Original Patterns in BnF. Ms. Fr. 640

Rozemarijn Landsman & Jonah Rowen

**Do not cite or circulate**

Despite the great quantity of detail and breadth of topics relating to metalworking in BnF. Ms. Fr. 640, most of the manuscript’s instructions for casting are for processes involving the prior existence of an object to be cast, usually medals, animals, or plants. While the focus on practical advice given in the manuscript may suggest that it was written in the context of a practicing artisan’s workshop practitioner, the metalworking descriptions most often involve replication, and very rarely address the making of an original object. For casting medals in particular, reproducibility or serial production seems to have been an important part of the process,[[1]](#footnote-0) but in the manuscript, whether the “original” was used for direct or indirect casting,[[2]](#footnote-1) the actual procedure for making that first model is left mostly unmentioned. This entry investigates the few instances of textual sources from the manuscript for making patterns other than from preexisting medals or casts from life. Among the questions that this annotation seeks to address are: what materials were used to make these patterns, and what are the processes used for fabricating them? Were they carved, drawn, or modeled? How and with what tools? Our research into instructions for patterns in BnF. Ms. Fr. 640 also attempts to gain insight into the identity of the author-practitioner.[[3]](#footnote-2) That is, we ask what the lack of instructions about how to make patterns for casting allows us to conclude about the author’s occupation or his areas of expertise. Were the techniques of carving or creating models so widely known that the author assumed readers would be familiar with those skills? Or were divisions of labor at work--in which case the artisan who made an original pattern would have practiced a different trade than the person who reproduced objects? What position would the author of BnF. Ms. Fr. 640 have held within such a system of divided labor and divided knowledge?

**Related Recipes from BnF. Ms. Fr. 640**

The recipe “Wax for seals and impressions” [*Cire a cachet et empraincte*] on fol. 42r includes directions for making wax that is soft enough to take impressions, which propose that one keeps wax in tepid water and kneads [*pestrie*] it. The author-practitioner writes, “you can stamp [*empraindras*] whatever you want.” Since this recipe is about making seals, the wax itself will not be cast but instead will only take an impression, so this is not quite a description of how to make a pattern for casting. However, the recipe also suggests carving: “You can carve figures [*tailler les figures*] and color them in gold, in silver, or paint them with *couleurs à vernis*.”[[4]](#footnote-3) For *tailler*,Randle Cotgrave provides a contemporary definition, “*Tailler*: to cut, slit, slice, hew, hack, slash, gash; nicke, snip, notch, indent; carve, [en]grave; also, to gueld, or spey; also to tax, impose taxes on, levie tributes of.”[[5]](#footnote-4) The term is related to *intaglio* processes, which Benvenuto Cellini alludes to in passages on engraving.[[6]](#footnote-5) Fol. 42r is the only recipe that we have been able to identify that uses the word *tailler* in the sense of carving a model. It seems more often to be used in the context of cut stone or other types of cutting.[[7]](#footnote-6)

Although carving is not much discussed in the manuscript, “sketching” or “(roughly) modeling” forms for other fabrication processes is. Under the heading “Adorning beds, mirrors and similar things” [*Pour orner des licts mirouers & semblabes*], a passage on fol. 131r reads, “Model any drawing in half relief on a flat slate [*Esbauche sur une ardoise bien unye quelque desseing a demy relief*] in order to set it on round or flat things. Cast with very fine tin, then you can gild it….” As a definition for the verb *esbaucher* Cotgrave writes, “To rough-hew; grossely to frame, forme, square, or cut out of the whole peece; to begin rudely, any peece of work; also, to pruine a tree; and, in painting, to tricke.”[[8]](#footnote-7)

On fol. 139v the recipe “Casting wax to mold an animal that one has not got” [*Gect en cire pour representer l’animal qu’on n’a point*] describes a procedure for making a stiff wax, sometimes called *esbaucher* wax. The title of the recipe appears promising for our research, since if “one has not got” the animal that one wishes to cast, then one’s recourse would be to carve a model of it. But the focus of the recipe is on the production of a material that is “firm” [*ferme*], rather than on a discussion of the actual process of modeling or working with that material. Nonetheless, the author does make certain recommendations about casting that have to do with an ability to check one’s work, such as adding charcoal “to give some color to your wax, that would otherwise be transparent and you will not be able to see your lines as clearly” [*donne couleur de corps à la cire qui aultrement seroit transparente & ne se verroit pas si bien le traict*]. The note to the left of this recipe also begins, “This black sulfured wax is for modeling round figures that do not come out of the mold” [*Ceste cire noire soufrée est pour esbaucher des figures rondes, qui ne sont poinct en despouille*]. The word *esbaucher*, which is also used on fol. 131r (discussed above), suggests a technique of fabrication that goes beyond replication.

The word *esbaucher* appears again on fol. 124v, under the heading “Casting gold,” to refer to molds that have “taken much modeling” [*couste beaucoup a esbaucher*] to produce.[[9]](#footnote-8) Similarly, fol. 109r contains a recipe titled “Modeling in wax” [*Esbaucher en cire*], which is about making hard wax “more malleable” or workable [*plus amiable*]. While none of these recipes explicitly uses the verb *tailler* again or describes the process of modeling in wax once it has been made workable, one might safely conclude that the reason for making wax malleable is to work it into a pattern for casting.

Another interesting passage to look at in regard to the topic of this annotation is a brief description of a procedure in the recipe entitled “Quickly molding and reducing a relief to a hollow [mold]” [*Mouler prompteme{n}t et reduire un cave en relief*] on fol. 156r. It begins with the instruction: “Make an impression in colored wax of the relief of your medal” [*Tu peulx empraindre de cire colorée le relief d’une medaille*].[[10]](#footnote-9) Again, the author already has a pattern (the medal) as his starting point. Interestingly, *empraindre* is also used in the recipe on fol. 42r, which we also discussed in relation to *tailler*. In that instance the author describes the preferred type of wax and a method for making such a negative imprint of a metal relief in the wax. On fol. 156r, this step is not explicitly explained but is either assumed as common knowledge or, perhaps, as sufficiently described earlier in the manuscript. That further on the recipe on fol. 42r suggests carving [*tailler*] this wax impression may indicate alterations to the design being made, or flaws in the imprint being corrected.

“Molding” on fol. 50r, is similar to the recipes above in that it does not exactly discuss producing *original* patterns, as much as it explains how to translate an impression of an existing object onto paper for subsequent casting:

If you want to quickly mold in demi-relief [*demy relief*] anything you come upon, fold some paper five or six times over, and place it on the medal [*le poses sur la medaille*] and make sure the paper is folded around the edges of the medal so it is very secure. Next take a stick… and rub firmly on the paper, and retrace the lines with the point of the stick until you reckon that your impression is well done. Then... rub oil onto the paper [imprint] lightly with a brush, and cast some tallow or wax or sulfur into it. And the paper, without burning, will give you a neat design that you can then mold in plaster or tripoli and then in lead and other metals. [*Puys... frotte legerement d’huile avecq un pinceau l’empraincte du papier et gectes y suif ou cire ou soufre, & le papier, sans se brusler, te rendra ton pourtraict nect, que tu pourras aprés mouler en plastre ou tripoly, et puys en plomb & aultre metal.*]

Here the author, as on fol. 42r, describes a process of lifting an impression from a medal that already exists, including careful registration of the paper on the pattern (“so it is very secure”). Even more significantly, this recipe also provides the procedure—albeit in an abbreviated manner—for moving from a model to a mold: the model is impressed into paper, which is then used as a negative mold for a casting material (tallow, wax, or sulfur); this casting material is poured into the paper as a positive, and then used to form a negative mold in plaster or tripoli, which results finally in a positive “in lead [or] other metals.” The terse last two sentences of this recipe provide as clear a set of step-by-step instructions for casting from a model as almost any other recipe in the manuscript.[[11]](#footnote-10) Furthermore, one can imagine that these steps would be applicable even without a medal used as a pattern, a peculiarity that prompted the series of questions raised in the introduction to this annotation.

The recipe “Copying off patterns” on fol. 51r similarly presumes an existing model, but it also provides further insight into what might have constituted an original pattern, describing a similar method of rubbing paper. In this case, the paper takes the impression from an engraved stone [*la piece de taille doulce*] (note again the use of the word *tailler*), which resonates with one interpretation of a passage from Cellini’s *Autobiography* that describes how he cuts a pattern: “During this man’s illness the Duke sent for me, and bade me take his portrait; this I did upon [*innun*] a circular piece of black stone about the size of a little trencher.”[[12]](#footnote-11) The aspect of Cellini’s account that requires interpretation, however, is whether the meaning of the conjunction *innun* is closer to “in” or to “on”--that is, whether the pattern that Cellini made was done *in* the black stone, as fol. 51r seems to suggest, or if it was done *on* the black stone, as a working surface used to make a wax model for a seal [[Fig. 1](https://drive.google.com/open?id=0BwJi-u8sfkVDR2dYUVBSTW16TVE): John Flaxman, Jr. (attributed), *The Virtue Prudentia*, c. 1800 (Philadelphia Museum of Art, Accession Number 1944-63-11)].[[13]](#footnote-12)

**Related Recipes from Other Sources**

Based on our research, BnF. Ms. Fr. 640 does not appear to contain detailed information about creating original patterns, and what it does provide addresses the topic only fleetingly. Whether this is because the author presumed that he did not need to provide instructions for this aspect of fabrication or because those instructions would fall outside of the scope of either this manuscript or the author’s expertise is a question into which we hoped to gain insight. While we have found few overt descriptions of a procedure for creating a model in BnF. Ms. Fr. 640, some contemporary authors’ books of recipes are slightly less scant in providing information about this first step in the making process.

The most colorful and most informative of contemporary sources that sheds light on the question of original patterns is Cellini’s *Treatises*. Cellini writes about a number of materials and provides instructions for making patterns in several of them, including steel (for numismatic dies), black wax,[[14]](#footnote-13) and white wax, in relation to which he describes the process of sand casting, as well as carving directly into silver.[[15]](#footnote-14) Cellini advises softening steel for engraving under fire and by leaving it overnight covered in “a concoction made of earth, powdered glass, soot from the chimney, and bole of Armenia [with] a little horse-dung [and formed into] a paste with man’s urine.”[[16]](#footnote-15) Into this steel, and using hard steel tools, one can engrave the ends of two tools, one for each side of the coin, using compasses to draw and measure the circumference of the coin.[[17]](#footnote-16) Regarding patterns in white wax, Cellini writes,

The first thing to be done is to make a model in white wax of the head, the reverse, and whatever there may be, to the exact size and relief of the final work, for we know this was how the ancients did it.

The white model in wax is made as follows: Take a little pure white wax, add it to half the quantity of well-ground white lead, & a little very clear turps…. [A negative] is made in the gesso just as the cardinals’ seals were, of which I erewhile told you.[[18]](#footnote-17) Then you take what are called the *taselli* [tools similar to those described above for steel dies]…. After you have softened them [the *taselli*] in the fire in the same way as I showed you above with the coins, you smooth and polish them very carefully with soft stones and mark out the size of your medal, the beading, the place for the inscription & so forth, with just such immovable compasses as you used before.[[19]](#footnote-18)

The description of making a model in white wax given here is unsurprising, but the fact that Cellini includes this step in his narrative of the process differentiates his text from BnF. Ms. Fr. 640. The other peculiarity in this passage from Cellini, which is titled “About Medals,” includes instructions for how to make tools, the *taselli*, evidently for reproducing the medals but also for fabricating monetary coins, which prompts questions as to whether the distinction between coins [*monete*] and medals [*medaglie*] is mostly a functional one. He also recommends that “you will do well to make wax impressions from time to time, while you are cutting, to see how you are getting on,” as he suggests in tin with steel dies, a statement that provides useful insight into the reasons for casting in materials other than metals.[[20]](#footnote-19)

Vannoccio Biringuccio’s comments on reproducing medals also provide information about workshop practices that go unmentioned in BnF. Ms. Fr. 640 and Cellini’s *Treatises*. In explaining the processes of sand casting, Biringuccio writes, “It [the sand and magistry discussed in the preceding text] also served me very well in that one, two, three, or four casts were made without having to mould it again, if the relief that was moulded was not very great.”[[21]](#footnote-20) Two significant implications are evident from this sentence: first, that in processes of sand casting, the same mold was indeed intended to produce several identical casts; and second, that for medals, the number of times a mold could be used was apparently related to the depth of its relief.

The pseudonymous Alessio Piemontese’s recipe “To imprint medalles in hoste [haste?] with Dragagant,” after explaining how to make a paste that would harden and could be used for casting, concludes with the suggestion, “And of this paste you maie make also other workes as you will, as Beades, stones, or other.”[[22]](#footnote-21) This suggests similar questions to those raised by BnF. Ms. Fr. 640 on fol. 50r above, namely, why, if the author suggests that other objects besides already-existing medals can be cast using this method, he chose not to expand his directions for making medals to encompass carving one’s own pattern.

What little information BnF. Ms. Fr. 640 does provide on this subject, however, adds to the documented research on the patterns that may have been used for casting medals. John R. Spencer follows George F. Hill, who wrote a series of articles on early modern medals from 1907 to the mid-1920s, in assuming that medals of the Italian Renaissance were cast from wax.[[23]](#footnote-22) Patricia Tuttle acknowledges that sulfur may have been used in the casting process but suggests that its use was as a material for making negative molds rather than for the positive form of a pattern.[[24]](#footnote-23) The addition of sulfur, especially, to the materials used for casting implies that a different set of tools for melting (since wax can be cast into sulfur but not vice versa) and almost certainly a different set of materials for molds might have been used. The melting point of beeswax, 144°F, is much lower than that of sulfur, at approximately 240°F (that of tallow is much lower, at around 113°F), which would make a sulfur mold suitable to use with molten wax or tallow. That pure wax was used as a pattern, and especially that medals were created using a lost-wax casting technique, appears to be an outdated conception of the process of making medals.[[25]](#footnote-24)

Instead, scholarly opinion has shifted toward an understanding that sand-casting was the primary method of fabrication. Partly because of the pressure necessary for impressing a pattern into sand, and the relative melting points and temperatures achieved during the steps of the casting process, a workable material harder than wax would have been ideal. On this point, Biringuccio gives plaster as an example: “It is also customary to make a plaster capable of being worked easily by hand in making medallion portraits… in bas-relief so that they can be moulded for making them in bronze if you wish.” He also gives several alternatives to plaster, including white wax mixed with white lead and tallow; plasters with gums, wax, “Greek pitch or ship’s tar”; soap; “sulphur and brick dust, or two parts of Grecian pitch and one of wax.”[[26]](#footnote-25) That all of these are viable materials for making a pattern that could produce, as Biringuccio describes, “multiple casts without having to mold it again” suggests that the scholarly assumption that medals began as carved wax models renders an incomplete image not only of the variety of substances used in fabrication but also of the ingenuity of the fabricators.

**Conclusion**

In general, explanations of how to make patterns for casting are largely absent from BnF. Ms. Fr. 640. How to interpret that conspicuous omission, however, is not a readily answerable question. This is particularly important since the author does seem to presume a fair amount of knowledge on the part of the reader, signaled by phrases such as “as you know” or “you know how to….” even when there are no recipes in the previous folios describing these processes.[[27]](#footnote-26) The author of the manuscript may have simply not included instructions for fabricating a pattern because he assumed that that part of the making process was unnecessary to describe, since any artist could go about it in whichever way he or she chose. Furthermore, the recipes collected in BnF. Ms. Fr. 640 mostly describe standardized procedures that can be replicated with some precision. The act of carving materials is a particular learned skill that also depends on individual creativity, which the manuscript’s author may have realized falls outside of the scope of the type of knowledge that he aimed to, or that could be, transmitted in text.[[28]](#footnote-27)

Finally, we return to the questions posed in the introduction to this annotation. The most challenging of these is the identity of the author of the manuscript. These notes will not attempt to solve this mystery. From the evidence gathered here, we can propose that the author’s focus was on *reproducing* medals and other objects and not on how to create entirely new objects to be cast. We have been able to shed little light on the trade practiced by the author. In this context, however, it is instructive to compare other late sixteenth- and early seventeenth-century individuals whom we know produced, wrote about, or collected medals (or possessed knowledge about them). On one end of such a spectrum lies the practical knowledge of an artisan, such as a founder or, slightly removed, a goldsmith like Cellini, while on the other end we might place the more or less learned approach of the savant or *amateur*, for instance, a compiler of “secrets” or “recipes,” or, further still, a more “passive” collector and contemplator of medals.

The author’s interest in and detailed descriptions of many things in fields other than casting and metalworking indicates wide-ranging interests, but the manuscript entries about mold-making and metalworking may still provide important clues. His interest in and description of all parts of the casting process that deal with making molds suggests that he was not merely a founder. We know that Cellini was a practitioner who related his practical experience through texts and could point to products of his craft. Yet we may also look to Hugh Plat as a counterexample, a compiler of instructions for various procedures in which he did not necessarily have any expertise himself.[[29]](#footnote-28)

Another interesting example to consider is the Dutch polymath and nobleman Constantijn Huygens, who is known to not only have collected medals but also to have (re)produced them around 1628.[[30]](#footnote-29) While Huygens’s education and level in society remove him further from artisans than the less socially elite Hugh Plat, his hands-on experience blurs such divisions. As A.R.E de Heer notes, the benefit of Huygens’s medal-making adventures, according to his autobiography, was threefold: first, it demonstrated his talent, and, as such, was cause for praise and respect among his peers; second, he demonstrated that he was skilled enough that, if ever necessary, he could earn a living through manual labor; and, third, his practical understanding and knowledge of medals provided the foundation for proper judgment of such objects.[[31]](#footnote-30)

Significantly, Huygens possessed a brief handwritten treatise concerning metal casting containing a similar structure and style of written recipes to BnF. Ms. Fr. 640 that explains the various processes of molding and casting medals.[[32]](#footnote-31) In a letter dated to 1629, Huygens’s friend Johan Brosterhuijsen mentions this treatise as a gift to Huygens, describing it as “the art of casting; it is a handwritten book, drawn from the memories of a great founder…” [*… l’art de getter; c’est un livret escrit à la main, tiré des memoires d’un grand fondeur …*].[[33]](#footnote-32) In the same letter Brosterhuijsen recommends Huygens learn the art of “casting herbs, etc. and gilding without gold” [*mouler sur des herbes, etc. et de dorer sans or*] from the “bag of secrets” [*son sac de secrets*] of the goldsmith Adriaen Rottermont--who does indeed appear to have been Huygens’s instructor.[[34]](#footnote-33)

Huygens, then, poses an interesting example of a learned man who not only practiced the art of casting medals himself but also collected recipes of such (as well as many other) processes. A closer look at his “recipe books” is necessary, but it seems safe to assume that Huygens did not write them himself, nor did he comment upon them. Within the spectrum mentioned above, however, the author of BnF. Ms. Fr. 640 appears to have been closer to the practitioner’s side than Huygens, while closer to the learned scholar’s end than Cellini.

Although this annotation cannot provide a definitive answer as to whether BnF. Ms. Fr. 640 was written by an author who considered himself an artisan, or if in fact it is a collection gathered from disparate sources, our findings place him somewhere in between. The designation as “author-practitioner” seems appropriate, since he did have the skills, time, and interest to write this broad and intriguing manuscript, while also experimenting, or practicing, with his own recipes, as is evident from his notes and illustrations in the margins.[[35]](#footnote-34) Concerning medal casting, further research into founders’ and artists’ practices might indicate whether the tools and workshops that reproduced cast objects were the same ones that produced patterns and, thus, what the significance of the omission of certain types of knowledge in this manuscript might mean. Where do practical or experiential knowledge and theoretical or learned knowledge intersect? A deeper understanding of the various communities interested in, experimenting with, and writing about such practical knowledge would be a valuable addition to this research. Questions regarding how often acquiring practical skills in the arts was a part of the higher classes’ education, as seen in Huygens, could shed more light onto the background and milieu of the author of BnF. Ms. Fr. 640.

1. Glenn Wharton begins his article on a technique for determining the facture of Renaissance medals (whether they were cast or struck) with the remark, “The Art of Medals is an art of multiples. From their origin in 1438 by Pisanello, Renaissance medals were usually produced in series, either cast in molds or struck from dies.” Arthur Beale writes, “there is ample documentation by Renaissance authors that using models, themselves made of metal, was an accepted procedure during that period.” The significant terms used for reproductions are the French *surmoulage*, or “after-cast” in English. (These are not terms used by the author of the manuscript, only by more recent authors.) See also Wharton, “Technical Examination of Renaissance Medals: The Use of Laue Back Reflection X-Ray Diffraction to Identify Electroformed Reproductions,” *The Journal of the American Institute for Conservation* 23, No. 2 (Spring 1984): 88. Beale, “Surface Characteristics of Renaissance Medals and Their Interpretation,” *Studies in the History of Art* 21, “Symposium Papers VIII: Italian Medals” (1987): 28. See also J. Graham Pollard, “The Italian Renaissance Medal: Collecting and Connoisseurship,” *Studies in the History of Art* 21, 161-169. [↑](#footnote-ref-0)
2. The distinction between these terms is made in, for instance, Francesca G. Bewer, “The Sculpture of Adriaen de Vries: A Technical Study,” *Studies in the History of Art* 62, “Symposium Papers XXXIX: Small Bronzes in the Renaissance” (2001): 158-193. [↑](#footnote-ref-1)
3. We follow Professor Pamela H. Smith and Tonny Beentjes in referring to the author of BnF. Ms. Fr. 640 using singular masculine pronouns. See Smith and Beentjes, “Nature and Art, Making and Knowing: Reconstructing Sixteenth-Century Life-Casting Techniques,” *Renaissance Quarterly* 63 (2010): 128-179. [↑](#footnote-ref-2)
4. Whether “carving” here refers to the stamp or the wax is ambiguous; most likely, it is the wax that the author suggests carving. [↑](#footnote-ref-3)
5. Randle Cotgrave, “*Tailler*,” in *A Dictionarie of the French and English Tongues* (1611) http://www.pbm.com/~lindahl/cotgrave/895.html. [↑](#footnote-ref-4)
6. Cf. fol. 39v, “Tracing a story on glass,” and “Chapter I. On the Art of Niello,” “Chapter III. Concerning the Art of Enamelling,” and maybe most relevantly here, “Chapter XIV. How to Make Steel Dies for Stamping Coins” in Cellini, *The Treatises of Benvenuto Cellini on Goldsmithing and Sculpture*, trans. C.R. Ashbee (Whitefish, MT: Kessinger Publishing, 2006), 7-9, 15-19, 67-74. [↑](#footnote-ref-5)
7. See, for instance, fol. 37v, “Yellow Amber,” and fol. 38r, “Sapphire” and “Amber.” [↑](#footnote-ref-6)
8. Cotgrave, “*Esbaucher*,” http://www.pbm.com/~lindahl/cotgrave/381.html. The close conceptual relation between *esbaucher* and *tailler* may be further indicated by the words’ connotations with vegetal pruning, as can be found in the instructions for “Grafting” on fol. 91r, which uses the word “cutting” [*tailler*] for branches. [↑](#footnote-ref-7)
9. *Esbaucher* is used in various other circumstances with similar connotations to “modeling.” See, for instance, fol. 109r, “Modeling in wax”; fol. 133r, “Casting the feet of small lizards in gold and silver”; fol. 138v, under “Imitation diamonds put into the work”; and fol. 157v, “Molding a bird”. [↑](#footnote-ref-8)
10. Incidentally, further down on fol. 156r (in the recipe “Chiseling”) the author provides directions for chasing, which in BnF Ms. Fr. 640 is another important but rarely addressed (in BnF Ms. Fr. 640) step in the process of metalworking. [↑](#footnote-ref-9)
11. Other recipes in BnF Ms. Fr. 640 that describe the molding process as such a series of positive and negative impressions in different materials are found on fol. 153r “Molding hollow seals or other things,” fol. 156r “Quickly molding and reducing a relief to a hollow [mold],” and fol. 169v “How to reduce a round form into a hollow.” [↑](#footnote-ref-10)
12. *In questo mezzo che lui stava ammalato, mi chiamò il ditto Duca a volse che io lo ritraessi, la qual cosa io feci innun tondo di pietra nera, grande quanto un taglieretto da tavola.* Benvenuto Cellini, *The Autobiography of Benvenuto Cellini*, trans. John Addington Symonds (New York: P.F. Collier and Sons Company, 1910), Part II, Section VI; available online at http://www.gutenberg.org/dirs/etext03/7clln10h.htm. Italian from http://www.letteraturaitaliana.net/pdf/Volume\_5/t115.pdf, p. 284. [↑](#footnote-ref-11)
13. G.F. Hill writes that “The black stone about the size of a trencher was of course a disc of slate, or something similar, such as we know was used by wax modellers for a modelling board,” but he indicates only that Cellini used this slate to carve into and does not acknowledge that in this case the stone could have been used as a working surface for wax as well. In his *Treatises*, Cellini uses similar vocabulary: “The seals are made in the following manner. You take a smooth and polished black stone, and draw thereon the design you want to appear on the seal; and with black wax, a bit hardened, you fashion whatever relief you wish to impress.” Cellini, *The Treatises*, 61. See Hill, “Notes on Italian Medals—X: Some Medals by Benvenuto Cellini,” *The Burlington Magazine for Connoisseurs* 18, No. 91 (October 1910), 14. [↑](#footnote-ref-12)
14. See n.12. Cellini does not specify how to make “black wax,” but he uses the term again on p. 65 (“To see better how you are getting on, you may occasionally press in a little black wax, or whatever colour pleases you better, to gauge the projections”) and in an apparently unrelated way in “Chapter V. How to Set a Ruby,” on p. 24. See also BnF. Ms. Fr. 640 fol. 139v, “Casting Wax to mold an animal that one has not got,” cited above, which includes a definition of black wax containing charcoal. [↑](#footnote-ref-13)
15. “Some artists have gone straight to work at their seals with merely cutting directly into their silver, and without casting at all, but pluckily doing their design straight on in the reverse with genuine knowledge of their art, and using the steel dies of which I told you, and they succeeded in it, too. I also have done this, but I have found the casting method more practicable; though both are good, and can lead to excellent results.” Cellini, *The Treatises*, 66. [↑](#footnote-ref-14)
16. Cellini, “Chapter XIV. How to Make Steel Dies for Stamping Coins,” *The Treatises*, 68. [↑](#footnote-ref-15)
17. Cellini, *The Treatises*, 69. He also advises intermittently pouring tin into the dies to check the quality of the coins. [↑](#footnote-ref-16)
18. For seals, this “volterrano gesso” is cast onto a black wax model, as described in n.12. The gesso “matrix” is then cleaned with a knife and impressed into sand-casting flasks. Because the seal is a negative for pressing into wax, the cast metal is a reverse (mirror) image, and therefore can be directly cast in sand from the gesso. Positive versions of these exist in lead, and some are illustrated in Ashbee’s English translation of *The Treatises*. See *The Treatises*, 61-63, especially the note under the † symbol, p. 63. The illustrations are between pp. 66 and 67. [↑](#footnote-ref-17)
19. Cellini, “Chapter XV. About Medals,” *The Treatises*, 72. This passage continues: “After this you begin to work with your chisels ever so carefully, cutting away the steel in order to round off the form of the head in just such manner as you have it in your gesso model.” [↑](#footnote-ref-18)
20. Cellini, *The Treatises*, 73-74. Cellini continues to a reiterate how these medals are cast and then chased from a first metal cast: “You do it in the usual way, taking the impression of it in caster’s sand—you remember we spoke about it before—the same that all founders use for the trappings of horses, mules, and brass work generally. From this pattern medal you make your final casting which you carefully clean up, removing the rough edges with a file, and after that polishing off all the file marks.” *The Treatises*, 75. [↑](#footnote-ref-19)
21. Vannoccio Biringuccio, *The Pirotechnia of Vannoccio Biringuccio: The Classic Sixteenth-Century Treatise on Metals and Metallurgy*, trans. Cyril Stanley Smith and Martha Teach Gnudi (New York: Dover Publications, 1990), 325. [↑](#footnote-ref-20)
22. In its entirety the text of the recipe reads, “Take five ounces of Dragagant, and steepe it in strong Vineger the space of three daies. Then stampe or beat it well, and ingrosse [?] it into a bodie or substance with plaister grounde very small, and if you will make them of other colours, put into it what pouder you will, be it white, or [illegible], so that the paste maie be somewhat hard, and all well incorporated together. Then take your hollowe formes or moulds, and annointe them a little, and fill them with the saied paste, and presse it well doune, and lette it drie in the Sunne, and you shall have the print of your moulde neate and fine. And of this paste you maie make also other workes as you will, as Beades, stones, or other.” The following two recipes on the same page spread, “To make paste meete and good to make all manner of medalles, or pictures in moulde,” and “To make medals and figures chaced and embossed with fishe glue,” are also related. Girolamo Ruscelli, *The seconde part of the Secretes of Maister Alexis of Piemont: by hym collected out of diuerse excellent authors, and nevvly translated out of Frenche into Englishe. With a generall table of all matters contained in the saied booke*, trans. William Warde (1580), 31. [↑](#footnote-ref-21)
23. “In general, the letters are very sharp and only the C in the SC of the Nero reverse reveals the wax from which it was modeled.” John R. Spencer, “Filarete, the Medallist of the Roman Emperors,” *The Art Bulletin* 61, No. 4 (December 1979): 558. For Hill’s short essays, see “Some Italian Medals in the British Museum,” *The Burlington Magazine for Connoisseurs* 10, No. 48 (March 1907): 384-385, 387, to “Notes on Italian Medals—XXVII,” *The Burlington Magazine for Connoisseurs* 42, No. 238 (January 1923): 38, 42-44, 47. While these articles have apparently been influential for those studying medals, they also evidently contain much misleading information, as many of the authors cited here have noted, including Spencer. [↑](#footnote-ref-22)
24. “Some [cast medals] seem to have been slushed into a mold, while in others the wax must have been in a semi-hard state in which it could be pressed into a mold, with bits and pieces added as reinforcement. Others must have had wax pressed into a mold using a piece of cloth, possibly as a separator, which left behind its fabric pattern in the metal surface. These molds were probably made of plaster, reinforced plaster, or sulfur, as the sand molds discussed above would be too delicate to withstand the pressure of pressing semi-hard wax against their surface.” Patricia Tuttle, “An Investigation of the Renaissance Casting Techniques of Incuse-Reverse and Double-Sided Medals,” *Studies in the History of Art* 21, “Symposium Papers VIII: Italian Medals” (1987): 211. [↑](#footnote-ref-23)
25. Lisha Deming Glinsman, “Renaissance Portrait Medals by Matteo de’ Pasti: A Study of Their Casting Materials,” *Studies in the History of Art* 57, “Monograph Series II: Conservation Research 1996/1997 (1997): 94-95. Cellini’s technique for making Cardinals’ seals on p. 64 of the *Treatises* does describe a lost wax process, but those objects are distinct from what would technically be described as medals (with notable differences in size and shape, but, perhaps most importantly, in that they are supposed to be unique). [↑](#footnote-ref-24)
26. Biringuccio, “The Methods for Moulding Various Kinds of Reliefs,” *The Pirotechnia*, 331. [↑](#footnote-ref-25)
27. See, for example, fol. 10r, “Imitation Jasper”; fol. 97v, “Mastic varnish dried in twelve hours”; and fol. 156r, “Quickly molding and reducing a relief to a hollow [mold]”. The last, on bread molding, includes the sentence, “But to make this process go faster, if you are in a hurry, make the first impression and the first hollow out of the inside portion of the bread loaf, prepared as you know, and which will cast neatly.” In the bread molding experiments we undertook, this phrase “prepared as you know” was an issue, since we did *not* know how to prepare bread according to the standards of the author. [↑](#footnote-ref-26)
28. In comparison with Cellini, who overtly took as his task the mission of writing a didactic treatise (as well as, of course, proclaiming his skill), the author of BnF. Ms. Fr. 640 was far less particular in his uses of proper names, and he seems to have been more casual in assuming that his reader already understood some aspects of the recipes that he presented. (Cellini’s didacticism is evident when he exclaims, on p. 19, “How careful you have to be with this cannot be told in words alone—you’ll have to learn that by experience!”) These two qualities may be linked to one another, if one reads Cellini through the lens of a teacher trying to impart specific information about particular circumstances, as opposed to the text of BnF. Ms. Fr. 640, which, from our research, can be characterized as providing instructions that do not rely on particular cases of their implementation. Although the manuscript at times does refer to specific places and situations, Cellini’s anecdotes read as concrete proof of the validity of his directions and his successes, particularly in references to the pope or cardinals. (On a slightly different period and geographic region, but nonetheless related, Francisco Alonso-Almeida writes, “the expression of efficacy and evaluation is gained by providing evidence of sources, such as mentioning authorities….” Alonso-Almeida, “Genre Conventions in English Recipes, 1600-1800,” in *Reading and Writing Recipe Books, 1550-1800*, ed. Michelle DiMeo and Sara Pennell (Manchester: Manchester University Press, 2013), 74. Those references have the double function, however, of situating those recipes in their particularities, whereas those in BnF. Ms. Fr. 640 may, on the whole, be described as less prescriptive. [↑](#footnote-ref-27)
29. See Deborah Harkness, “From the Jewel House to Salomon’s House: Hugh Plat, Francis Bacon, and the Social Foundations of the Scientific Revolution,” *The Jewel House: Elizabethan London and the Scientific Revolution* (New Haven: Yale University Press, 2007), 211-253. [↑](#footnote-ref-28)
30. According to his autobiography, Huygens occupied himself with medal making around 1628-1629, when he started with producing aftercasts of bronze and lead medals before moving on to making his own originals: “When I, finally, had enough of working with someone else’s work, I moved on to make my own originals” [*Toen ik tenslotte genoeg gekregen had van dat ezig zijn met het werk van een ander, was ik ertoe overgegaan zelf originelen te maken*]; cited from A.R.E. de Heer, e genoeg gekregen had van dat ezig zijn me, “Constantijn Huygens en de Penningkunst,” *Jaarboek voor munt- en penningkunde* 80 (1993): 271-288. [↑](#footnote-ref-29)
31. De Heer, “Constantijn Huygens en de Penningkunst,” 275-276*.* The third point seems particularly relevant, since we experienced for ourselves in our laboratory work how much our understanding and appreciation of medals has been affected by hands-on knowledge about the process of making. [↑](#footnote-ref-30)
32. This treatise was bound together by Huygens with other treatises (one of which is a note regarding the preparation of wax, treatment of silver and gold, and the making of medals by the goldsmith Adriaen Rottermont). This collection was titled “Musica, medica, phijsica, chijmica, odofera, perfumatoria, fusoria, coquinaria, philosophiaca, mathematica, artificialia. Constantini Hugenii, Ars formandorum et poliendorum votorum ad usum astronomicum” and is nowadays kept in the Royal Dutch Library (KB) in The Hague, inv.nr. KA XLVII. The manuscript concerning metalworking begins at fol. 220ff, see De Heer, “Constantijn Huygens en de Penningkunst,” 280, which also contains a transcription on pp. 282-288. The entire bound book would be interesting to compare to BnF. Ms. Fr. 640, since the versatility of subjects touched upon may relate to that similar aspect of the manuscript. Moreover, it would be interesting to investigate what Rottermont’s notes looked like exactly (found on fol. 185ff), in order to ask questions about whether he wrote them himself and what his focus, as a goldsmith, was in these recipes. The manuscript sent by Brosterhuijsen was apparently “drawn from the memories of a founder,” which could also make for an interesting comparison with BnF. Ms. Fr. 640. [↑](#footnote-ref-31)
33. Brosterhuijsen mentions that this treatise will be “communicated” to Huygens via Mr. Dedel “l’advocat” [*… en recompense je vous communiqueray, ou il vous sera communiqué de ma part par Mr Dedel, l’advocat …*]. It is not entirely clear at this point who the author of this treatise is, or, in other words, what the role of this Mr. (Willem) Dedel was. Perhaps he transcribed treatises in the possession of Brosterhuijsen. De Heer mentions two more such treatises, sent by Mr. Dedel in Huygens’s binding, one of them concerning life casting (fol. 227ff), the other for making plaster to cast with (fol. 228ff). See De Heer, “Constantijn Huygens en de Penningkunst,” 280-281. [↑](#footnote-ref-32)
34. De Heer transcribed and commented upon part of this letter, “Constantijn Huygens en de Penningkunst,”279-280. The entire letter can also be found as no. 420 in J. A. Worp, ed., *De Briefwisseling van Constantijn Huygens (1608-1687)*, 6 vols. (The Hague: Martinus Nijhoff, 1911-1917), vol. 1, 247. [↑](#footnote-ref-33)
35. For a discussion of the author of BnF. Ms. Fr. 640 as a practitioner, see also Smith and Beentjes, *Nature and Art, Making and Knowing*, 129-179. [↑](#footnote-ref-34)