Transmuting Silver into Gold: Cautionary Notes on the Iconography and Symbolism of Silver Trumpets

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The evidence recently published by Timothy J. McGee on the type of metal specified for the "brass" instruments of the *haut* bands of high- and late-medieval Western Europe, particularly Florence, is clearly noteworthy.[1] This article provides supplementary materials—iconographical, symbolic, and economic—to refine the treatment of that evidence, and, like the paper to which it responds, it too is chiefly concerned with the Tuscan experience, particularly that of the city on the Arno. Little will be said regarding the evidence for French and English practice.

Before proceeding to the matter of this article, it is worth stating at the outset that, in source criticism (diplomatics), the nomenclature used in a record is accepted unless there is a compelling reason to reject it. In default of such a reason it is not usual procedure to doubt inventory or statute descriptions of the materials from which objects are made. Later practices of the same geographic region, no matter how consistently different from what went before, cannot constitute a compelling reason for doubt unless they form part of a carefully reasoned, scrupulously documented, and fully presented argument. This principle remains unaffected by the genre of the document; a notary who uses the term "silver" means "silver," be it in contract, conveyance, or ordinance. The one proviso is that the content or signification of words is culturally determined, and content is not necessarily constant across space or time. What we commonly mean by "silver" may or may not be equivalent in whole or in part to what a fourteenth- or fifteenth-century Florentine meant by "silver."[2] As a starting point, however, critical prudence leaves little choice but to take at their face value the words of the documents presented by Professor McGee.

Iconography: where are all the silver trumpets?

Italian Gothic and early-Renaissance depictions of trumpets almost invariably render the instruments in gold (shell or leaf), or yellow pigments. At first site the plethora of gold ("brass") and dearth of silver trumpets in illuminations, panel paintings, and frescos seems to sort ill with the documentary evidence for silver trumpets from the Florentine archives, an evidential discordance which Professor McGee openly acknowledges. This apparent disagreement between the extant written and iconographical witnesses, while it could be due solely to an iconographic convention—and the art of the time had many[3]—might be more convincingly explained by a technological process, as Karl Hachenberg perceptively suggests.[4] Metals were regularly, though not invariably, gilded in Western Europe, from the twelfth to the sixteenth century (and beyond).[5]

Given the organological interest of the documentary sources, and their apparent dissonance with the visual sources, it would be profitable to explore the practice of gilding

in a little more detail. For, to paraphrase Benvenuto Cellini, himself a virtuoso cornettist, "Organologists should know how the craft is done, but should leave the actual gilding to specialists(!)."[6]

Cellini himself provides what is probably the most memorable description of a common procedure for gilding metal. The highest-quality twenty-four carat gold (*Oro purgatissimo, & nettissimo, & che sia xxiiij carati*) is beaten with clean hammers on an anvil until it is rendered thin as paper (*foglio di carta da scriuere*), and the required amount for the work in hand is cut into small pieces. The gold (Au) is mixed with a sufficient quantity of quicksilver (Hg; *Argento viuo*) in the proportion 1:8 (*vn' ottaua parte d'Oro sopr' otto parti d'Argento viuo*) in a clean earthen or wooden container. The mixture is thrown into a virgin crucible heated to red, and is stirred over the fire with a "live ember" (*carboncino*), held by tongs. The mixture must be stirred rapidly and the success of the amalgam owes everything to the judgement of the craftsman (*indi con l'occhio, et con la discrettione della mano* in Cellini's colorful language), a judgement which can be won only through experience (*la practica*). When the desired state is reached, the amalgam is poured into a small container of water. The amalgam is washed a further two or three times, each time in clean water, until the wash water remains clear and fine (*chiara & bella*).

The surface to be gilt must be well polished and "scratch-burnished, as they say in the craft" (*pulita & grattapugiata, come per l'arte si dice*), using a brush made of thin brass wires (*fila d'ottone, di grossezza d'vn filo di refe*), and gathered in bundles about the thickness of a finger (*dito*). The amalgam is then carefully applied with a small rod of copper set into a handle of wood (*Auuiua[-]toio ... vna verghetta di Rame posta in vn manico di legno*), about the size and length of a table fork (*grossezza & lunghezza di vna forchetta ordinaria*). Any unevenness in the gilding can be remedied by applying more amalgam while it is yet warm. If the amalgam resists adhering to the work, the copper rod charged with amalgam can be dipped into either a blanching solution (*acqua di bianchimento*),[7] or dilute aquafortis (*acqua forte bene sfumata*).[8] Excess mercury is then driven off by heating the work over a slow fire (an unfortunate byproduct is the production of poisonous fumes). The gilded work can then be left to cool.[9]

Those who specialized in gilding literally took their lives in their hands:

> Truly it is a beautiful and marvellous craft, and a knowledge of it well becomes the leading masters, so that they may direct the professional gilders. I knew many, both in France and in Rome, who applied themselves only to gilding; none-the-less, great masters ought not to practise this art themselves, for the quicksilver which has to be used for it is a deadly poison, and so wears out the men who practice it, that they live but few years.[10]

The prevalence of the practice can be judged from collections of extant Gothic and early-Renaissance Tuscan metalwork. The proportion of gilded to non-gilded metalwork may be skewed towards the former, for it was a way of adding value to a piece, and more valuable works may have enjoyed better rates of survival than the non-gilded; the difference,

however, may not really be significant. A stroll into any cathedral treasury or "treasury" room of a modern museum shows what survives. For examples of silver gilt one can cite the Chalice of Saint Atto,[11] one of the reliquaries of John the Baptist in the Florence Duomo,[12] the *Reliquario del' Libretto*,[13] or the settings of the semi-precious stone vessels collected by Lorenzo de' Medici.[14] As if to blur the visual evidence further for organologists, it was also a very common practice to gild copper alloy.[15]

The implications of this for the evidential value of iconographical witnesses is great. In an era when both silver and copper-alloys were habitually gilded, any gold ("brass") image of a trumpet could, in fact, be an image of a silver-gilt trumpet, or of a copper-alloy one. On the basis of the visual evidence alone it is now impossible to tell which is meant. This fact, unfortunately, renders the iconographical sources useless in the determination of the materials out of which "brass" instruments were crafted (it does not, however, affect previous work using iconography for investigating the form of the instruments, playing postures, ensemble combinations, and occasions and venues for performance).

Symbolism: assaying moral properties

Professor McGee suggests that there may have been symbolical reasons for using silver for trumpets.[16] One of the best places to find instances of such symbolism is in the homiletic and exegetical literature of the thirteenth to the sixteenth centuries. The property which confers such promise on these texts is their peculiar mode; some familiar aspect of everyday life is accurately delineated, and is then treated as a symbol, allegorical, tropological, and eschatological. At times only one of these non-literal senses of scripture is pursued, at others one or more are serially presented; the most skilful treatments subtly interweave diverse symbolical readings. The starting point can be a social situation, an object, or a technique. Assiduously searching through Florentine fourteenth- and fifteenth-century sermons would doubtless uncover much useful material. A relatively brief, somewhat rudimentary, and minimally productive example is presented below.

The *Glossa ordinaria*, an exegesis of the entire Bible compiled during the eleventh and twelfth centuries, was available in Italy in manuscript from the twelfth century forward, and in print from the final decades of the fifteenth century.[17] The text enjoyed varying influence during its circulation. The glosses on a brief passage in the Book of Numbers are of particular interest, as the biblical passage concerns silver trumpets. The Vulgate text reads, "Make for yourselves two trumpets out of malleable silver" (Num. 10:2).[18] To give the flavor of this sort of work, the entire gloss *in margine* on silver trumpets is reproduced here:

> Make for yourselves two trumpets, etc. Isidore of Seville[19] treats this passage (and that closely following at Numbers 10:5: When the short alarm has sounded, the camp will be struck, etc.) The army is led by two trumpets, that through the two testaments [Old and New], or the two precepts of charity [Matthew 22:37-40; Mark 12:30-31; Luke 10:27], the people are summoned to battle-readiness for the faith. Which instruments, therefore,

> are ordered to be made of silver, so the words of preachers[20] may reflect the brightness of [Divine] eloquence, and no uncertainty of the preachers' may confuse the mind of the congregation [lit. "mind of the auditors"]; therefore also malleable, as being necessary, seeing that they [i.e., the preachers] are such as preach the life to come; the preachers prosper [spiritually] through the assaults of present tribulation [lit. "tribulations"]. It is also well said that when the short alarm has sounded, the camp will be struck, etc., as when refined and more detailed preaching is performed the mind of the congregation is more passionately roused to contend with temptation [lit. "minds of the auditors are roused to battles against temptations"].[21]

We see from this that a pair of trumpets is a symbol of the Old and the New Testaments, as well as the two commandments upon which "hang all the law and the prophets." The silver from which they are made symbolizes the brightness of Divine eloquence, and enables the trumpets to deliver a message of undiminished clarity. The malleable silver represents the preacher who is formed spiritually through temporal vicissitudes. The sound of silver trumpets is likened to refined and detailed preaching, which can rouse the hearer passionately to moral rectitude.

Two additional glosses augment this silver imagery. These are the interlinear glosses on Psalm 11:7 and Proverb 10:20. The Vulgate psalm verse reads, "The eloquence of the Lord is a pure eloquence,/ as silver proven in the fire, brought forth from the earth,/ purified sevenfold."[22] The gloss states, "Eloquence: here one understands the prophet [i.e., David]. Pure: that is, without corruption, and without deceit. Silver: that is, eloquence proven through tribulation [lit. "tribulations"]."[23] The proverb reads, "Choice silver is the tongue of the just."[24] This is glossed as, "Choice silver: that is, without defect."[25] These largely reinforce the imagery from the gloss on Numbers 10:2, that cupellated silver represents a pure and refined eloquence. Immaculateness and freedom from deceit are inherent in the very material itself. Silver that is immaculate is likened to the tongue of the just. The vicissitudes of this world work on the material to improve rather than detract from its power to persuade. One of the most arresting images is silver as a symbol of king David the psalmist; a more resonant musical image for the thirteenth, fourteenth, and fifteenth centuries would be hard to imagine.

If one were to digest the principal meaning of silver trumpets, it is that they symbolize the brightness, clarity, and immaculateness of divine eloquence, they veritably preach without deceit a clarion call to moral rectitude. The message of a trumpet made of "true" silver is not false, and the body politic that sponsors the use of silver trumpets "speaks" truly, as it were, with bright, clear, and immaculate eloquence. Political checks administered by other states only render brighter, clearer, purer, and more true the silver eloquence of the state which uses trumpets of silver.

The humanist culture of late-medieval and early-modern Italy was first and foremost a literary culture, built on the revival of forensic rhetoric and its adaptation to broader civic purposes. Eloquence was everything. Italian civic states were also very concerned with the

quality of their own moral character, a concern that at times marked strongly the music they sponsored.[26] It should occasion little surprise that a state such as Florence would want its trumpets to be of silver.

The apparent delay between the publication of the *Glossa ordinaria* and the introduction of silver trumpets is distinct enough not to be ignored. Is it significant? The *Glossa ordinaria* was hardly a new text by the end of the *duecento* (indeed, most of its sources were then many centuries old), nor is its origin to be found especially in Tuscan experience. While it is perfectly conceivable that the delay between the appearance of the text and the adoption of silver trumpets was part of the "natural process" of the assimilation of ideas, there were very likely other factors which encouraged the Florentine government, the English crown, and the city of Toulouse to endow that symbol with an argentine reality when they did.[27] Given time, drudgery, and thought, those factors may be uncovered.

Damn the expense!: silver trumpets and silver famine

One factor that is puzzling is the continued use of silver trumpets during the period of the great silver famines that regularly plagued European economies in the fourteenth and fifteenth centuries.[28] Space does not allow for more than the briefest sketch of the phenomenon. There had been periodic fluctuations in the supply of silver in Europe since the fall of the Roman Empire, due to the working out of deposits and the opening of new mines, the shifting balance of trade, recoinage, the normal wear and tear on specie, accidental loss, deliberate hoarding and the disbursement of hoards, and such like.[29] The late-medieval silver famines were more serious and of much greater duration than any previous post-Roman shortages. The reasons for the famines are as complex as their effects, yet two causes were chiefly contributory: the balance of trade, and the variable rates of mine exhaustion, discovery, and exploitation. There were many and frequent complaints throughout Western Europe concerning the operations of the "Lombard" (i.e., Italian) bankers. The balance of trade between mercantile Italy and the rest of Europe certainly favored Italy.[30] Tramontane Europe consumed more value in goods and services offered by Italians than it sold in return. This resulted in, among other things, a drain of silver to Italy. Florence was a great beneficiary of this, Venice even more so. Italy in its turn had a negative balance of trade with the Islamic East, purchasing more from the Mamelukes than it sold (and the Mamelukes in turn enjoyed a negative balance of trade with those to their East). Consequently, bullion flowed east out of Italy—and out of Europe altogether.

Things became very serious indeed. The master of the Paris mint relinquished his post in 1397 because there was nothing to do; he could not get bullion to mint.[31] Early in 1409 the mint was again idle, because the luxury needs for precious metals of the Duc de Berry and other high noblemen took precedence.[32] Philip the Good's mint in Brussels closed in 1437, and did not mint any silver coins during the following twenty-nine years(!); from 1447-54 the mint at Ghent struck no silver.[33] At Valencia in 1451 neither the well-stocked galley of some Florentine traders nor the ship of the fabulously rich merchant Jacques Coeur (*argentier* to Charles VII of France) could unload a single object of commerce, for no one in the Spanish port had the cash to purchase anything.[34]

Even the comparatively well-off Italian cities had earlier felt the pinch. To quote one leading economic historian,

> The first signs of silver becoming rarer were experienced in the 1350s and 1360s.... Not only did the Sardinian mint cease production at this time but there was no silver minted at Genoa.... These were only the beginnings of a chronic shortage of silver which reached famine proportions in the 1390s. In the two most commercially advanced areas of Europe alike, northern Italy and the southern Netherlands, a desperate lack of silver was felt. The minting of silver ceased in Malines in 1392, in Florence the next year and in Louvain the year after, whilst serious concern was expressed about the lack of silver in Milan.... Only the Venetians partially escaped the effects of this silver famine.... However in the next few years the greatly increased quantities of silver from Serbia radically changed the picture in Italy, at least for the time being. In 1402 the minting of silver *grossi* began again in Florence, and some *piccoli* had been minted the previous year.... Outside Italy the end of the famine came rather more slowly.[35]

It is not a little surprising that this is the same period which saw continued the extensive use of silver for reliquaries and the sacred utensils of the mass, as well as baubles and ornaments for the wealthy and powerful. Precious metals were part of the conspicuous consumption of the royal uncles of Charles VI of France, chief among whom was that Maecenas mentioned above, Jean, Duc de Berry, and of the brilliant court of his grandnephew, Philip the Good of Burgundy. This is the wider economic context for the use of silver trumpets in Tuscany.

If silver was a rare commodity, and one associated with the consumption patterns of the noblest of the wealthy, then a civic government which mandated silver for its trumpets was placing itself, at least symbolically, and in this one respect, on a par with any royal government that did likewise (e.g., England). A commune's silver trumpets were auditory and visual symbols of its authority, power, and wealth. A political and economic entity like Florence used silver trumpets because *it could* (or wished to create the impression that it could facilely bear the expense).

A leading social historian has recently characterized the taste of individual *trecento* Italians as follows: "[F]ourteenth-century people loved being seen adorned with their costly possessions, outshining, if they could, their rivals and neighbours."[36] The same could be said of the Tuscan cities that used silver trumpets. At least one Florentine would concur. Proudly writing of the notable features of his city in the 1330s, Giovanni Villani included the civic *haut* band: "[T]here are the six heralds and the trumpet players, the player of the *naqquera* and the instrument of the watch, shawms and the small trumpet, to the number of ten, all with trumpets and small trumpets of silver; the yearly salary of all these amounts to 1,000 pennies of the impost."[37] The only instruments whose material is specified is the "brass"—and they are silver.

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NOTES

[1] Timothy J. McGee, "Silver or Gold: The Color of Brass Instruments in the Late Middle Ages," *Historic Brass Society Journal* 17 (2005): 1-6. From a metallographic standpoint the best complement to the documentary evidence Professor McGee presents would be one or more surviving silver trumpets from fourteenth- or fifteenth-century Tuscany, and the permission to analyze their metal. I am unaware of any survivals. The discovery of a medieval trumpet in London in 1984 might give some hope for a like fortuitous retrieval, but silver tends to do less well than copper-alloy in many depositional environments; see Graeme Lawson and Geoff Egan, "Medieval Trumpet from the City of London," *Galpin Society Journal* 41 (1988): 63-66. The improbable is not impossible. Later partially gilt examples survive, but they were never buried. See, e.g., Robert Barclay, *The Art of the Trumpet-Maker: The Materials, Tools, and Techniques of the Seventeenth and Eighteenth Centuries in Nuremberg*, Early Music Series 14 (Oxford: Oxford University Press, 1996), 99.

[2] We demonstrably have different standards of purity for silver and silver alloys. The literary associations and even the color significations of silver can be different. How many now would make the heraldic association "silver is the color white," or the alchemical association "silver represents the moon"? See Bernard Guineau, *Glossaire des matériaux de la couleur et des termes techniques employés dans les recettes de couleurs anciennes*, De diversis artibus, ed. Emmanuel Poulle and Robert Halleux, vol. 73 (N. S. 36) (Turnhout: Brepols, 2005), 78.

[3] E.g., the visual *topos* of the sexagenarian Virgin as a young woman at her assumption, as in Martino di Bartolommeo, *Assumption of the Virgin*, ca. 1408, panel painting, Cortona, Museo Diocesano; Bartolomeo della Gatta, *The Lady of the Assumption Gives St. Thomas Her Belt*, ca. 1475, panel painting, Cortona, Museo Diocesano; Benozzo Gozzoli, *Assumption of the Virgin*, 1484, fresco, Castelfiorentino, Biblioteca Comunale; Filippino Lippi, *Assumption and Annunciation*, 1489-91, fresco, Rome, S. Maria sopra Minerva; Rosso Fiorentino, *Assumption of the Virgin*, 1517, fresco, Florence, SS. Annunziata.

[4] See Hachenberg's letter in "Communication," *Historic Brass Society Journal* 18 (2006): 92-93. Another observation of Hachenberg's in his informative response to McGee, that the metal chosen for "brass" instruments has "to be largely immune to the highly corrosive conditions present during the use of the instrument," hints at a further possible advantage to gilding metals less noble than gold; the thin layer of gold could provide a somewhat better resistance to those corrosive conditions.

[5] Theophilus, *Theophilus De diversis artibus/The Various Arts*, ed. and transl. C.R. Dodwell (London: Thomas Nelson, 1961; reprint edn., Oxford: Oxford University Press, 1986); Theophilus, *On Divers Arts: The Foremost Medieval Treatise on Painting, Glassmaking and Metalwork*, ed. and transl. John G. Hawthorne and Cyril Stanley Smith (Chicago: University of Chicago Press, 1963; reprint edn., New York: Dover, 1979); Vannoccio Biringucci, *De la pirotechnia, libri X., dove ampiamente si tratta non*

solo di ogni sorte & diuersita di miniere, ma anchora quanto si ricerca intorno B la prattica di quelle cose di quel che si appartiene à l'arte de la fusione ouer gitto de metalli come d'ogni altra cosa simile à questa (Venice: V. Roffinello, ad instantia di C. Nauo,1540); Vannoccio Biringuccio, *The Pirotechnia of Vannoccio Biringuccio: the Classic Sixteenth-Century Treatise on Metals and Metallurgy*, ed. and transl. Cyril Stanley Smith and Martha Teach Gnudi (New York: Basic Books, 2/1959; reprint edn., New York: Dover, 1990); Susan Mosher Stuard, *Gilding the Market: Luxury and Fashion in Fourteenth-Century Italy*, The Middle Ages Series (Philadelphia: University of Pennsylvania Press, 2006), 143.

[6] Benvenuto Cellini, *Due trattati, uno intorno alle otto principali arti dell'oreficeria...*, ed. Antonio Altomonte (Modena: Edizione Aldine, 1983), fol. 43r. This is a facsimile of the original edition. See also Benvenuto Cellini, *The Treatises of Benvenuto Cellini on Goldsmithing and Sculpture*, transl. C.R. Ashbee (London: Edward Arnold, 1888; reprint edn., New York: Dover, 1967), 104. Ashbee's translation is not based on the original edition, but rather on the original manuscript rediscovered in 1857. No reader of this journal need be reminded of the cornetto's status as a leading non-metallic "brass" instrument. For Cellini's original sense, replace "organologist" with "goldsmith."

[7] A solution of powdered tartar (carboxylic acid [$(CHOH)_2(COOH)_2$]), salt, and either water, or urine.

[8] This is a solution of nitric acid, NO_3H, according to Guineau, *Glossaire des matériaux*, 74.

[9] Cellini, *Due trattati*, fols. 39v-40r; Cellini, *Treatises*, 96-97. There are almost no differences in the description of the process between the Ashbee and the original edition. The instructions in Theophilus' early twelfth-century treatise are similar in their broad outlines to Cellini's, but differ in some important particulars—Theophilus' instructions are also much more discursive; Theophilus, *De diversis artibus*, 84-92 (lib. III, cap. 33-39); Theophilus, *On Divers Arts*, 108-114. Robert Barclay rightly includes the final stage of polishing, which Cellini apparently omits. See Barclay, *Art of the Trumpet Maker*, 99.

[10] Cellini, *Treatises*, 95. I have slightly adapted Ashbee's translation. The original edition reads substantially the same, but differs in some details, the most notable being that it specifies the effect on the workers' members and eyes (*che hà forza d'indebolire quegli che tal arte essercitano, facendo tremar le membra, & spauentar hl'occhi arrouescandogli loro*). See Cellini, *Due trattati*, fols. 38v-39r.

[11] Pistoia, Museo della Cattedrale di San Zeno, ca. 1270. See Annamaria Giusti, "Calice di san Atto," in *L'arte a Firenze nell' età di Dante*, ed. Angelo Tartuferi and Mario Scalini (Florence-Milan: Giunti, 2004), cat. no. 45, 164-65.

[12] Florence, Museo dell'Opera del Duomo, fourteenth-fifteenth century. See *L'oreficeria nella Firenze del quattrocento*, ed. Maria Grazia Ciardi Dupré et al. (Florence: S.P.E.S., 1977), cat. no. 12, 34.

[13] Florence, Museo dell'Opera del Duomo, fourteenth-fifteenth century. See *Tessori dalle collezioni Medicee*, ed. Cristina Acidini Luchinat (Florence: Octavo, 1997), 11, 31.

[14] Many are today in Florence, Museo degli Argenti. See *Tessori dalle collezioni Medicee*, 33-35, 40-41.

[15] *L'oreficeria nella Firenze del quattrocento*, 367-92.

[16] McGee, "Silver or Gold," 1, 5.

[17] This genre of text was well represented in major humanist book collections, such as those of Niccolò Niccoli and the library of the Dominican convent of San Marco funded by Cosimo de' Medici. See Berthold L. Ullman and Philip A. Stadter, *The Public Library of Renaissance Florence: Niccolò Niccoli, Cosimo de' Medici and the Library of San Marco*, Medioevo e umanesimo 10 (Padua: Editrice Antenore, 1972), 18, 69, 125-130.

[18] fac tibi duas tubas argenteas ductiles. *Biblia sacra iuxta vulgatam versionem*, ed. Boniface Fischer, Jean Gribomont, et al. (Stuttgart: Deutsche Bibelgesellschaft, 3/1983), 193.

[19] An allusion to Isidore of Seville, *Isidori Hispalensis Episcopi Etymologiarum sive Originum libri XX*, ed. W. M. Lindsay, Oxford Classical Texts, vol. II (Oxford: Oxford University Press, 1911), liber

XVIII, cap. 3.1, and cap. 4.1-4; lib. III, cap. 17.2.

[20] When the *Glossa ordinaria* was compiled this word, *prędicator*, referred generally to any preacher of the regular or secular clergy. By the time of the ascendancy of the Medici many reading the passage would indubitably think of the mendicants first and foremost, particularly the Dominicans, the order of preachers (*ordo prędicatorum*).

[21] "Fac tibi duas tubas etc. Isidorus et paulo post. Cum concisus clangor increpuerit: mouebuntur castra etc. Per duas tubas exercitus dicitur: quia per duo testamenta. vel duo caritatis pręcepta ad procinctum fidei populus euocatur. Quę ideo argenteę fieri pręcipiuntur. vt prędicatorum verba eloquij nitore refulgeant: et auditorum mentem nulla sui obscuritate confundant. Ideo autem ductiles. quia necesse est vt qui venturam vitam prędicant: per tribulationum pręsentium tunsiones crescant. Bene autem dicitur. Cum concisus clangor increpuerit mouebuntur castra Quia cum subtilior et minutior prędicatio tractatur: auditorum mentes ad temptationum certamina ardentius excitantur." *Biblia latina cum glossa ordinaria. Facsimile Reprint of the Editio princeps Adolph Rusch of Strassburg 1480/81*, ed. Karlfried Froehlich and Margaret T. Gibson (Turnhout: Brepols, 1992), I, 299. The translation is by the present author.

[22] eloquia Domini eloquia casta/ argentum igne examinatum probatum terrae/ purgatum septuplum. *Biblia sacra iuxta vulgatam*, ed. Fischer et al., 780.

[23] "†Eloquia †¶Hic propheta. †Casta †¶sine corruptione simulatione. •i•argentum •i•Eloquia per tribulationes probata." *Biblia latina cum glossa ordinaria*, ed. Froehlich and Gibson, II, 469.

[24] "argentum electum lingua iusti." *Biblia sacra iuxta vulgatam*, ed. Fischer et al., 966.

[25] "Argentum electum.. ¶sine menda." *Biblia latina cum glossa ordinaria*, ed. Froehlich and Gibson, II, 666.

[26] Timothy J. McGee, "Dinner Music for the Florentine Signoria, 1350-1450," *Speculum* 74, no. 1 (1999): 95-114.

[27] McGee, "Silver or Gold," 4.

[28] Gino Luzzato, *An Economic History of Italy From the Fall of the Roman Empire to the Beginning of the Sixteenth Century,* transl. Philip Jones (London: Routledge and Kegan Paul, 1961), 139. A good introduction to the phenomenon, and the substantial literature it has generated, is Peter Spufford, "Coinage and Currency," in *The Cambridge Economic History of Europe. II. Trade and Industry in the Middle Ages*, ed. M.M. Postan, Edward Miller, and Cynthia Postan (Cambridge: Cambridge University Press, 2/1987), 851-60; Peter Spufford, *Money and Its Use in Medieval Europe* (Cambridge: Cambridge University Press, 1988), 339-62. Most economic historians of the later Middle Ages now accept their complex reality; some have taken a revisionist stance, e.g., Nathan Sussman, "The Late Medieval Bullion Famine Reconsidered," *Journal of Economic History* 58, no. 1 (1998): 126-54 (chiefly a re-examination of French material). Developments are best followed in journals such as *Annales: E.S.C., Economic History Review, Journal of European Economic History*, and *Research in Economic History*.

[29] Spufford, "Coinage," 852; idem, *Money*, 340.

[30] Harry A. Miskimin, *The Economy of Early Renaissance Europe, 1300-1460* (Cambridge: Cambridge University Press, 1975), 138, 142-44.

[31] Spufford, *Money*, 346.

[32] Ibid.; Stuard, *Gilding the Market*, 142-43. In an interesting statement Stuard claims the luxury market in Northern Italy used less pure grades of silver than its French counterpart; unfortunately she cites no source. If true, would it apply to the silver used for "brass" instruments in Tuscany?

[33] Spufford, "Coinage", 858; idem, *Money*, 356-57.

[34] Spufford, "Coinage", 859; idem, *Money*, 358.

[35] Spufford, "Coinage", 857-58. Stuard, *Gilding the Market*, 192, states that Florence ca. 1450 had

a sufficiency of silver due to Balkan sources. It is notable that throughout the famines the Italian authorities refused to implement precise surveys of private silver accumulations with a view to conducting appropriations; ibid., 144-45, 216-19.

[36] Stuard, *Gilding the Market*, 145.

[37] "...che sono i banditori vi e trombadori, naccheraio e sveglia, cenamelle e trombetta, x, tutti con trombe e trombette d'argento, per loro salaro l'anno libre m di piccioli." Giovanni Villani, *Nuova cronica*, ed. Giuseppe Porta, Biblioteca di scrittori Italiani (Parma: Fondazione Pietro Bembo and Ugo Guanda Editore, 1991), 196. The translation is by the present author.