, and to Rainer Leng, Julius-Maximilians-Universität, Würzburg, for sharing his research, both published and unpublished, on relevant German *Büchsenmeister-* and *Feuerwerks-Bücher*. Finally, I wish to thank the following for information, images, and advice: Oliver Auge and Karl-Heinz Spiess, University of Greifswald; Alfred Bütikhofer, Stadtarchiv, Winterthur; Ian Eaves, London; Robert Giel, Staatsbibliothek, Berlin; Bruno Klein and Stefan Bürger, Technische Universität, Dresden; Dietmar Mieth, Eberhard Karls Universität, Tübingen (Meister-Eckhardt-Gesellschaft); Norbert Ott, Bayerische Akademie der Wissenschaften, Munich; Moritz Paysan and Heike Schröder, Landesmuseum Württemberg, Stuttgart; Magdalene Popp-Grilli, Württembergische Landesbibliothek (Handschriftenabteilung), Stuttgart; Jörg Poettgen, Overath; Lieselotte E. Saurma-Jeltsch, Ruprecht-Karls-Universität, Heidelberg; Matthias Senn, Schweizerisches Landesmuseum, Zurich; and Elisabeth Vetter, Zentral- und Hochschulbibliothek, Lucerne.

## NOTES

1. See de Cosson 1901. My colleague Stuart Pyhrr is currently preparing a comprehensive article on the duc de Dino and his collection.
2. De Cosson 1893; part of his article was summarized in the crossbow's catalogue entry in de Cosson 1901, p. 93.
3. Dean 1905, p. 123; Laking 1920–22, vol. 3 (1922), pp. 135–36; Dean 1925, p. 155; Dean and Grancsay 1930, p. 101; Nickel 1991, p. 40; Paterson 1990, p. 68 (illus. only); Frakes 2004, pp. 68–69; Richter 2006, pp. 42–43; Breiding 2007, pp. 104–5.
4. No further information has come to light regarding the crossbow's early provenance as given by de Cosson 1893, p. 451. It has been impossible to verify the intermittent Paris provenance, nor has it been possible to identify the weapon in any surviving inventories. The majority of inventories of the Württemberg households (relating to the main residences in Stuttgart and Urach) are kept in the Hauptstaatsarchiv in Stuttgart. To date, I have been unable to locate any inventories of Château Montbéliard, which may be kept elsewhere, or of Château Gorgier, which may still be found in the archives of Neuchâtel. It is possible that Count Ulrich gave the crossbow away as a present during his lifetime, in keeping with common customs of the period. (On July 30, 1473, for instance, Markgrave Johann von Brandenburg wrote to his father, Albrecht von Brandenburg [Count Ulrich's hunting companion], requesting three crossbows, since the two that his father had presented him during his last visit had been given away as gifts; see Steinhausen 1899, p. 124.) Alternatively, the crossbow may have passed to one of Count Ulrich's heirs upon his death in 1480; no crossbow is mentioned among the weapons carried in the count's funerary procession, which took place in Stuttgart on October 8, 1480 (Landesarchiv Baden-Württemberg, Hauptstaatsarchiv Stuttgart, Bestand Württembergische Regesten, A 602, Nr. 211 = WR211). Nevertheless, a direct link between a count of Württemberg and Count Pourtales-Gorgier's castle at Gorgier through the Burgundian-Swiss Wars, as suggested by de Cosson (1893, p. 452) and, subsequently, Richter (2006, p. 43), seems rather unlikely. Despite close and cordial connections with the Burgundian court until at least the late 1460s, Württemberg loyalties and the political landscape changed drastically during the 1470s. Neither of the counts of Württemberg is recorded as a vassal of Charles the Bold during the Burgundian-Swiss wars (1474/75–77), nor did any count participate personally in campaigns against the last duke of Burgundy (except at the relief of the German city of Neuss, near Cologne). Unless the crossbow had already been given to a duke of Burgundy, or a member of his retinue, as a present in the years before the Burgundian-Swiss Wars, the theory that our crossbow may have found its way into the castle of Gorgier as part of booty taken by the victorious Swiss from the Burgundian camps can be disregarded. For the relations between Württemberg and Charles of Burgundy, see Fritz 1999, pp. 377–96, and Baum 1993.
5. This custom was particularly widespread in German-speaking lands and in other European areas where primogeniture was not prevalent. In German-speaking areas the practice of dividing property and rights to property among several offspring could lead to situations in which a castle was co-owned by numerous members of the same family, or even by members from several different families; such owners were referred to as “coheirs” (*Ganerben*).
6. This subject will be treated more comprehensively by the author in an essay for a catalogue of European crossbows and related archery equipment in the Metropolitan Museum's collection, currently in preparation. The most recent publication on the subject is the 2006 monograph by Richter.
7. Among the more than thirty European crossbows in the Metropolitan Museum's collection only five date from the fifteenth century: 04.3.36 (the example under discussion, currently on display); 14.25.1575a, a crossbow of the late fifteenth or possibly early sixteenth century (currently in storage); 25.42, a crossbow that belonged to Matthias Corvinus (currently on display); 29.16.14 (currently on loan to the Walters Art Museum, Baltimore); and 29.158.647 (currently on display).
8. To name but one example, see a letter, dated March 11, 1473, from King Christian of Denmark to Albrecht Achilles, markgrave of Brandenburg (1414–1486), accompanying the gift—among other interesting weapons—of a Danish “crossbow with its trigger as it is customarily made and carried in our lands” (“eyn armbrust mit sinem tüge, als hiir in unnsen landen tho makende unde to förende wönlick is”); see the full transcription in Steinhausen 1899, p. 105.
9. One of the first authors to devote any attention to this subject since de Cosson is Richter 2006; see his very informative chapter, pp. 119–58.
10. *Ibid.*, p. 131.
11. Some evidence for the marking of crossbows as a guild requirement does exist: for example, the 1425 statutes of the guild of crossbow makers of the northern German city of Lübeck state that “every crossbow maker shall put his mark upon the bow of the crossbow as a sign that he will and shall hold his work as honest” (“ein islik armborster schal sin merke setten uppe den bogen der armborste to enem teken, dat he sin werk rechtverdich waren wil unde schal”); see Homeyer 1870, p. 338. Some instances of marks on the stocks of surviving fifteenth-century crossbows are illustrated in Richter 2006, pp. 37, 39, 44, 83, 123; whether the rosette-shaped mark on each nock of a crossbow of about 1400 in the Stadtmuseum, Cologne (W 1109), is a maker's mark or perhaps just a simple form of decoration is difficult to ascertain (*ibid.*, p. 27). The belly of the (steel) bow would, however, become the standard place during the sixteenth century for makers to mark their products. Finally, makers' marks may also be found on the trigger (*ibid.*, p. 172), but such examples are probably those of a specialized blacksmith or metalworker (like those commonly found on spanning devices such as the cranequin).
12. The only such attribution known to the author is that of a fifteenth-century crossbow, a quiver, and eight(?) bolts in the Schweizerisches Landesmuseum, Zurich (crossbow: IN 46; quiver: KZ 215), which Hugo Schneider (1976, pp. 62, 115) attributed to Ulrich Bock, a crossbow maker from Freiburg, recorded in Zurich from 1461 to 1465. Although his attribution, for the crossbow at least, is perfectly feasible, Schneider unfortunately gives no explanation for it (nor does he provide a reference for the documentary evidence for Ulrich Bock). Given that quiver and bolts are associated and that the crossbow was, in fact, acquired on the art market in 1889, his proposal must remain, at best, tentative (email communication with Matthias Senn, Landesmuseum, Zurich, April 2009).
13. These include two examples in the Metropolitan Museum, the present one and that of Matthias Corvinus (see note 7 above); the gigantic crossbow, surely a *Rüstung*, dating from about 1460–70 and known to have belonged to the Austrian baron Andreas Baumkircher (executed in 1471), in the Hofjagd- und Rüstkammer, Vienna (A 108); an example (with steel bow) from the last quarter of the fifteenth century, with arms of the Vels-Colonna family, in the Wallace Collection, London (A 1032); and an example from the end of the fifteenth century, with arms of the Fuger (or Fügen) fam-



- ily, today in a private collection (formerly in the Zschille Collection, Saxony; see Forrer [ca. 1893], pls. 201, 202). Mention should also be made of the heraldry associated with Matthias Corvinus found interspersed within the decoration on the composite bows of a group of fifteenth-century crossbows, today in the Brukenthal National Museum in Sibiu (Hermanstadt), Romania, and originally from that city's arsenal; see Richter 2006, pp. 59–61. Their relatively plain stocks and common provenance seem to suggest, however, that these weapons may have been the outfit of a group of crossbowmen (perhaps the supply for a bodyguard or hunting party), rather than the personal possession of the king.
14. The elaborate decoration on the other crossbow (MMA 25.42) includes the arms of Matthias Corvinus; see Dean 1925, as well as the relevant entry in the forthcoming MMA catalogue of crossbows (see note 6 above).
  15. See note 2 above. A nut is also missing; see note 25 below.
  16. Detailed measurements are: length of tiller 26¾ in. (67.9 cm); length of trigger overall 11 ⅞ in. (28.3 cm); length, rear end of tiller to center of the spanning lugs 11⅞ in. (30.3 cm); height, lower end of key to top of nut 5¼ in. (13.4 cm); height, rear end of tiller 1⅞ in. (4.9 cm); height, tiller at center/nut 2¼ in. (5.8 cm); height, front of tiller including bolt guide 3⅞ in. (7.8 cm); height, bow at center 2½ in. (5.5 cm); width, tiller at rear 1⅞ in. (3 cm); width, greatest width at center/nut 2½ in. (6.2 cm); width, tiller at joint with bow 1½ in. (3.8 cm); thickness, bow at center 1⅞ in. (4.7 cm); thickness, bow at either end approximately 1¼ in. (3.2 cm).
  17. The *Halbe Rüstung* was smaller than siege crossbows (*Wallarmbrust*) or the *Rüstung*, both of which, because of size and weight, were usually either mounted or needed some other kind of support. The two categories that were even smaller than the *Halbe Rüstung* are known as the *Viertelrüstung* (quarter-size equipment), or *Schnepper*; and the *Balestrini*, or *Kleinschnepper*. For detailed definitions of these modern categories, which are nonetheless based on contemporary documents, see Harmuth 1971, p. 129 (with earlier literature); or, especially for earlier periods and documentary evidence, Wilson 2007.
  18. Despite taking several images at different kV dosages, it could not be determined with absolute certainty whether the backing consists of wood or some other organic material such as baleen or leather.
  19. Examination by the MMA Department of Paper Conservation suggests that the pattern of paint on the bark covering was applied by printing (rather than painting). Surprisingly, the printing appears to have occurred *after* the bark was applied to the bow. Such a procedure would seem needlessly difficult and cumbersome unless it was not only the paint but the process itself that helped to seal the bark covering and protect the bow from moisture. Further research into this technique is required.
  20. Richter 2006, pp. 17ff. Although most authors on the subject usually state that the composite bow was introduced from the East during the Crusades, there is sufficient evidence to challenge this assumption. See, for example, Credland 1990, p. 19, and Paterson 1990, pp. 68–69.
  21. Evidence for the use of steel bows can be found from the early fourteenth century onward, but to judge from surviving specimens and pictorial evidence, they were not in common use before about 1500.
  22. If this bow is indeed the original one, a decoration consisting only of a pattern of dots seems rather plain for such an elaborate weapon. Given that the ties are a later replacement, one may speculate that the weapon was originally fitted with a much more elaborately decorated bow.
  23. Birch wood is not particularly hard or durable (in terms of stress or pressure), but its longevity and relative resistance to both dryness and moisture make it a suitable material for the stocks of crossbows and firearms.
  24. Such lugs could also be used for more simple spanning devices, such as a rope-and-pulley system or a pulling-lever, commonly known as a “goat’s foot lever.”
  25. De Cosson 1893, pl. 34, shows the weapon clearly without a nut; the present example must therefore be a later replacement (since de Cosson’s 1901 catalogue does not illustrate the crossbow, it cannot be established whether the present nut was added by de Cosson himself or at a later date, when the object was in the Dino collection or in the Metropolitan Museum). The heavily reinforced nut found on the crossbow today, if original, probably came from a weapon dating from the second half of the sixteenth century or later.
  26. The practice of adorning (iron) arms and armor with elements of copper alloy is frequently evident on armor and other weapons from throughout the fifteenth century. In the Metropolitan Museum’s collection see, for example, the hilt of a sword (55.46.1), a late fourteenth-century visor (29.154.3a), late fourteenth- or early fifteenth-century elements of armor from Chalcis (29.150.91f, g), the head of a fifteenth-century boar spear (14.25.321), or the late fifteenth-century helmet (*sallet*), probably of Maximilian I (29.156.45).
  27. The floral carving is too generalized to allow any detailed comparison to other works of art; nonetheless, its density is not unlike the floral decoration found in the margins of contemporary manuscript illuminations such as those in the Book of Hours of Louis, count of Piémont and future duke of Savoy (see note 79 below).
  28. These, in addition to similar traces in the third banderole and inscription (see below), were the only signs of pigmentation or painting that a thorough examination revealed. The remaining parts of the crossbow’s stock do not appear to have been painted or stained. It should be noted, however, that several areas of the stock show signs of thorough cleaning, and it may thus be possible that pigmentation or painting of other parts has been lost.
  29. I am grateful to Helmut Nickel, as well as my colleague Theo Margelony in the Department of Medieval Art and The Cloisters, for reviewing my descriptions of the blazons of the two coats of arms.
  30. A heraldic shield, unless shown frontally, is usually depicted as if carried by its owner (whose helmet appears above), and it is thus tilted, or pointing, to the left. Because heraldic descriptions reflect the viewpoint of the person wearing the shield (rather than that of the observer), however, a shield that is tilting or facing left to the eye of the observer is described as facing right (in Latin, *dexter*).
  31. The description of the two coats of arms is given heraldically correct, that is, complete as if emblazoned, or fully colored, even though the actual carvings do not show any traces of polychromy. The mantling in Count Ulrich’s donor portrait (see Figure 14) is shown only in red (*gules*), although the combination of red and gold (*gules* and *or*) appears to have been more usual.
  32. The small 9s used in the transcription here approximate the small scrolls, very similar to 9s, that serve as abbreviation indicators in the original inscription.
  33. I am grateful to Dr. Andreas Heinz, professor of liturgical sciences (*Liturgiewissenschaft*) at the Theological Faculty of the University of Trier, for confirming my transcription and for offering helpful information concerning the possible meaning and liturgical context of this inscription (email communication of July 20, 2008). It was after he suggested that the “te” after “speciosa” makes no

sense that I reexamined the panel and found that these last two letters are not necessarily “te” and, furthermore, that there appears to be a sign of abbreviation (macron) above the last letter. In this specific context, therefore, a reading of “aō” (for *anno*) or perhaps “ad” (for *anno domini*) seems more probable; alternatively, if these letters were indeed meant to be read as “te,” they may be a simple mistake related to the fact that the inscription on the opposite panel ends with “te.”

34. Professor Heinz further states that the inscription is not long or detailed enough to offer information for a more specific identification. Although the verse is almost certainly taken from either a rhymed prayer, hymn, or rhymed office to the Virgin Mary, the liturgical context unfortunately cannot be identified more closely and could have been associated with or used during any holiday or celebration dedicated to Mary. As Professor Heinz emphasizes, in “a late medieval Liber Precum (prayer book) such a text would have been usable at any occasion.” On the same grounds it is also impossible to identify a specific geographical region or chronological context from which this inscription may have originated, since he notes that such a verse could have been in use in any other region during the fifteenth century.
35. The figure in the upper scale may in fact be a small tower; in contemporary paintings the tower is often accompanied by one or two small demons, symbolizing the devil’s attempt to “weigh down” the soul, as, for example, in the Saint Michael panel from an altar of about 1470 in the parish church at Kiedrich (Rheingau, near Wiesbaden); for other examples, see Jezler 1994, pp. 332–34, nos. 126, 127.
36. De Cosson 1893, p. 451.
37. Compare, for example, the textile patterns depicted in the illuminations of the Tavernier Book of Hours, Southern Low Countries, ca. 1450, today in the Bibliothèque Royale de Belgique, Brussels (KBR ms. IV 1290), see *Tavernier Book of Hours* 2002, e.g., fols. 28r, 31r, 35r, 39r, or 55r. I am grateful to my colleague Tom Campbell, who confirmed that the ornament, although not unlike that found in some Italian textiles, is too generic to be specifically or exclusively identified as Italian (personal communication, June 2008).
38. Count Ulrich married Margaret of Savoy, daughter of Duke Amadeus VIII of Savoy and herself twice a widow, in Stuttgart in November 1453. The erroneous statement that Count Ulrich married Margaret in 1460 (de Cosson 1893, p. 452) was corrected most recently by Richter (2006, p. 42). The correction of this error also negates de Cosson’s assumption that the crossbow may have been a wedding present, brought from Savoy.
39. See, for example, the miniature *Goddess Diana Hunting a Stag* from *L’Épître Othéa* contained in a manuscript of works by Christine de Pizan, French (Paris), ca. 1410–14 (MS Harley 4431, fol. 124, British Library, London). Despite extensive research, I have so far been able to find only one fifteenth-century image of a woman using a crossbow, contained in a French manuscript of Boccaccio’s *De mulieribus claris*, ca. 1460, and showing Zenobia, queen of Palmyra, hunting a leopard, lion, bear, and wolf (MS 0381, fol. 62r, Morgan Museum and Library, New York). It is noteworthy that neither illumination depicts a woman of the fifteenth century but, rather, a mythical person and a figure of antiquity, respectively (although both are shown in contemporary costume). In later periods, depictions of women hunting with crossbows become more frequent; see, for example, the series of paintings commemorating several hunts of the Saxon dukes (dating from the first half of the sixteenth century) that are today divided among Vienna, Madrid, Glasgow, and Cleveland. See also Francis 1959. For a general account of women hunting, see Fietze 2005.
40. When the arms of spouses were depicted together, it was customary that the husband’s arms would be turned (so that they were facing to the left, or sinister) in order to “face” those of his wife, out of “respect” (or as it is referred to in heraldry, a *courtoisie*). Such pairings were of course ubiquitous in fifteenth-century heraldic, artistic, and public contexts; an apt example is the heraldry in the two panels depicting Count Ulrich and his three wives (Figures 14, 15). On the crossbow, the carver of the panels faced a dilemma, since the two coats of arms cannot be seen as a pair; allowing the Württemberg arms to face sinister, therefore, would have made little sense. I am grateful to Helmut Nickel for discussing this interesting heraldic conundrum with me (email exchanges of November 2008 and February 2009). See also note 30 above.
41. For the most recent biographical account, especially of Ulrich’s public and political life, see Fritz 1999 (with extensive bibliography); a discussion of the earlier literature is found in the introduction, pp. 1–20. For Württemberg’s elevation to a dukedom, see Molitor et al. 1995.
42. For the close relations with Duke Philip of Burgundy (two of Count Ulrich’s sons had been educated at the Burgundian court in Dijon), see Fritz 1999, pp. 373–74.
43. Ibid., pp. 258–81.
44. Ibid., p. 428.
45. The scene is found on the left wing of the cross altar from the Augustinian abbey church at Polling, near Weilheim in Upper Bavaria, today in the Alte Pinakothek, Munich (1369). The altar depicts scenes from the life of Duke Tassilo of Bavaria (r. 748–88) but is dated 1444 (the painting of the side wings was executed some ten years later, about 1455) and accordingly shows the duke and his companions in mid-fifteenth-century costume; see Hoffmann 2007, especially pp. 135–36 and 231–36.
46. Simon Studion was a Latin teacher in Stuttgart and Marbach who pursued an early archaeological interest in the history of the Württemberg dynasty at the behest of Duke Friedrich I of Württemberg (1557–1608). The manuscript, today in the Württembergische Landesbibliothek, Stuttgart (Cod. hist. fol. 57), is entitled *Vera origo illustrissimæ et antiquissimæ domus Wirtenbergicæ* . . . and bears the date 1597; the notes and sketches of Castle Marbach are found on fols. 151r–153v. See Heyd 1889, pp. 26–27, and Kulf 1988. An inscription accompanying the first sketch of this group, showing Ulrich in armor and kneeling in front of a Crucifixion, specifically states that this chamber was made (*gezümet*, or carpentered) for the count in 1467 (see fol. 151v).
47. Unfortunately, these are only short summary references (“calendars,” or *Regesten*), since the original documents were destroyed in 1944. Thus, no further information is known concerning more details such as seals.
48. Hauptstaatsarchiv Stuttgart, Bestand Kanzleiregister (Urkunden), Bd. XXI, WR1363 (Bl. 16), destroyed 1944.
49. The term *Werkmeister* appears to have been used in a military sense since at least the early fifteenth until well into the sixteenth century; for examples, see J. Grimm and W. Grimm, *Deutsches Wörterbuch*, vol. 29 XIV<sup>2</sup> (1960), cols. 385–88. In Lucerne, a certain “heinrich smit” is recorded as crossbow maker in 1443 and appointed as *Werkmeister* in 1463; see Türlér 1921–34, vol. 6 (1931), p. 204. Also in 1443, Hans Baldhoffer “the crossbow maker” is accepted by Count Johann von Wertheim as a citizen in Wertheim and appointed *Werkmeister* for both the count and the city; see the charter of November 5, 1443, Gräfliche Freiungsbrieft und Ernennungen (G-Rep. 9a/1 Lade XXXII Nr. 14), Staatsarchiv Wertheim. Günther Binding does not mention the third possible meaning of this term in his relevant entry “Werkmeister” in *Lexikon*



- des Mittelalters* 1977–99, vol. 8, cols. 2205–6. The fact that *Werkmeister* can also be used as a term for a “master of military works” has received more scholarly attention only recently; Richter (2006, p. 128) mentions *Werkmeister* as a term synonymous with “crossbow maker” in Scandinavia. As yet, however, it appears uncertain to what extent this term differs from, or overlaps with, other contemporary professions in the field of military engineering, such as *Schirrmeister/Schirmmeister* or—owing to the increasing predominance of firearms—the one in charge of artillery, the *Büchsenmeister* (master of guns). There appears to be no literature dealing with this aspect in detail, but it has recently become the focus of more detailed study. I am grateful to Bruno Klein and Stefan Bürger, organizers of the 2007 symposium *Werkmeister der Spätgotik*—which dealt with the architectural aspects of the profession—for briefly discussing this problem with me (email communication of April 2009).
50. Hauptstaatsarchiv Stuttgart, Bestand Kanzleiregister (Urkunden), Bd. XX, WR1167 (Bl. 23), destroyed 1944.
  51. See note 53 below for some comparative house prices.
  52. Hauptstaatsarchiv Stuttgart, Bestand Kanzleiregister (Urkunden), Bd. XXI, WR1459 (Bl. 51), destroyed 1944.
  53. This Auberlen Georg or Auberlin Jerg or Jörg (recorded 1448–77), the count’s master mason and citizen in Stuttgart, appears to have been relatively wealthy. In 1455, Count Ulrich had already sold him a prominent house in Stuttgart for 500 gulden (Hauptstaatsarchiv Stuttgart, Bestand Kanzleiregister [Urkunden], Bd. XX, WR1159, Bl. 15b, destroyed 1944). About a year later, by comparison, Count Ulrich’s goldsmith bought two houses “in front of the castle of Stuttgart” for only 200 gulden (*ibid.*, Bl. 17). In 1466, Count Ulrich again sold to Auberlin Jörg, “his mason” and a citizen in Cannstatt (a city near Stuttgart), an apparently similarly illustrious house, an “estate” (*Hof*), in nearby Schwieberdingen, this time for the sum of 510 gulden (*ibid.*, WR1253, Bl. 173b, destroyed 1944). Apart from being an indication of Georg’s wealth, these prices appear to indicate that what may be called the housing market in and around Stuttgart remained relatively unaffected by the 1461–62 war.
  54. The name of Heinrich Heid von Winterthur, crossbow maker, has been published before: first in Pfeilsticker 1957, p. 258; also Schneider 1976, p. 137; and, quoting Schneider as its source, Heer 1978, p. 512. The statement that Heid “worked for a while for the Count of Württemberg in Stuttgart” implies that Schneider knew, or knew of, the documents in the Stuttgart Hauptstaatsarchiv; neither publication provides a reference for the statement “recorded 1455.” To date, it has been impossible to find a document of 1455, nor have Schneider’s notes in the object files of the Zurich Landesmuseum yielded any further information (email correspondence with Dr. Senn, April 2009). Finally, an entry for the catalogue accompanying the Landesausstellung in Stuttgart (Breiding 2007, p. 105) attributed this crossbow to Heid, although without giving detailed reasons at the time.
  55. Richter 2006, p. 42.
  56. Despite extensive archival research, I have been unable to find a single fifteenth-century German, Austrian, or Swiss crossbow maker who is identified as a Jew. Although some instances from thirteenth-century England mention Jewish “crossbowmen” in the service of King John (r. 1199–1216) and King Henry III (r. 1216–72), it seems more likely that these were archers (i.e., soldiers) using the crossbow rather than craftsmen producing the weapon; see Stacey 1992, p. 266 (I am grateful to Vivian B. Mann of the Jewish Theological Seminary, New York, for providing this source; email correspondence of October 2, 2006, between Dr. Mann and Stuart Pyhrr, Department of Arms and Armor). Christine Magin

(2003) has successfully demonstrated that the right to bear arms was not as restricted during the medieval and early modern period as is commonly thought (Magin has kindly confirmed that no instance of Jewish crossbow makers are recorded; email communication, April 2009).

57. Evidence from fifteenth-century written sources does not support the assumption that the maker of the present crossbow could have been Jewish. The Jewish cemetery in Wertheim (near Würzburg) is, together with that of Prague, one of the most important Jewish cemeteries in Europe, and it possesses no fewer than seventy-two tombstones from the fifteenth century (ranging in date from 1405 to 1494). None of these stones makes reference to the name Heinrich; see Rapp 1964. It is not until the seventeenth century that members of the Jewish population in the German-speaking lands appear to have adopted the name Heinrich.
58. See also note 11 above.
59. While the Star of David in medieval rose windows may still be regarded as a reference to the Old Testament, it is also found in other contexts such as heraldry (as part of coats of arms, on both Jewish and non-Jewish seals); see Rudolf Schmitz, “Davidstern,” in *Lexikon des Mittelalters* 1977–99, vol. 3, col. 608.
60. See Hauser 1909, pp. 105–6.
61. If Heinrich Heid was still employed as *Werkmeister* in the summer of 1462, it is quite likely that he would have accompanied Count Ulrich on his ill-fated campaign. Although it cannot be said for certain, it nevertheless seems unlikely that he came to any harm during the battle at Seckenheim: it is recorded that Count Ulrich was only in the company of his mounted men-at-arms by the time his parties and those of his allies met their enemies, while the rest of his troops remained at their fortified camp. The count was released from captivity ten months later, after he had personally agreed—among many other conditions—to the payment of an enormous ransom of 100,000 gulden, a financial burden on court and county for years to come; see Fritz 1999, pp. 255–78.
62. The surviving court registers (*Hofordnung*) of people in the employ of Counts Ulrich and Eberhard, as well as Countess Margaret (dating from about 1472 and about 1478, respectively), do not specifically mention crossbow makers, although other craftsmen are listed, including a certain Kaspar Windenmacher (cranequin maker), who had been appointed in 1466 (active until 1477 and recorded until 1486), as well as the fletcher *pflschnitzer selband* (recorded 1478); furthermore it lists a *wintmeister* (Kaspar Windenmacher?), and Hans Bussemeister (master of guns); see Hauptstaatsarchiv Stuttgart, Bestand Hausarchiv (Ulrich V.), Bd. XXI B. 4, WR 191 (document of ca. 1472), and Bd. XXI B. 9 and 10, WR 205 (document of 1478). An entry for *zwen snitzer* (two carvers or sculptors) may possibly refer to crossbow makers; for the term *snitzer* as a reference to crossbow makers, see J. Grimm and W. Grimm, *Deutsches Wörterbuch*, vol. 15 (1899), col. 1365, and Richter 2006, pp. 127, 129. The listings for cranequin maker and fletcher leave little doubt that Count Ulrich had continued need for the services of a crossbow maker, either in his own employ or working in the Stuttgart region, but the circumstantial evidence is inconclusive: in 1465, Count Ulrich, in return for a similar gift, sent arms and armor to a duke of Cleve and Mark, probably Johann I, including a crossbow, quiver, arrows, and a cranequin; whether these had been made in Stuttgart, purchased elsewhere, or simply taken from his armory, we do not know; see Hauptstaatsarchiv Düsseldorf, Findbuch (103.04.01-07 Kleve-Mark, Akten), Akte Nr. 28. Likewise, the long-promised crossbow that Count Ulrich jokingly requests in a letter dated October 6, 1466, to his frequent hunting companion Albrecht Achilles is not

- necessarily an indication that he no longer employs his own crossbow maker; transcript in Steinhausen 1899, vol. 1, p. 76. The particular meaning of this passage is misunderstood by Melanie Rupprecht (2005–6), who implies that Count Ulrich had sent a crossbow and is now expecting a shipment of bolts in return, when in fact Count Ulrich jokes that, after waiting so long for the promised crossbow, he would like to have the bolts instead.
63. In this document Jakob Heid agrees to go on pilgrimage as a condition for being released from captivity. If we assume that Jakob was at least sixteen or eighteen years of age in order to undertake such a journey, he would have been born in the early 1470s, a time frame that would allow the possibility that his father and the crossbow maker Heinrich Heid von Winterthur were one and the same person. See Ringholz 1896, p. 109. Nevertheless, I could find no record of a crossbow maker by the name of Heinrich Heid in Basel, unless it is Heinrich Heiden, “an armorer called crossbow maker” (recorded 1448) mentioned—without reference—in Schneider 1976, p. 137.
  64. In this context it may be noteworthy that his employer’s wife, Margaret of Savoy, undertook a journey to Switzerland in autumn 1470, during which she also visited the area of Zurich; perhaps Heid accompanied the countess and then remained in Basel.
  65. Although the S-shape of the banderole may be an allusion to Saint Sebastian, patron saint of archers and crossbowmen, there is insufficient evidence that this symbolism and meaning are intended here: S-shaped scrolls containing inscriptions are frequently found in fifteenth-century art, and their shape can carry varied meanings, if any. Compare, for example, the (reversed) S-shaped band, containing a religious inscription in medieval Czech, on one of the Metropolitan’s Bohemian ceremonial arrowheads (1984.17; for a summary with all relevant literature, see Breiding 2005b); or the numerous scrolls, including reversed examples, found in the margins of the illuminations of the pontifical of Ferry de Clugny, bishop of Tournai, made in the southern Netherlands (Bruges) in about 1475–76 (Günther 2009, [pp. 11–12], no. 8).
  66. These experts were the noted Bible scholar Dr. Christian David Ginsburg (1831–1914) and Mr. E. A. Wallis Budge (1857–1934), philologist and then assistant keeper of Egyptian and Assyrian Antiquities at the British Museum. See de Cosson 1893, p. 451.
  67. De Cosson 1901, p. 93.
  68. In the Metropolitan Museum’s collection see, for example, the pseudo-lettering on the border of the mantle of a bishop saint (Saint Alexander?) by Fra Angelico, ca. 1425 (1991.27.2); the borders of the clothing of two soldiers in the *Martyrdom of Saint Lawrence*, attributed to the Master of the Acts of Mercy, Strasbourg or Salzburg, ca. 1465 (1981.365.1); or, as late as 1517, the pseudo-inscription on the (sword?) pommel in the portrait of Benedikt von Hertenstein by Hans Holbein the Younger (06.1038). See also note 103 below.
  69. This was undertaken by Ludwig Wolpert (1900–1981), an instructor at the Jewish Museum in New York; unpublished files in the archives of the Department of Arms and Armor.
  70. Unpublished files in the archives of the Department of Arms and Armor.
  71. Frakes 2004.
  72. The two languages were, of course, inseparably linked, especially during the early formation of Yiddish as a language in the Rhineland between the eleventh and the thirteenth century; see the relevant entries (with further literature) in the *Lexikon des Mittelalters* 1977–99, vol. 5, col. 370, s.v. “Jiddisch,” and Ulrich Mattejiet, “Jüdische Sprachen und Literaturen,” in the same volume, cols. 795–96.
  73. Frakes (2004, pp. 68–69) suggested “[I] love God and [I] have courage’ [or] ‘[I] love well and [I] have affection’ . . . as appropriate for such a weapon.”
  74. The chivalric virtue of *hoher muot* (in the sense of “noble or exalted joy”) is a central topic of courtly romances by numerous authors such as Hartmann von Aue (died ca. 1210–20), Wolfram von Eschenbach (ca. 1170–ca. 1220), and Gottfried von Strassburg (died ca. 1215). It is particularly interesting that the author Der Stricker (first half of the thirteenth century), in his romance *Karl der Große*, specifically emphasizes that “what is in man’s heart is what we call *muot*” (“swaz in des mannes herzen ist, daz wir dâ heizen der muot”); quoted from *Mittelhochdeutsches Wörterbuch* (Stuttgart, 1990), vol. 2, pp. 242ff. (with further examples and literature). Instances of the exact phrase *hōch herze* appear to be rarer: it is found once in Wolfram von Eschenbach’s *Willehalm* (7:26), dating from after 1217 (quoted in Lachmann 1879, p. 426). A fifteenth-century instance is found in a translation by Niklas von Wyle (ca. 1410–1479) titled *Wie ain husvater hus haben sölle etc.* (How a Father Shall Lead His Household etc.), quoted in von Wyle 1967, p. 154 (fol. 101r). This quotation is discussed below (note 112). For chivalric virtues in general, see Eifler 1970.
  75. References to the name Hochhertze can occasionally be found from at least the fourteenth century onward, although the name appears to have been relatively rare; examples include a citizen of Königsee, Bertoldus dictus Hochhertze (recorded 1338), the Thuringian noblewoman Margaretha von Hochhertz (d. 1468), and the Basel stonemason Konrad Hochhertz (recorded 1508/9); see Anemüller 1905, pp. 197–98; Zacke 1861, p. 95; and Brun 1905–17, vol. 4 (1917 suppl.), p. 219, respectively. Since no connection between anyone bearing this name and the Württemberg court could be established to date, it seems rather unlikely that the last two words of the inscription refer directly to a person with that surname.
  76. Even in German, the meaning of this expression is far from clear: the most convincing explanation is that Count Ulrich may have suffered from a hereditary illness and is cursing the prescribed herbal medicine *Nieswurz* (a plant of the *Helleborus* family); see Raff 1988, pp. 295, 300.
  77. Ibid.
  78. This motto, as well as the knot device, is associated with the chivalric Order of the Collar (since 1518, the Order of the Most Holy Annunciation), founded in 1362 by Margaret’s great-grandfather, Amadeus VI, count of Savoy (r. 1343–83). Apart from various later interpretations, the original meaning of the four letters *FERT* has been interpreted either as an allusion to the victory at Rhodes in 1310 by Count Amadeus V—standing for “Fortitudo eius Rhodum tulit” (Through his fortitude he held Rhodes)—or as simply the third person singular of the Latin verb *ferre* (to carry) in the present indicative tense, meaning “he/it carries” in the sense of “he/it holds” or “he/it supports,” perhaps a reference to the order’s allegiance to the Virgin Mary. See Calderari 1977 (with further literature).
  79. The motto was in fact added to the order’s collar in 1409 by Margaret’s father, Amadeus VIII, and as such, the use of both motto and device may have been restricted to male members of the Savoy family. Motto and knot device are shown together with the Savoy coat of arms in an illumination in a book of hours, made in Savoy about 1451–58 for Count Louis (the future Duke Amadeus IX, and nephew of Margaret), today in the Württembergische Landesbibliothek, Stuttgart (HB I 175, fol. 2v). For the manuscript, see Fiala and Hauke 1970, pp. 48–51, and Gardet 1981; it is not clear how the manuscript came to Stuttgart, although the assumption that Margaret may have acquired it herself is tempting (see Gardet 1981, pp. 22, 27).
  80. As part of a larger project, these manuscripts have been at the center of a comprehensive Internet presentation focusing on man-



- uscripts illuminated in Upper Germany during the fifteenth century: see <http://www.ub.uni-heidelberg.de/helios/fachinfo/www/kunst/digi/welcome.html> (with literature) and Lähnemann 2002. One of the most telling examples of Margaret of Savoy's passionate interest in illuminated manuscripts is probably her (unsuccessful) attempt to acquire the Book of Hours of Charles the Bold from the victorious Swiss; see Deuchler 1963, pp. 48, 349.
81. For Henfflin and his workshop, see <http://www.ub.uni-heidelberg.de/helios/fachinfo/www/kunst/digi/henfflin/Welcome.html>.
  82. For Tepl's *Ackermann aus Böhmen* (University Library, Heidelberg, Cod. Pal. germ. 76), see <http://www.ub.uni-heidelberg.de/helios/fachinfo/www/kunst/digi/henfflin/cpg76.html>; for *Friedrich von Schwaben* (University Library, Heidelberg, Cod. Pal. germ. 345), see <http://diglit.ub.uni-heidelberg.de/diglit/cpg345/>.
  83. The *Schreiberspruch* is found on the last page of each manuscript (on fol. 32v in the *Ackermann aus Böhmen*, and on fol. 379v of *Friedrich von Schwaben*); only the latter one contains the middle line "Und den nagsten alls dich selbs." See also note 82 above.
  84. In German, the verb *lieb haben* (imperative: *hab' lieb*) can be translated as "to hold dear" but, more strongly, can also be used synonymously with *lieben* (to love); in order to keep as closely to the original wording as possible, I have translated the line with the three-word option: "hold God dear" (see also note 85 below).
  85. The specific passage is found in Eckhart's sermon "Praedica verbum, vigila, in omnibus labora" (usually referred to as his thirtieth sermon); see Largier 1993, vol. 1, p. 343 (with a list of specific manuscripts). Late thirteenth- and early fourteenth-century German manuscripts of this sermon use the Middle High German term *minne* for "to love," but the words *lieben* and *lieb haben* (to love and to hold dear) can already be found in Eckhart's own writings and become commonplace in copies of his manuscripts during the fourteenth century; I am grateful to Professor Dietmar Mieth for confirming these findings (email communication of March 2009). In the same context the phrase is found in a treatise on the "Love of God," dating from about 1430, by an unknown author (probably the Carthusian Nikolaus von Kempf of Strasbourg); see Paulus 1928. Although not published until 1518, the work *Von den Sünden des Munds* (*Of the Sins of the Mouth*) by one of the most famous German preachers of the period, Johann Geiler von Kaysersberg (1445–1510), is a good indication that passages about the most important commandments were frequently included in public sermons; the particular phrase is quoted in J. Grimm and W. Grimm, *Deutsches Wörterbuch*, vol. 1 (1854), col. 1153 (s.v. "basz"). For Geiler von Kaysersberg's preaching activities, see the relevant chapters in Voltmer 2005.
  86. See, for example, a manuscript of about 1467–70, *Erklärung der zehn Gebote* (The Explanation of the Ten Commandments), by the fourteenth-century Franciscan Marquard von Lindenau, given by Count Ulrich's nephew, Count Eberhard, to a local monastery in 1480. It is today in the Württembergische Landesbibliothek Stuttgart (Cod. theol. et phil. 2o 240); see Irtenkauf 1985, p. 161, no. 169.
  87. See Stievermann 1989 and Neidiger 1993, pp. 74–76.
  88. Several of Master Eckhart's writings had been banned by the pope in 1329, but this censure did nothing to prevent their continued dissemination; see Largier 1993, vol. 1, pp. 721, 722–27.
  89. *Ibid.*, p. 343.
  90. For a concise summary of the use of this phrase in Germany (with further literature), see Häussling 1991.
  91. On Seuse's *Vita*, see Williams-Krapp 2004. Seuse devotes an entire chapter (chapter 9) to the interpretation of this phrase in his *Vita*, an account of his life that is autobiographical but relates the events in a third-person narrative; it appears to have been at least partially edited by the mystic himself.
  92. For a selection, see *Thesaurus Proverbiorum Medii Aevi*, vol. 5 (1997), pp. 193–99. After about 1500 the use of the phrase becomes even more widespread, not only in religious and secular literature but also as decoration on (art) objects. Among numerous examples from throughout the German-speaking regions, it is found on a wooden pulpit, carved by Erhard Falkener of Abensberg and dated 1511, in the Basilica Saint Aegidius in the German town of Oestrich-Winkel (Hessen); in 1559 it is recorded on a wooden ceiling in a patrician's house in the Austrian town of Krems (see Kinzl 1869, pp. 134–35); while in the Swiss town of Jenaz it can still be seen, together with the date of 1579, on an outside wall of the old vicarage, or *Pfrundhaus* (see Rüegg 1970, p. 309). As late as 1747 it is found on a dated Swiss stained-glass roundel showing the arms of Johannes Schweitzer; see Bendel 1879, p. 32 (an insert titled "Verzeichnis der in der culturhistorischen Sammlung des historischen Vereins befindlichen Glasgemälde" [List of the stained glass in the collection of the Historical Society]).
  93. This text, the *Erkenntnis der Sünde* (Knowledge of Sin), by Heinrich von Langenstein, is part of a collection of three manuscripts, bound in one volume and all apparently written in the same hand, today in the Biblioteca Nationala a Romaniei, Filiala Batthyaneum, in Alba Iulia, Romania (MS I 54). Oswald Enperger, apparently from the Austrian town Everdingen (near Linz), could possibly be the scribe responsible for copying all three treatises. Alternatively, he may be one of the manuscript's first owners: a similar rhyming inscription is found on fol. 54r: "Nichs an ursach O[rtolf] v[on] Trenbach." Ortolf von Trenbach can be identified as a Bavarian nobleman connected to the imperial court. Since the Trenbach arms appear on the same page as this phrase, which appears to be his motto, "Nothing without a cause," it has been suggested that he is either responsible for the commission of this manuscript or a second owner (after Oswald Enperger); see Szentiványi 1958, pp. 35–36, and Steer 1981, p. 254.
  94. This romance is part of a volume containing two manuscripts (the other being a text of *Lohengrin*), today in the Universitätsbibliothek Heidelberg, Cod. pal. germ. 345 (fols. 182r–379v); the entire manuscript has been digitized and can be found at <http://diglit.ub.uni-heidelberg.de/diglit/cpg345>. For a discussion and further literature, see <http://www.ub.uni-heidelberg.de/helios/fachinfo/www/kunst/digi/henfflin/cpg345.html>.
  95. For a comprehensive history of this literary genre (in Germany), see Leng 2002.
  96. See Bloen and Olsen 2006.
  97. "Also sal sich ey[n] meister halden / Wyl her myt eren alden / Her habe got leff vor allen dinghen / So mach imme nicht misselinghen / Vnde swere nicht wil by got / So wert her nicht der lude spot."
  98. For references in the manuscript, see fols. 20r, 20v, 25v–26r, 28v–29r, 36r–37r, 42r–43r, and 49r (see Figure 25) in Bloen and Olsen 2006, vol. 1.
  99. This treatise, based on a work probably written in the early decades of the fifteenth century, is today in the Staatsbibliothek Berlin (Ms. germ. fol. 710a); see Leng 2002, vol. 1, p. 218, vol. 2, pp. 443–44. The question of how (through which author and at which time) this particular advice and phrase may have entered the genre of military-engineering literature is outside the scope of this article. The phrase does not appear in the original manuscript, presumably the presentation copy, of one of the earliest examples of this genre, Kyser's *Bellifortis* (the text of which is in Latin), dating from about 1405; see Breiding 2005a (with further literature). One of the earliest instances is probably the anonymous *Bumbardia*, of about 1410, today in the Hofjagd- und Rüstkammer, Kunsthistorisches Museum Vienna (P5135); for the text, a discussion, and the literature, see Leng 1999, pp. 307–48 (the phrase is found on p. 334).

100. The only other—possibly early—instance known to the author in which this phrase can be found outside of manuscript production (apart from Count Ulrich's weapon) appears to be an inscription on a bell; see an allegedly "ancient" bell in the tower of the Saint Nikola church in Landshut bearing the inscription "Hab Gott lieb vor allen Dingen, so mag ich wohl täglich dreimal klingen" (an apparently nineteenth-century transcription, unfortunately given without date, in Wiesend 1858, p. 213). The inscription is also found on three early seventeenth-century bells in Switzerland: one by David Zender, dated 1632, in Eggiwil, near Bern; another by the same founder, dated 1642, in Kirchberg; and, with a slightly changed inscription, an example by Heinrich Lamprecht, dated 1614, in Thundorf, also near Bern. I am grateful to the Deutsches Glockenmuseum, Castle Greifenstein, especially Jörg Poettgen and his Swiss colleague Matthias Walter, for providing the information on the seventeenth-century bells (email communication, April 2009). If the above-cited inscription on the Landshut bell is indeed "ancient"—that is, from before about 1500—this, too, may be significant, since the process for founding bells was essentially the same as that for the production of early guns and cannon, and makers of cannon (*Büchsenmeister*) are not infrequently recorded to have also cast bells; see Blackmore 1976, p. 2, and also Schilling 1988, pp. 21–24. For a number of German examples (specifically from Nürnberg during the first half of the fifteenth century) of the interrelation between gun makers and bell founding, see Willers 1973, pp. 65–67. Moreover, inscriptions on bells occasionally also employ acronyms and simple forms of encryption; see Schilling 1988, pp. 112, 136.
101. See Pascal Ladner, "Geheimschriften (1. Lateinischer Westen)," in *Lexikon des Mittelalters* 1977–99, vol. 4, cols. 1172–73; and Bischoff 1981. For the period under discussion, the following sources are still important: Meister 1902 and Meister 1906.
102. This is a later copy of the *Bellifortis* (see note 99 above), today in the Österreichische Nationalbibliothek, Vienna (Ms. W 5278). The choice of what is rendered in encryption is often somewhat curious: in many cases it is not, as one would expect, military secrets (such as recipes for gunpowder) but rather mundane information or magical spells for love potions that have been encoded. Since these books were for personal use, however, the encryptions may not have been intended to keep information secret but, rather, meant to serve as simple aides-mémoires to remind the *Büchsenmeister* of the system or methods at his disposal (for examples, see literature in previous note). On the other hand, in at least one instance almost the entire manuscript is written in encryption: the treatise on war engines (the title *Bellicorum instrumentorum liber cum figuris et fictitiis literis conscriptus* is later) of Giovanni Fontana (ca. 1395–ca. 1455), today in the Bayerische Staatsbibliothek, Munich (cod. iconogr. 242); see Birkenmajer 1932, pp. 40–41.
103. Hebrew was not officially taught at German universities until 1470 or 1471, when Petrus Nigri (Schwarz) began teaching the language at Ingolstadt University (in Bavaria) as part of a regular curriculum; see Petzsch 1967, p. 63.
104. The *Mittelalterliche Hausbuch* dates from about 1480–93; see, for example, Bossert and Storck 1912, especially pp. 31–35 and xxvi–xxix; Dürkopp 1931, p. 96; and note 110 below.
105. This famous manuscript is in the Zentral- und Hochschulbibliothek Luzern (HS S 23). The illuminations are found on fols. 132 and 305, respectively; the beginning of each inscription is a variation of "HAB / GOT / LIEB / VOR / ALLEN / DINGEN / SO / MAG / ES / DIR / NIT / MISSE / LINGEN..."
106. The cryptogram, though largely unnoticed in the literature on the *Luzerner Bilderchronik*, was noted and published by Hans Goetz as long ago as 1930. I am grateful to Elisabeth Vetter, Zentral- und Hochschulbibliothek Luzern, for confirming that this article is still accepted by the latest research. The best literature on the chronicle remains the commentary volume accompanying the 1977 facsimile edition: Schmid and Boesch 1977–81. It is undoubtedly significant that the scene of the *Rotärmler* (literally, "those with red sleeves") in front of the tailors' guild hall depicts a semilegendary conspiracy against the Swiss federation by factions loyal to the House of Austria during the first half of the fourteenth century (a red sleeve was the symbol of the Austrian loyalists). The importance of writing, script, and government in Lucerne, and especially the significance of words and signs in Schilling's chronicle, are discussed at length by Rauschert (2006, especially pp. 73–78); surprisingly, the author makes no mention of the cryptogram. Wall or cross ciphers are based on the "magical square" of the Kabbalah in Jewish mysticism. In this instance, as explained by Goetz (1930), the system works by placement of letters in a *raster*, or grid, of nine fields (⌘). When writing, each letter is then substituted by the compartment in which it has been placed: ⌘ as a substitute for *a*, ⌘ for *b*, ⌘ for *c*, and so on; after the ninth letter, the same symbols are used, distinguished by a single dot (for letters *j* through *r*) and two dots (for letters *s* through *z*), respectively.
107. The geographical situation of Hagenau is also noteworthy because it lies between Stuttgart and the Württemberg possessions in Montbéliard, France. Another possible relationship, which has not been discussed at length in the relevant literature, must still be regarded as rather tentative: the Lauber/Schilling workshop in Hagenau seems to have experienced a significant crisis about 1455, two years after Margaret of Savoy had arrived in Stuttgart, whereas in 1470, when the Hagenau workshop appears to have finally faltered, the workshop of Ludwig Henfflin in Stuttgart apparently rises to more prominence. This may be an indication, albeit rather circumstantial, that Henfflin's workshop in Stuttgart was active much earlier than indicated by the surviving manuscripts. See note 81 above.
108. See Bischoff 1979, p. 224, and especially Bischoff 1981, pp. 120ff. See also note 101 above.
109. See, for example, the anonymous Netherlandish panel painting *Christ Bearing the Cross*, a copy of about 1470 after a lost early work by Jan van Eyck, in the Metropolitan Museum (43.95). Partially legible inscriptions refer to the Procession of the Holy Blood, held annually in Bruges.
110. Homa 1974. Among several further examples may also be cited the cryptogram on a horse caparison in the *Mittelalterliche Hausbuch* (see note 104 above) that can be deciphered as "Heinrich Mang" or "Lang" (fol. 21r), although it is still debated whether this is the name of the illuminator or a renowned jousting of the period; see Hutchison 1972, p. 82.
111. See note 82 above.
112. In this context, the presence of the term *hoch herze* in one of Niklas von Wyle's *Translatzionen* is perhaps particularly noteworthy, since von Wyle stood in the service of the Württemberg court and was city scribe in Esslingen. His eighth translation (*How a Father Shall Lead His Household etc.*; see note 74) relates the advice given by Saint Bernhard to his brother Raymundo, a knight, on how to govern his entire household from his wife down to the servants; this paragraph of the text deals with malicious women, and the particular passage states, "Because a noble and exalted heart does not inquire into the deeds and exercises of women" (Dann ain edel vnd hoch hertze, fräget nit von handlung vnd übung der frouwen). Although the marriage of Count Ulrich and



Margaret appears to have been a happy one, much of the count's political troubles during the late 1450s and early 1460s stemmed not least from the dispute over Margaret's inheritance from her two previous marriages; see Fritz 1999, pp. 128–259, and Birkmeyer 2004. Relations between Count Ulrich and his sons (from his second marriage), however, as well as with his nephew Eberhard, at least during their youth and early adulthood, appear to have been difficult. Margaret of Savoy owned at least one copy of von Wyle's ninth *Translatzion*, which was personally dedicated by the author with a long and exhortative introduction. It has been pointed out, however, that Margaret does not appear to have been particularly interested in von Wyle's efforts; see Lähnemann 2002, p. 165. Nonetheless, one of Margaret's contemporaries, the famous literary patron Countess Mechthild von der Pfalz (the two corresponded) appears to have taken an interest, since the eighth translation was specifically made at her request; see Strauch 1883, pp. 14–19. In any case, if the inscription had any personal meaning for Margaret of Savoy and her husband, it would explain why the message was encrypted. The mutual love of the spouses, and the happiness of their marriage, is already remarked upon in near-contemporary sources; see the chronicle by the Stuttgart councilor Sebastian Kung (1514/15–1561), completed by 1554, especially fol. 112v (Sommer 1971, p. 108).

113. One argument against this theory is the fact that two different words would have been used to denote the same letter. Equally speculative is the suggestion that *hoch herze* somehow stands for the count or his wife. Since, understandably, very few lists of code words, or keys, have come down to us, this speculation is impossible to prove. The only surviving list known to the author that is of any relevance in terms of time and geographical proximity is a list, in the archives of Nürnberg, that dates from between 1461 and 1464/68, but this key only gives a code word for Count Ulrich (*Raiger*, or “heron”). See Wagner 1884, especially pp. 32–56.

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