

A Visual Survey of
Craft History

***Global Traditions &
Technological
Innovations
in Clay, Fiber,
Glass, Metal,
& Wood***

***Volume VI: Rebirth to Revolution
Renaissance, Baroque,
Rococo, and Neoclassical***

Carol Ventura

Global Traditions and Technological Innovations in Clay, Fiber, Glass, Metal, and Wood

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ISBN 978-0-9721253-4-5

Web page: <https://www.crafthistory.com>

Cover: *Reticello Glass Plate*, Venice, 1600-1700, Corning Museum of Glass, Figure 11.9. <https://glasscollection.cmog.org/objects/33498/plate?ctx=863dfde05bb4529d95dbe9c6a760b3ba6404ece5&idx=0>

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Preface

Crafts have played an important role in world history. Over millennia, the search for raw materials, merchandise, and markets has sparked military campaigns, alliances, conquests, and trade networks that built and destroyed empires. For example, the great expense of importing silk and porcelain from Asia enticed Europeans to find better trade routes, resulting in the “discovery” and colonization of the Americas and elsewhere.

We stand on the shoulders of the men and women who appropriated, adapted, and developed the products that changed lives and fortunes over the centuries. The Renaissance was financed in large part by the luxury fabrics woven in Florence. The Industrial Revolution had a tremendous impact on society since all furnishings, clothing, and accessories had been laboriously made by hand before mechanized production. Some types of manufacture are still time consuming and expensive, though, so sweatshops and child labor persist. Machines decreased hand labor, but thanks to increased factory production, many craftspeople may now choose to make utilitarian ware or one-of-a-kind non-functional pieces or both.

This visual overview will introduce and deepen your appreciation of clay, fiber, glass, metal, and wood crafts through time with a focus on who, what, where, when, and how. Hundreds of iconic and innovative examples from around the world demonstrate how craft media evolved in the Americas, Europe, Asia, Africa, and Oceania. References in the

bibliography, museum websites, and other internet resources lead to more in-depth knowledge about the cultures and media presented.

The book was divided into volumes because the photographs made the digital files too large to convert into an eBook. As a survey, much was excluded, but great effort was made to present a variety of the most innovative and influential masterpieces from around the world. Numerous sidebars in each chapter focus on craft techniques associated with the examples. The words in the glossary are highlighted with bold text the first time they appear in each volume.

The five media are not represented in every chapter nor in consistent order, but the progression is logical because many styles build on tradition or are inspired by another medium or technical innovation. Several figures represent more than one medium. For instance, ceramic figurines that depict clothed people illustrate both clothing and ceramics. Paintings and sculptures that depict clothing, jewelry, and/or furniture establish context and show examples when few survive.

How did I become interested in this topic? Along with her other talents, my mother sewed, knitted, crocheted, and made slip-cast pottery. In addition to his military career, my father tinkered with electronics, automobiles, plumbing, and carpentry. Between them, my parents could do just about anything. The Navy relocated our family every few years around the United States and Europe, and we traveled every summer to museums and factories to discover new things and see how they were made. My love of travel and manufacturing continues to this day. Most of the photographs in the sidebars were taken on my journeys to Africa, Europe, Asia, and the Americas. The best way to learn is to teach, but this project has taught me that to really understand relationships, influences, and the evolution of ideas, write a book!

I would like to acknowledge and thank Fulbright, Fulbright-Hays, the National Endowment for the Humanities, the Program for Cultural Cooperation between Spain's Ministry of Culture and United States Universities, Smithsonian National Museum of American Art, the US Department of State, and Tennessee Technological University for their support. I would especially like to thank the museums who shared their photographs, Linda Pastryk, Luke Anderson, Noreen Grisolano, and the

many other friends and craftspeople who made this free eBook possible.

Chapter 10: Renaissance (ca. 1400-1600)



Renaissance Europe in 1500 <https://mrcolwellhistory.weebly.com/map-of-europe.html>

Interest in ancient Greek and Roman art and culture reignited during the Renaissance (which means “rebirth”), thanks in part to the perfection of the printing press by Gutenberg in the mid-15th century that resulted in a flood of affordable books about Greece, Rome, and religion. Access to books also led to a growth of knowledge in other areas, especially science.

The Renaissance Period began in Florence, the center of the cloth trade and banking. A new Florentine merchant class began to commission art, the most famous being the powerful Medici family. They were not of noble birth, but great patrons of the arts, knowledgeable of the classics,

and friends of architects, painters, sculptors, philosophers, Humanist scholars, and poets.

Giovanni de' Medici (Italian, 1360-1429) established the family fortune in the early 15th century. His son, Cosimo (Italian, 1389-1464), founded the first public library since the ancient world. The most famous Medici was Cosimo's grandson, Lorenzo the Magnificent (Italian, 1449-1492), a talented poet who surrounded himself with gifted men in all fields, including the young Michelangelo. Lorenzo commissioned buildings, expanded the library, revitalized the art academy, supported craft research, and established the Platonic Academy of Philosophy.

Cipriano Piccolpasso (Italian, 1524-1579) documented Renaissance **pottery** production in his informative book, *Li Tre Libri dell'Arte del Vasaio (The Three Books of the Potter's Art)*. Many of the same techniques and tools he recorded are still used today, including clay and **glaze** preparation, **kick wheels** (Figures 10.1a and 11.27e), **molds**, hand tools, and **kiln firing** methods.

In the late 15th century Italian **potters** began to experiment with Spain's tin-based **earthenware** techniques. The result was maiolica, often decorated with geometric patterns, plants, animals, people, and/or text.

The key ingredients of the opaque white base glaze were potash (made from burning the lees from wine barrels), sand, lead, and tin oxide. It was ground and mixed with water. The clay vessel was **bisque** fired, then dipped in the white glaze. Colorful imagery was painted over the absorbent unfired white glaze, including cobalt blue, copper green, antimony yellow, orange from antimony and iron, and purple and brown from manganese. Sometimes a second clear lead-based glaze ("coperta") was applied. The ware was placed on spurs or stilts in saggars for the second firing to keep the glazed piece from sticking to the **saggar**.

Wood-fired brick updraft kilns (Figure 10.1b) were used to bisque fire the pieces to around 1832°F / 1000°C. Glaze firings were around 1742°F / 950°C. Even lower temperatures were used to fire **lusterware**.



Figure 10.1a Cipriano Piccolpasso (Italian, 1524-1579), kick wheels in *Li tre libri dell'arte del vasaio*, ca. 1557 (National Art Library).

<https://collections.vam.ac.uk/item/O1321808/li-tre-libri-dellarte-del-manuscript-piccolpasso-cipriano/>

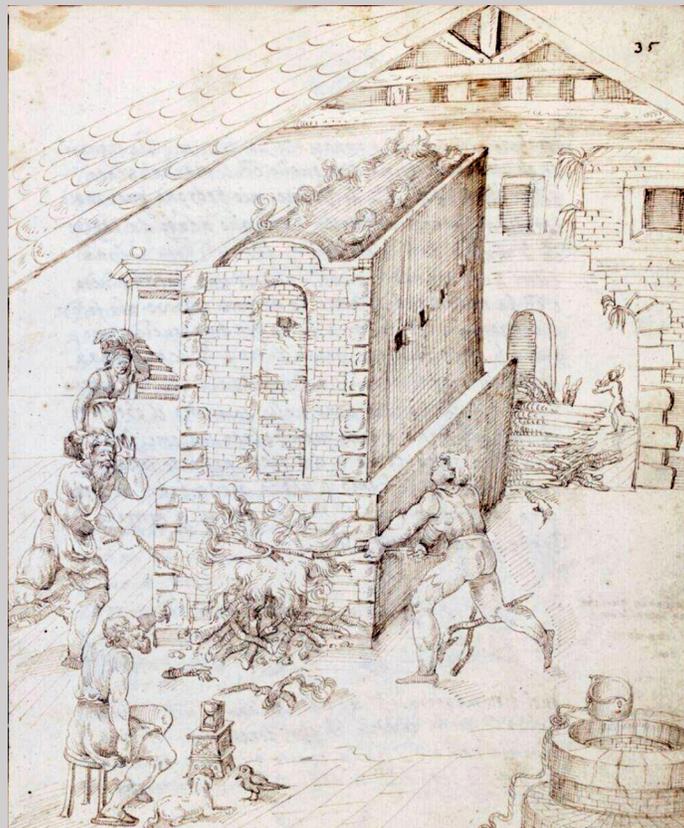


Figure 10.1b Cipriano Piccolpasso (Italian, 1524-1579), kiln in *Li tre libri dell'arte del vasaio*, ca. 1557 (Victoria and Albert Museum).

<https://collections.vam.ac.uk/item/O1321808/li-tre-libri-dellarte-del-manuscript-piccolpasso-cipriano/>

Luca Della Robbia (1399-1482) was an innovative Renaissance artist who sculpted stone, **bronze**, and clay. He is best known for his architectural glazed **terracotta**. Because they were relatively inexpensive, durable, and decorative, his colorful **maiolica** reliefs became extremely popular and developed into a flourishing family business, continued by Luca's nephew, Andrea, and Andrea's sons.

Della Robbia's humanized figures were often composed within a tondo, a circular frame popular with contemporary painters and sculptors. The green and white lilies and white arch that flank the *Madonna and Child* in Figure 10.2 suggest Easter and May, the month of the Virgin.



Figure 10.2a Luca Della Robbia (Italian, 1399-1482), *Madonna and Child*, terracotta with polychrome glaze, 72 in / 182.88 cm diameter, Renaissance, Orsanmichele, Florence, Italy, ca. 1455-1460.



Figure 10.2b TTU Art Tour class standing under Luca Della Robbia's *Madonna and Child* relief, Orsanmichele, Florence, Italy (photograph by Carol Ventura, 2010).

By 1500, the maiolica technique was well established in northern Italy with a variety of recognizable regional styles. Much of the imagery was inspired by contemporary painting and prints, but the *Plate* in Figure 10.3 shows a maiolica painter with his patrons. The dish was made by a potter and then painted by Jacopo Maestro at Cafaggiolo in a workshop on the grounds of a Medici villa near Florence. It is a good example of the “istoriato” style that developed in Italy depicting people in a prominent role.



Figure 10.3 Jacopo Maestro (painter), *Plate*, tin-glazed earthenware maiolica, 9 3/8 in / 23.9 cm diameter, Cafaggiolo, Italy, ca. 1510 (Victoria and Albert Museum, 1717-1855).

<https://collections.vam.ac.uk/item/O70735/plate-jacopo-maestro/>

Italian lusterware was first made in Deruta. The shape and glazing techniques were learned from Muslim potters, many of whom fled Spain during the Christian conquest (1492-1610). As with the Muslim prototypes (Figure 8.4), the top would have been sealed with a piece of parchment or leather and tied below the lip with a cord. Fingers could easily grasp the top of the jar, which would be placed neck to neck on apothecary shelves.

The *Pharmacy Jar* in Figure 10.4 is appropriately decorated with a young man grinding drugs in a mortar with a pestle. Renaissance pharmacies were run by monastic orders and prominent families. The badge of the order or the arms of the family were depicted on many drug jars. DIA CHASSIA (electuary of cassia) in the center of the badge refers to the contents.



Figure 10.4 *Pharmacy Jar*, tin-glazed earthenware with luster, 8.8 x 5.1 in / 22.4 x 13 cm, Deruta, Italy, ca. 1507 (Victoria and Albert Museum, Bequeathed by George Salting, Esq.).

<https://collections.vam.ac.uk/item/O119417/drug-jar-unknown/>

The amazing **ceramic** vessel in Figure 10.5 was probably inspired by the style of contemporary metalwork. The fine white earthenware clay was sculpted, molded, and modeled, then covered with a clear lead-based glaze. Red, yellow and brown clay inlays were used to create the intricate interlaced patterns. Molded mask, frog, and swag reliefs were applied to add yet another dimension to this incredible tour de force.



Figure 10.5 *Ewer*, molded and modeled lead glazed white earthenware with inlaid **slip** decoration, 14 x 5 3/8 in / 35.6 x 13.7 cm, Saint-Porchaire, France, ca. 1540-1567 (Cleveland Museum of Art, CC0).

<https://www.clevelandart.org/art/1953.363>

Stoneware, **porcelain**, and **silk** production were closely guarded trade secrets in China. Stoneware was not made in Europe until the Renaissance, centuries after the Chinese developed it. After much

experimentation, German potters successfully formulated stoneware clay and built a horizontal wood fired kiln that could reach the high temperatures required.

The oak-leaf, acorn, and portrait reliefs on the jug in Figure 10.6 were made by pressing clay into **sprig molds**, then removing and attaching them with slip. The bearded wild man motif was very popular in Northern Europe. The buff-colored clay was covered with an iron-bearing slip to darken the surface. Salt thrown into the kiln towards the end of the firing vaporized and combined with the silica on the surface of the high-fired clay to produce the clear, glossy glaze. Germans developed this **salt glazing** technique.



Figure 10.6 *Jug*, salt glazed stoneware with applied molded motifs, in 3 3/8 x 5 9/16 in / 8.4 x 14.2 cm, Frechen, Germany, ca. 1520-1545 (© The Trustees of the British Museum, CC BY-NC-SA 4.0 license).

https://www.britishmuseum.org/collection/object/H_1887-0211-10

Bernard Palissy (1510-1590) was a French naturalist and artist who **cast** actual specimens, then pressed clay into the molds to create the flora and fauna on the surface of his work. The oval dish in Figure 10.7 includes plants, fish, a frog, a twisting snake, a lizard, crayfish, a moth, and shells. The lead-based glazes that Palissy developed bring everything to life. His style inspired countless potters to create what is known as “Palissy Ware.”



Figure 10.7 Bernard Palissy (French, 1510-1590) or close follower, *Platter*, molded and modeled lead-based glazed earthenware, 19 5/8 x 15 1/4 x 2 7/8 in / 50 x 38.8 x 7.2 cm, Paris, ca. 1580-1600 (Victoria and Albert Museum, bought from the Soulages Collection).

<https://collections.vam.ac.uk/item/O132609/dish-palissy-bernard/>

Venice was built on 118 islands. Its large fleets protected the city state from attack and established it as an important trade hub with the East. The Venetian glassmakers' guild formed in the early 1200s. In 1291, it moved to the Venetian Island of Murano to keep the capital safe from the fiery **furnaces** and to guard trade secrets about furnace construction, **glass** and **enamel** formulas, and the manufacture and handling of tools. Glassmakers were held in high esteem, but they faced the death penalty if they moved away from Murano. Some craftsmen eventually escaped and opened glass workshops elsewhere.

Glass imported by merchants and brought back by Crusaders exposed Venetians to Middle Eastern glass and its manufacture. So, it is not surprising that Figures 10.8a and 10.8b that illustrate 16-17th century Venetian glass furnaces are similar to the Islamic furnace in Figure 8.2b. In Figure 10.8b, the wood-fueled fire (A) is on the bottom level, molten glass (B) is held in ceramic vessels in the middle chamber, and the upper chamber is the annealing oven (D). Also shown are **blowpipes** (A), dip molds (E), and jacks (D). The broken glass on the bottom left will probably be remelted. A merchant carries away a crate of finished glassware strapped to his back.



Figure 10.8a Venetian glass furnace, in *De re metallica* by Georg Agricola (German, 1494-1555) page 484 (The Corning Museum of Glass, Rakow Research Library).

https://cmog.primo.exlibrisgroup.com/view/UniversalViewer/01CORNING_INST/1257906180004126?c=&m=&s=&cv=483&c=&xywh=-879,-165,3123,2297&r=0



Figure 10.8b Working Venetian glass furnace, in *De re metallica* by Georg Agricola (German, 1494-1555) page 486 (The Corning Museum of Glass).

<https://renvenetian.cmog.org/figure/fig-39>

Trace minerals in silica made it difficult to produce clear glass, but early Renaissance Muranese glassmakers were able to develop clear glass “cristallo” (Figure 10.9) that looked like rock crystal. They also produced dark blue, amethyst, red brown, emerald green, and white “lattimo” milk glass (Figure 10.10). Classical themes were painted on the surface of both colored glass and “cristallo” after they cooled, then the pieces were heated to adhere the enamel.

The clear “cristallo” *Goblet* in Figure 10.9 is an excellent example of the refined Venetian style. The Roman inspired putti, garlands, and grotesques were also popular in contemporary painting and interior design.



Figure 10.9 *Goblet* with "Grotesque" Decoration, clear “cristallo” glass with enamel and gilding, Venice, Italy, 9 ¼ x 5 5/8 in / 23.5 x 14.4 cm, ca.

1500-1525 (Corning Museum of Glass).

<https://glasscollection.cmog.org/objects/60326>

The bowl in Figure 10.10, that was inspired by contemporary painting, metalwork, and porcelain, is an example of “lattimo” glass (from Italian “latte” for milk). The outside is decorated with a gilded and enameled fish scale pattern. The inside features the profile of a young man with a pink face and gold hair wearing a brown and white top, under a cloudy blue sky. A banner on his left is inscribed, “EG/O VOBI/S SERV/O SON” (I Serve the Sun). Behind him are turquoise blue hills and fine black grass. The central image is framed with concentric circles of light green enamel dots on **gold**, pairs of light blue dots with red and pairs of light green dots with light blue motifs.



Figure 10.10 *Rothschild Bowl*, gilded and enameled “lattimo” glass bowl, 2 3/8 x 5 1/2 in / 5.9 x 14.1 cm, Venice, 1500-1510 (Corning Museum of Glass, Purchased with funds from the Museum Endowment Fund).

<https://glasscollection.cmog.org/objects/12829/the-rothschild-bowl?ctx=5aefc0350e8d3504ffe7e2c3f80fb3419303febf&idx=0>

Venetians also contributed to scientific discoveries through producing optical glass for eyeglasses, microscopes, and telescopes, as well as glassware for laboratories. Mirrors were made of polished metal before

Venetians backed flat glass with metal foil, which was quite an improvement. Venetian glass beads were used to make rosaries and jewelry, and these were popular trade items in Africa and the Americas.

Wealthy Italian families were great patrons of the arts. Their support, combined with new sources of gemstones, precious metals, and changing fashions offered goldsmiths many opportunities. Italian painters and sculptors often trained as goldsmiths, including Botticelli and Donatello. The best jewelers were talented artists, crafting wearable miniature sculptures and paintings. The *Goldsmith's Workshop* in Figure 10.11 shows craftsmen making and selling a variety of precious wares.



Figure 10.11 Alessandro Fei (Italian, ca. 1538-1562), *Goldsmith's Workshop*, oil on panel (Studiolo of Francesco I, Palazzo Vecchio, Florence,

Italy).

Both men and women wore rings, pendants, necklaces, bracelets, earrings, and jewel-covered clothing or hats. Several rings with gemstones or **cameos** in intricately shaped and **enameled** settings were often worn on the same finger. Some rings included a compass, sundial, miniature mechanical timepiece, or a secret compartment.

Metalwork was commissioned, but standard rings and **brooches** were also available for purchase, as shown in the well-stocked jeweler's shop in Figure 10.12. Two wealthy clients stand behind a jeweler weighing a gold ring. Behind him are loose gemstones, pearls, coral, amber, finished rings, pendants, brooches, and vessels.



Figure 10.12 Petrus Christus (Netherlandish 1410-1475), *A Goldsmith in his Shop*, oil on oak panel, 39 3/8 x 33 3/4 in / 100.1 x 85.8 cm, 1449 (The Metropolitan Museum of Art, Robert Lehman Collection, 1975).

<https://www.metmuseum.org/art/collection/search/459052>

Ornaments were made to decorate men's and women's hair, clothing, and accessories in Europe and Asia. Double-sided pendants could be worn on chains or attached to a woman's bodice or sleeve. The exquisite gold pendant in Figure 10.13 features a cut-out profile of Queen Elizabeth I backed by a Phoenix in flames under a royal monogram. The Queen is shown wearing jewels in her curly hair and pearl-ornamented clothing. A ruffled lace cuff, pendant, and necklaces complete the outfit. Red and white Tudor roses, green leaves, and intertwined stalks form a wreath around her that symbolize her lineage and the unity that her dynasty brought to the realm. The back of the pendant (Figure 10.13b) features a phoenix rising from flames and under her royal monogram



Figure 10.13a *Phoenix Jewel with Queen Elizabeth I*, gold, enamel, **engraved**, and chased, 2 3/8 (with loop) x 1 3/4 x 3/16 in / 6 cm (with loop) x 4.4 x .4 cm, England, ca. 1570-1580 (© The Trustees of the British Museum,

CC BY-NC-SA 4.0).

https://www.britishmuseum.org/collection/object/H_SLMisc-1778



Figure 10.13b *Phoenix Jewel with Queen Elizabeth I back*, gold, enamel, engraved, and chased, 2 3/8 (with loop) x 1 3/4 x 3/16 in / 6 cm (with loop) x 4.4 x .4 cm, England, ca. 1570-1580 (© The Trustees of the British Museum, CC BY-NC-SA 4.0).

https://www.britishmuseum.org/collection/object/H_SLMisc-1778

In 1530, King Francis I (French, 1494-1547) designated eight fine pieces as heirlooms of the French Kings—establishing the first “Crown Jewels.” Other European monarchs followed suit, establishing royal treasuries. The stones were protected, but not their settings, so many Crown Jewels were upcycled as styles changed.

The crown in Figure 10.14 was commissioned by Emperor Rudolf II for everyday use but later became the Imperial Crown of the Habsburg family and the Austrian Empire. It consists of a circlet with fleur-de-lis mounts, a high arch inspired by the Imperial Crown of the Holy Roman Empire (Figure 9.13), and a bishop's miter that symbolizes his right to rule as God's representative on earth.

The link below the crown's caption includes a video with views of the gold reliefs that show Emperor Rudolf II's coronations as the Holy Roman Emperor, as king of Bohemia in Prague, as King of Hungary, and as victor over the Turks.

A polished blue-green emerald tops the crown. Additional embellishments include enamel, diamonds, zircons, spinels, sapphires, and pearls. Pearls were one of the most costly and desirable of the gems and easily faked. Making false pearls in Venice was punishable by cutting off the right hand and a ten-year exile.



Figure 10.14 Jan Vermeyen (Dutch, 1559-1608), *Crown of Rudolf II*, enamel, gold, and gemstones, 11 1/8 x 11 in / 28.3 x 27.8 cm, Prague, 1602

(© KHM-Museumsverband, Hofburg Palace, Vienna).

<https://www.khm.at/en/objectdb/detail/100360/?pid=2333&back=1565&offset=0&lv=listpackages-5580> (includes video with more views of the crown)

Before they were appreciated as gemstones, diamonds were only used to work with other gems; diamond-tipped tools and pulverized diamonds were employed for drilling, engraving, and polishing.

Diamond cutting transforms a rough stone into a faceted gem. The process includes cleaving (splitting), bruting (rubbing two diamonds together for shaping), cutting, and polishing. The first guild of diamond cutters and polishers formed in Nuremberg, Germany, in 1375. They developed the Point Cut (Figure 10.15 left), which followed the natural shape of the mined octahedral diamond crystal. This was followed by the Table Cut (Figure 10.15 right) that is also used for cutting rubies, emeralds, and sapphires. Table-cut stones were initially sunk into closed-back settings that gave them a dark, sparkling appearance.

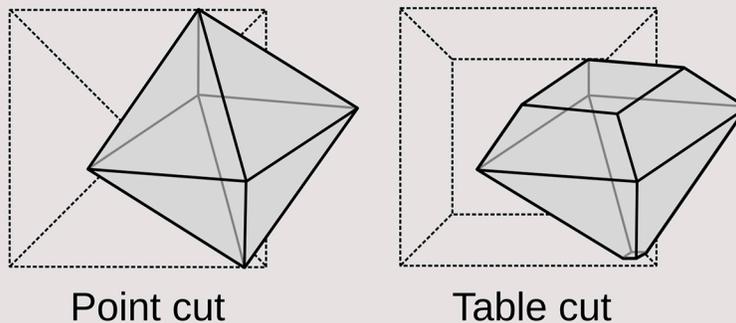


Figure 10.15 Point Cut and Table Cut gems (illustration by Popletibus and Alhadis, CC BY-SA 4.0).

https://commons.wikimedia.org/wiki/File:Diamond_cut_history.svg

In the 16th century, Antwerp and Paris replaced Bruges as the principal European centers for diamond cutting and polishing (Figure 10.15b). After the Fall of Antwerp in 1585, many craftsmen fled to Amsterdam to establish diamond-cutting there.

Glass, foils, and slivers of genuine gemstones were used to imitate colored stones. Imitation diamonds were cut from rock crystal or glass, and

eventually colorless zircon.



Figure 10.15b Diamond polisher (photograph by Andere Andre / Public domain Wiki Commons, 2002).

https://commons.wikimedia.org/wiki/File:Diamond_Polisher.jpg

The French word “maille” means “mesh,” an accurate description of the flexible fabric formed with interlocking metal (usually **iron**) rings (Figure 10.16a). To make mail, wire was wrapped around a rod, then cut on one side to produce rings that could be opened and closed with pliers. The rings were interlinked to form the garment (Figure 10.16b). Mail was worn from the Medieval period through the Renaissance. It was only effective against light weapons, though, so it was usually worn under plate armor.



Figure 10.16a *Mail Shirt*, 33 1/8 x 52 in / 84 x 132 cm, 21 3/4 lb / 9869 gr,
Syrian or Turkish, early 16th century (The Metropolitan Museum of Art,
Bequest of Frederick Townsend Martin, 1914, CC0)

<https://www.metmuseum.org/art/collection/search/22415>



Figure 10.16b Pinching metal rings together with pliers to make mail from Das Hausbuch der Mendelschen Zwolfbruderstiftung by Nurnberg ca. 1484 (Mendel I, Amb. 317.2, Folio 103 recto). https://online-service.nuernberg.de/viewer/image/5d64f831-7a9d-47b4-9a01-d6a28f29ad99/210/LOG_0210/

The wire to make the mail was made by drawing it through the diminishing sized holes of an iron drawplate (Figure 10.16c) with draw tongs (Figures 10.16d) or with a wire puller (Figure 10.16e). Each drawplate produced a wire of a specific shape. The entire length of wire passed through a large hole, then through a slightly smaller one, again and again, until obtaining the desired size. When the wire became work-hardened after a few pulls, it was coiled and **annealed** to make it flexible again.



Figure 10.16c Iron drawplates with shaped diminishing sized holes used with the wire puller in Figure 10.16e in the Museo Regina de Joyería, Córdoba, Spain (photographs by Carol Ventura, 2005).



Figure 10.16d Drawing wire through an iron drawplate with draw tongs from Das Hausbuch der Mendelschen Zwolfbruderstiftung by Nurnberg ca. 1425. (Mendel I, Amb. 317.2, Folio 40 verso). https://online-service.nuernberg.de/viewer/image/5d64f831-7a9d-47b4-9a01-d6a28f29ad99/85/LOG_0085/



Figure 10.16e Wire puller used with the iron drawplates in Figure 10.16c in the Museo Regina de Joyería, Córdoba, Spain (photographs by Carol Ventura, 2005).

In 1480, Leonardo da Vinci (1452-1519) sketched a rolling mill that flattened metal by passing it through cylindrical rollers (Figure 10.16f). His invention was upscaled in the 1600s to manufacture sheet metal in England.



Figure 10.16f Leonardo DaVinci (Italian, 1452-1519), Rolling Mill sketches, 1480.

Jewelers still use adjustable rolling mills today to produce various sized wires (Figure 10.16g) and sheet metal (Figure 10.16h).

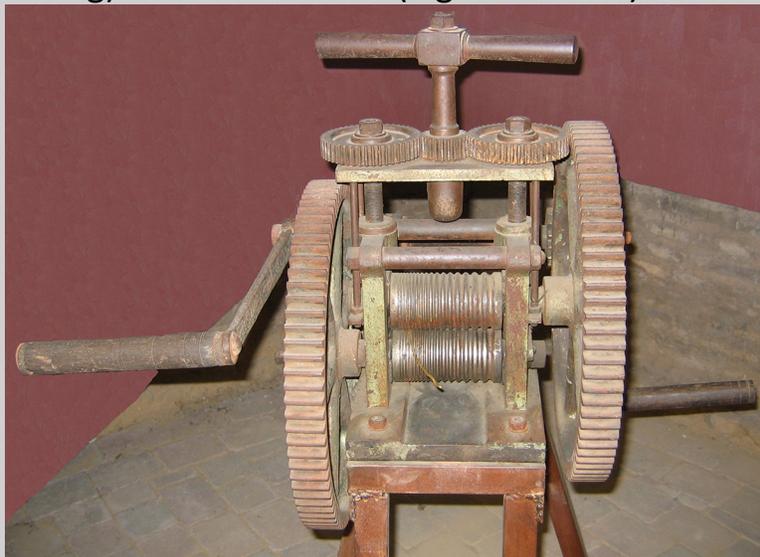


Figure 10.16g Adjustable wire rolling mill in the Museo Regina de Joyería, Córdoba, Spain (photographs by Carol Ventura, 2005).

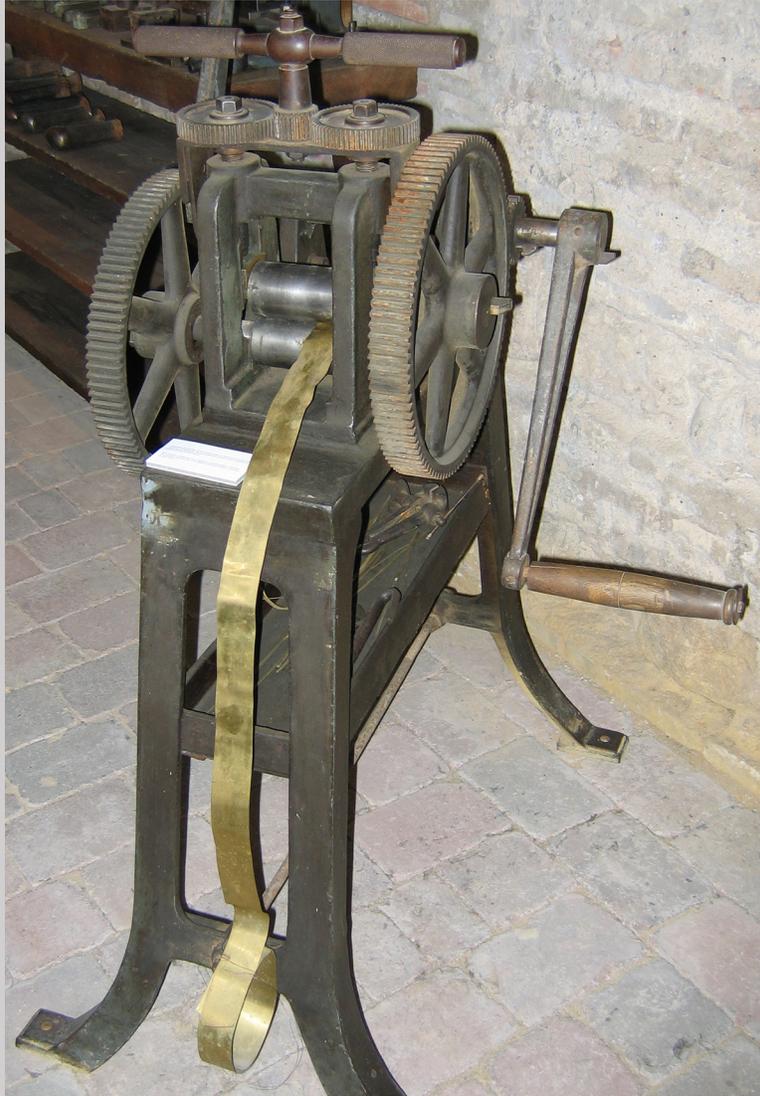


Figure 10.16h The top handle adjusts the height of the roller on this sheet metal rolling mill in the Museo Regina de Joyería, Córdoba, Spain (photographs by Carol Ventura, 2005).

Sheets of 23k gold flattened on a rolling mill are interleaved with paper and hit repeatedly with a 5-pound hammer to make gold leaf. Twenty-five sheets are placed between paper and cut to size to produce a “gold book.”

<https://www.carolventura.com/Silva.htm>



Figure 10.16i Pounding a packet to make gold leaf, placing thin sheets into a book, and trimming the edges at the Ricardo do Espirito Santo Silva Foundation, Lisbon, Portugal (photographs by Carol Ventura, 2005).

Blacksmiths forged armor on an **anvil** (Figure 10.17a). After shaping, the metal was smoothed and polished with an oil and abrasive mixture to remove the rough edges and give it a reflective surface.

Armor was embellished with several techniques, including **repoussé** (Figure 1.9b), **chasing** (Figure 1.9d), gilding, engraving (Figure 7.61), **damascene**, **burnishing**, and **etching**.

Etching developed in the early 1500s. With this technique, the surface is coated with an acid-**resist**, then parts of the resist are removed to allow acid to eat into the metal. The remaining resist is removed after the acid bath, revealing a decorative relief.



Figure 10.17a *Forging Armor*, Das Hausbuch der Mendelschen Zwolfbruderstiftung by Nurnberg ca. 1535 (Mendel I, Amb. 317.2, Folio 155 recto). https://online-service.nuernberg.de/viewer/image/5d64f831-7a9d-47b4-9a01-d6a28f29ad99/314/LOG_0314/



Figure 10.17b *Polishing Armor*, Das Hausbuch der Mendelschen Zwolfbruderstiftung by Nurnberg ca. 1483 (Mendel I, Amb. 317.2, Folio 101 verso). <https://online-service.nuernberg.de/viewer/image/5d64f831-7a9d-47b4-9a01-d6a28f29ad99/207/#topDocAnchor>

Armor was worn for status and protection during battles, joust competitions, and on ceremonial occasions. The armor of riders and their horses often matched.

George Clifford (English, 1558-1605) was one of Queen Elizabeth I's favorites. She commissioned her royal armorers to craft him (Figure 10.18) and his horse a matching set that could be used in the battlefield and during tournaments. The **steel** is etched and gilded with the Tudor Rose, the French fleur-de-lis (then part of the English arms), and two letter E's back-to-back.



Figure 10.18a Jacob Halder, *Armor Garniture of George Clifford* (1558-1605), Third Earl of Cumberland, etched and gilded steel, leather, **textile**, 69 1/2 in / 176.5 cm, 60 lb / 27.2 kg, Greenwich, UK, 1586 (The Metropolitan Museum of Art, Munsey Fund, 1932, CC0).

<https://www.metmuseum.org/art/collection/search/23939>



Figure 10.18a Jacob Halder, *Armor Garniture of George Clifford Hand* (1558-1605), Third Earl of Cumberland, etched and gilded steel, leather, textile, Greenwich, UK, 1586 (The Metropolitan Museum of Art, Munsey Fund, 1932, CC0).

<https://www.metmuseum.org/art/collection/search/23939>

Blackened repoussé (Figure 1.9b) foliage contrasts to the gilded and damascened ground of the helmet in Figure 10.19. Creatures, horns of plenty, scrolls, and a winged caryatid with a woman's body supports a dragon with gold scales and spread wings. The green silk lining is **embroidered** with gold thread.



Figure 10.19a *Helmet*, engraved, gilded, repoussé, chased, burnished, damascened iron, gold, **silver, fabric**, 50 x 25 x 42.5 cm, Bourguignotte, France, 1590-1600 (Musée de l'Armée Invalides, Paris).

<https://basedescollections.musee-armee.fr/ark:/66008/20180174?posInSet=127&queryId=036d077c-0939-4f4b-a554-da0a852e369f>



Figure 10.19b *Helmet* detail, engraved, gilded, repoussé, chased, burnished, damascened iron, gold, silver, fabric, Bourguignotte, France, 1590-1600 (Musée de l'Armée Invalides, Paris).

<https://basedescollections.musee-armee.fr/ark:/66008/20180174?posInSet=127&queryId=036d077c-0939-4f4b-a554-da0a852e369f>

Some of the best surviving built-in furniture is found in Western European monasteries and church choirs dating to between 1150 and 1550. The choir stalls often include a misericord (from the Spanish word for “mercy”), a sculpted ledge placed under a folding seat (Figure 10.20a). When the seat is folded up, the misericord helps support a standing person. Thousands of “mercy seats” can still be found in Western Europe. Some of the figures **carved** into the misericords were derived

from fables and proverbs, while others depict religious scenes, cardinal sins, daily life, occupations, and animals.

The talented craftsman, Rodrigo Alemán, designed and carved the magnificent choir of the Cathedral in Toledo, Spain. The fifty-four relief panels (Figures 10.20b) over the back of each seat depict scenes from the Reconquest of Granada, the contemporary event that ended Islamic rule in Spain. Most panels depict the surrender of a city or fortress framed by columns that curve to form a double arch with carvings of a person or creature in the upper corners and imaginative beasts and men below.



Figure 10.20a Rodrigo Alemán (Spanish, 1470-1542), *Cathedral Choir Stall Seat with Misericord*, Toledo, Spain, 1495-1498 (photograph by Antoine Taveneaux - Own work, CC BY-SA 3.0)

<https://commons.wikimedia.org/w/index.php?curid=19601032>



Figure 10.20b Rodrigo Alemán (Spanish, 1470-1542), *Toledo Cathedral Choir Stalls*, carved walnut panels and seats, Spain, 1495-1498 (photograph by Antoine Taveneaux, CC BY-SA 3.0).

https://commons.wikimedia.org/wiki/File:Choir_stall_of_Cathedral_of_Toledo_05.jpg

To make a carved wooden panel, a log is split into panels along the grain, planed smooth, then carved with a wooden mallet and chisels following a pattern (Figure 10.21a).



Figure 10.21a A paper pattern glued to the wood guides a carver in Sefrou, Morocco (photograph by Carol Ventura, 2012).



Figure 10.21b A flat, pointed, or round tipped chisel is hit with a wooden mallet to remove the negative space around the motifs in Sefrou, Morocco (photograph by Carol Ventura, 2012).

Pieces of colorful semiprecious stones were cut (Figure 10.22a) with abrasive powder and a bow saw (Figure 10.22b) to make stone inlay. The bow saw was invented around 1580. The shapes were refined with abrasive power and a grinder (Figure 10.22c), fit together like a puzzle and then set onto another piece of stone to form “pietre dure” / hard stone imagery (Figures 10.22d and 10.22e) in Italy.



Figure 10.22a Stone inlay process, Florence, Italy (photograph by Carol Ventura, 2010).



Figure 10.22b Bow saw with iron wire used to cut stone clamped to workbench, Opificio Pietre Dure Museum, Florence, Italy, 19th century (photograph by Carol Ventura, 2010).



Figure 10.22c Foot-powered grinding wheel to cut into or refine the shape of a stone in the Opificio Pietre Dure Museum, Florence, Italy (photograph by Carol Ventura, 2010).



Figure 10.22d *Farnese Table* designed by Jacopo [Giacomo] Barozzi da Vignola (Italian, 1507-1573), piers by Guglielmo della Porta (Italian, ca. 1500-1570), and “pietre dure” top by Giovanni Mynardo (Jean Ménard) (French, 1525-1582), colored marble, semiprecious stones, Egyptian alabaster, 37 ½ in / 95.3 cm high, Rome, Italy, ca. 1565-1573 (The Metropolitan Museum of Art, Harris Brisbane Dick Fund, 1958, CC0).

<https://www.metmuseum.org/art/collection/search/202115>



Figure 10.22e Detail of “pietre dure” top of the *Farnese Table* by Giovanni Mynardo (Jean Ménard) (French, 1525-1582), colored marble, semiprecious stones, Egyptian alabaster, Rome, Italy, ca. 1565-1573 (The Metropolitan Museum of Art, Harris Brisbane Dick Fund, 1958, CC0).

<https://www.metmuseum.org/art/collection/search/202115>

Intarsia is an **inlay** technique consisting of fitting together pieces of contrasting colors of wood. **Marquetry** is a variation done with thin pieces of **veneer**. Some wood species lighten over time while others darken with age. Wood is naturally available in many shades of brown, but obtaining colors is a challenge. During the Renaissance, green was obtained from wood infected with a special fungus and bog oak was used for black. Today wood is **dyed** a rainbow of colors. Veneer can be gradually shaded from light to dark (to create the illusion of depth in the final design) by partially submerging it into fine, hot sand, which lightly singes and darkens the wood.

Medieval and Renaissance craftspeople used a shoulder knife to cut wood for intarsia. The long handle resting securely against the shoulder enabled a precise cut. The artist in Figure 10.24a carves the letters: HOC EGO ANTONIUS BARILIS OPVS COELO - NON PENICELLO EXCVSSI. AN.DN. MCCCCCII. / This work have I Antonio Barili made with the carving knife, not with a brush. In the year 1502.



Figure 10.23a Antonio Barili (Italian, 1453-1516), *Self Portrait*, intarsia of pear, beech, walnut, maple and palisander, 1502 (destroyed in World War II).

https://commons.wikimedia.org/wiki/File:Antonio_Barili_Intarsia_Self_Portrait.jpg

Tools that enable more precise cuts developed in the 19th century, including the mechanical scroll saw (Figure 10.23b) with a reciprocating saw blade that cuts through a packet of veneers of contrasting colors. The cut components are interchanged and assembled to create light-on-dark and dark-on-light veneer panels (Figure 10.23c).



Figure 10.23b A scroll saw with a circular bed stands behind a disassembled packet of components at the Ricardo do Espírito Santo Silva Foundation, Lisbon, Portugal (photographs by Carol Ventura, 2005).



Figure 10.23c A disassembled packet of components being reassembled to prepare marquetry panels at the Ricardo do Espírito Santo Silva Foundation, Lisbon, Portugal (photographs by Carol Ventura, 2005).



Figure 10.23d Veneer being glued to the surface of a cabinet at the Ricardo do Espirito Santo Silva Foundation, Lisbon, Portugal (photograph by Carol Ventura, 2005).



Figure 10.23e Cabinet decorated with marquetry at the Ricardo do Espirito Santo Silva Foundation, Lisbon, Portugal (photograph by Carol Ventura, 2005).

Federico da Montefeltro (Italian, 1422-1482) was the powerful Duke of Urbino and a great patron of the arts. Mastery of intarsia and the Renaissance innovation of linear perspective transformed the walls of his study into amazing optical illusions (Figures 10.24a and 10.24b). Although the detail in Figure 10.24c is a flat surface, it convincingly depicts an open cabinet with a book, dividers, a stringed cittern instrument, hourglass, plumb bob, and set square.



Figure 10.24a Francesco di Giorgio Martini (Italian, 1439-1501) designer, made in the workshop of Giuliano da Maiano (Italian, 1432-1490) and Benedetto da Maiano (Italian, 1442-1497), *Studiolo*, intarsia of walnut, beech, rosewood, oak and fruitwoods in walnut base, 16 x 17 ft / 485 x 518 m, Ducal Palace in Gubbio ca. 1478-1482 (The Metropolitan Museum of Art, Rogers Fund, 1939, CC0).

<https://www.metmuseum.org/art/collection/search/198556>



Figure 10.24b Francesco di Giorgio Martini (Italian, 1439-1501) designer, made in the workshop of Giuliano da Maiano (Italian, 1432-1490) and Benedetto da Maiano (Italian, 1442-1497), *Studiolo*, intarsia of walnut, beech, rosewood, oak and fruitwoods in walnut base, 16 x 17 ft / 485 x 518 m, Ducal Palace in Gubbio ca. 1478-1482 (The Metropolitan Museum of Art, Rogers Fund, 1939, CC0).

<https://www.metmuseum.org/art/collection/search/198556>



Figure 10.24c Francesco di Giorgio Martini (Italian, 1439-1501) designer, made in the workshop of Giuliano da Maiano (Italian, 1432-1490) and Benedetto da Maiano (Italian, 1442-1497), *Studiolo*, intarsia of walnut, beech, rosewood, oak and fruitwoods in walnut base, Ducal Palace in Gubbio ca. 1478-1482 (The Metropolitan Museum of Art, Rogers Fund, 1939, CC0). <https://www.metmuseum.org/art/collection/search/198556>

The ***Cassapanca*** in Figure 10.25 combines storage with seating. In fact, *cassapanca* in Italian means "chest-bench." The hinged lid functions as the seat and like the earlier Roman couch (Figure 4.24b) that inspired it, cushions would have made this piece of luxury furniture quite comfortable.



Figure 10.25 *Cassapanca*, carved walnut, 61 x 86 ½ x 24 ½ in / 154.9 x 219.7 x 62.2 cm, Florence, Italy, ca. 1550-1560 (Metropolitan Museum of Art, Purchase, funds from various donors, 1958, CC0).

<https://www.metmuseum.org/art/collection/search/202107>

The **Cassone** in Figure 10.26 was inspired by Roman sarcophagi (carved stone coffins) but served a different purpose. Cassone means “chest” and “accasare” means “marry” in Italian, so the hope chest was appropriately named. The groom would send one or more pairs of cassoni to the bride's house to be filled with her dowry. The heavy chests would then join the formal procession to the bridegroom's residence.

This cassone features the family coat of arms in the center of a symmetrical arrangement of caryatids, acanthus leaves, satyrs, stallions, and dolphins inspired by the classical past and the work of contemporary artists like Michelangelo. The decorative frieze of acanthus **volute**s below the lid serves as handles.



Figure 10.26a *Cassone* (one of a pair), carved and partially gilded walnut, 34 x 71 5/8 x 26 1/2 in / 86.4 x 181.9 x 67.3 cm, Rome, Italy, ca. 1550-1560 (The Metropolitan Museum of Art, Gift of Stanley Mortimer, 1954, CC0).
<https://www.metmuseum.org/art/collection/search/201802>



Figure 10.26b *Cassone* detail, carved and partially gilded walnut, 34 x 71 5/8 x 26 1/2 in / 86.4 x 181.9 x 67.3 cm, Rome, Italy, ca. 1550-1560 (The Metropolitan Museum of Art, Gift of Stanley Mortimer, 1954, CC0).
<https://www.metmuseum.org/art/collection/search/201802>

Italy was a leader in **wool** and silk textile production during the Renaissance. In fact, it was wealth earned from fabric manufacture that helped establish the Renaissance in Florence. Although very few examples have survived, some of the exquisite fabrics are depicted in paintings. The Florentine woman in Figure 10.27 is wearing a figured silk black and red dress with a yellow and white **brocade** overgarment. A white chemise is over her chest and pulled through the sleeve slits. The gold pendant with pearls, diamonds, and rubies is similar to the brooch on the shelf.

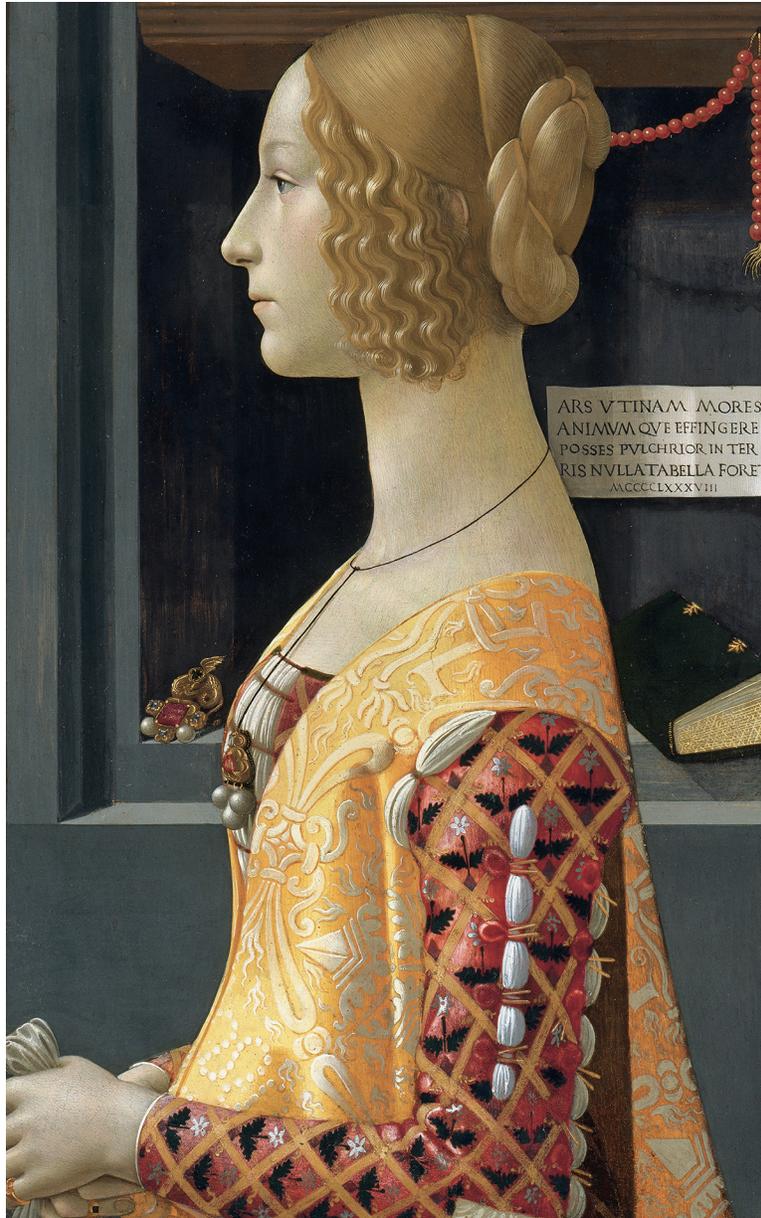


Figure 10.27 Domenico Ghirlandaio (Italian, 1448-1494), *Portrait of Giovanna degli Albizzi Tornabuoni*, mixed media on panel, 30 3/8 x 19 1/4 in / 77 x 49 cm, ca. 1488 (Museo Nacional Thyssen-Bornemisza, Madrid).

<https://www.museothyssen.org/en/collection/artists/ghirlandaio-domenico/portrait-giovanna-degli-albizzi-tornabuoni>

The portrait of *Eleanor of Toledo and Her Son* in Figure 10.28 depicts the wife of Cosimo I de' Medici. She is wearing a dress with an embellished pomegranate motif made of black cut patterned **velvet** with gold and silver brocaded bouclé (loops) on a silver ground. It is worn over a linen chemise

trimmed with narrow bands of blackwork embroidery. Her gold belt is decorated with jewels, beads, and a pearl tassel. A gold pendant hangs from a short pearl necklace that compliments the longer pearl necklace resting on her chest. More pearls dangle from her ears and decorate the gold partlet on her shoulders and the snood elegantly keeping her hair in place.



Figure 10.28 Agnolo Bronzino (Italian, 1503-1572), *Eleanor of Toledo with Her Son, Giovanni de' Medici*, oil on wood, 45 $\frac{1}{4}$ x 37 $\frac{3}{4}$ in / 115 x 96 cm, 1545 (Galleria degli Uffizi). <https://www.uffizi.it/en/artworks/eleonora-di-toledo>

The Poldi Pezzoli Museum in Milan includes a similar fabric: crimson cut velvet with silver and gold bouclé and pomegranate motifs (Figure 10.29). How was the gold thread produced? There are a few methods, but

gold **leaf** (Figure 10.16i) was commonly **fused** to degreased animal intestine membrane, cut into thin strips, then wrapped around silk yarn (sometimes dyed yellow with saffron). Similar techniques were used to produce silver thread.



Figure 10.29a **Chasuble**, looped silver and **gilded** silver and red voided velvet silk fabric, 36 3/8 x 29 1/2 x 1 1/8 in / 93 x 75 x 3.4 cm, Italian or Spanish, ca. 1575 (Poldi Pezzoli Museum, Milan, Italy).

<https://museopoldipezzoli.it/en/discover/collections/catalogue/opera/?guid=9e2bbddc-4b61-4310-98be-caeb231bc9f5>



Figure 10.29b *Chausuble* detail of gold loops and voided velvet silk fabric (Poldi Pezzoli Museum, Milan, Italy; photograph by Emma Sawyer 2013).

Although most velvet is industrially woven today, it is still also **Jacquard** woven on **foot looms** in Italy. Velvet **pile warps** are wound around individual bobbins (Figure 10.30a) because their lengths vary when weaving voided velvet. The weaver in Figure 10.30b inserts a wire into the open **shed**. The wires are made different heights to produce cut and uncut velvet. The weaver will change the shed, insert a **weft**, change the shed, insert a wire, and repeat the sequence several times to firmly secure the warp before cutting through the loops on the wire closest to him with a razor blade (Figure 10.30c). Light and dark green are produced from the same warp thread but appear darker when cut.



Figure 10.30a Dark pile warp threads are wound on bobbins (lower left). The weaver talks to Barbara Pickett while beating background voided velvet weft in place on a Jacquard loom at Rubelli in Como, Italy (photograph by Carol Ventura, 2013).



Figure 10.30b Inserting wire into the shed at the Lisio Foundation, Florence, Italy (photograph by Carol Ventura, 2013).



Figure 10.30c Cutting velvet loops on the wire at the Lisio Foundation, Florence, Italy (photograph by Carol Ventura, 2013).



Figure 10.30d Velvet wires on cut and uncut voided velvet fabric on a loom at Rubelli in Como, Italy (photograph by Carol Ventura, 2013).



Figure 10.30e Velvet wires on cut and uncut voided velvet fabric on a loom at Rubelli in Como, Italy (photograph by Carol Ventura, 2013).

Yarns made from **wool**, silk, and plant **fibers** were dyed with plants, minerals, and insects. The wool yarns in the **weft faced tapestry** in Figure 10.31 were dyed shades of yellow with weld, red with madder, and blue with woad. The detail (Figure 10.31b) shows how weavers were able to shade with hachures (closely alternating colors that optically mix) creating the illusion of more colors (the same principle behind modern 4-color printing). The men are dressed in stylish Renaissance hats, round-toed shoes, fitted bodices, and leggings.

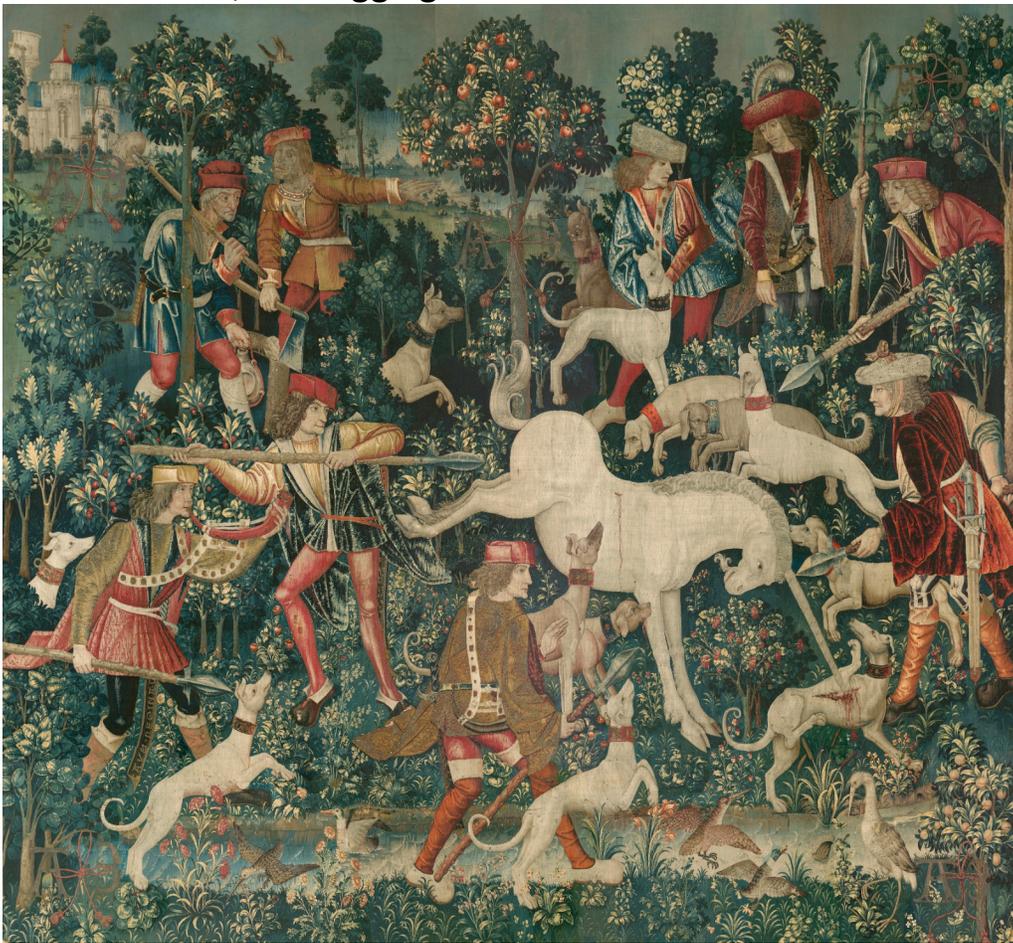


Figure 10.31a *The Unicorn Defends Himself* (from the *Unicorn Tapestries*), wool warp with wool, silk, silver, and gilt wefts, 145 x 158 in / 368.3 x 401.3cm, woven in Southern Netherlands with a French **cartoon**, 1495-1505 (The Metropolitan Museum of Art, Gift of John D. Rockefeller Jr., 1937, CC0). <https://www.metmuseum.org/art/collection/search/467640>



Figure 10.31b *The Unicorn Defends Himself* detail (from the *Unicorn Tapestries*), woven in Southern Netherlands with a French cartoon, 1495-1505 (Gift of John D. Rockefeller Jr., 1937, Metropolitan Museum of Art 37.80.4). <https://www.metmuseum.org/art/collection/search/467640>

Sprang fabric stretches from side to side, but not vertically so it is perfect for form-fitting clothing. To make it, yarn is wrapped around upper and lower adjustable supports (Figure 10.32a). As adjacent warps are twisted around each other on top, the bottom forms in the opposite direction, producing a mirror image. In other words, sprang is constructed from the upper and lower ends to the middle, then the center is secured to keep the warps from unraveling. The cloth may be used as it is or cut apart. The top and bottom loops can be gathered together or sewn. Slip stitches in every other loop along the sides produce invisible seams.

The basic technique is shown in Figure 10.32a. Like a chain link fence, paired warps are intertwined vertically. Other sprang stitches produce patterned (Figures 10.32d and 10.32e) and lace-like fabrics (Figure 10.32c).

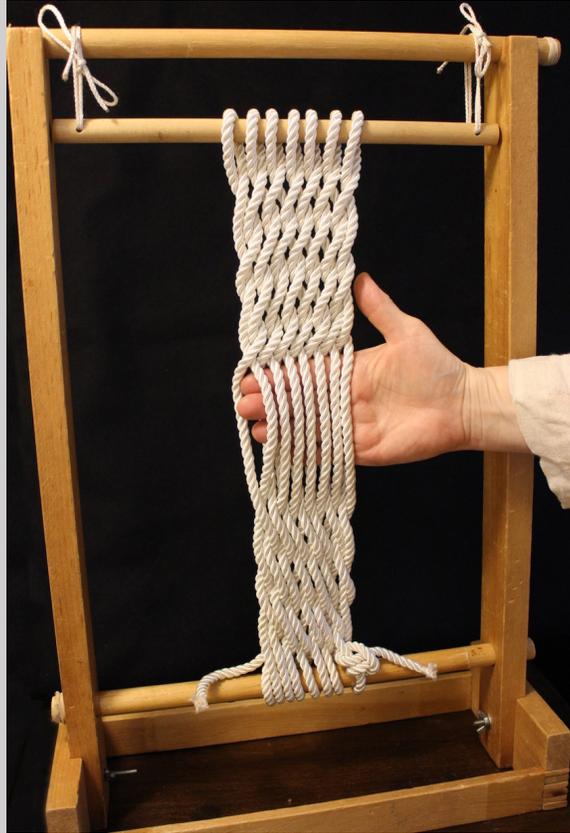


Figure 10.32a Sprang and frame (photograph by Carol James).

<https://www.spranglady.com/sprang.html>

The oldest surviving piece of sprang (Figure 10.32b) dates to around 1400 BCE. The back of the bonnet was shaped by gathering the loops of one end of a flat rectangle. The long tying cords secure the warps along the middle.



Figure 10.32b *Bonnet, sprang, Bredmose Bog, Denmark, Bronze Age, c. 1400 BCE* (photograph by Roberto Fortuna, National Museum of Copenhagen, Denmark). <https://samlinger.natmus.dk/do/asset/10882>)

Several headpieces dating to the Roman Era were found in Egyptian tombs. The turban in Figure 10.32c is a beautiful example of openwork sprang. The top loops of two identical flat rectangular pieces were gathered and secured, then seamed together to the middle.

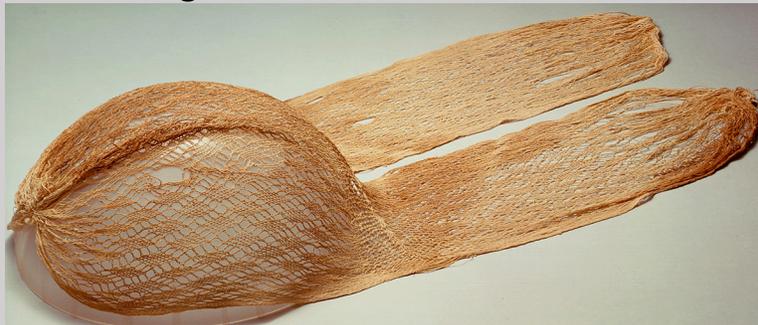


Figure 10.32c *Turban from the Head of a Mummy of a Child, linen sprang, 26 ¾ x 15 ¾ in / 68 x 40 cm, Egypt, 3rd-early 4th century CE* (Metropolitan Museum of Art, Rogers Fund, 1930, CC0). <https://www.metmuseum.org/art/collection/search/548843>

Plain and patterned leggings (Figures 10.31b and 10.32d) were very popular during the Medieval and Renaissance Periods. The leggings worn

by the black gondolier in the painting by Carpaccio in Figure 10.32d inspired Carol James to make a similar sprang pair (Figure 10.32e). She began at the ankles, adding warps as needed to increase the width and thickness. The flat piece was cut in half (at the waist), then sewn together. An additional piece was strategically sewn to the middle of the front.



Figure 10.32d Vittore Carpaccio (Italian, 1460-1526), *Gondoliers in Miracle of the Relic of the Cross at the Rialto Bridge* detail, tempera on canvas, c. 1496, Venice, Italy (photograph courtesy of Ministero dei beni e delle attività culturali - Gallerie dell'Accademia di Venezia).

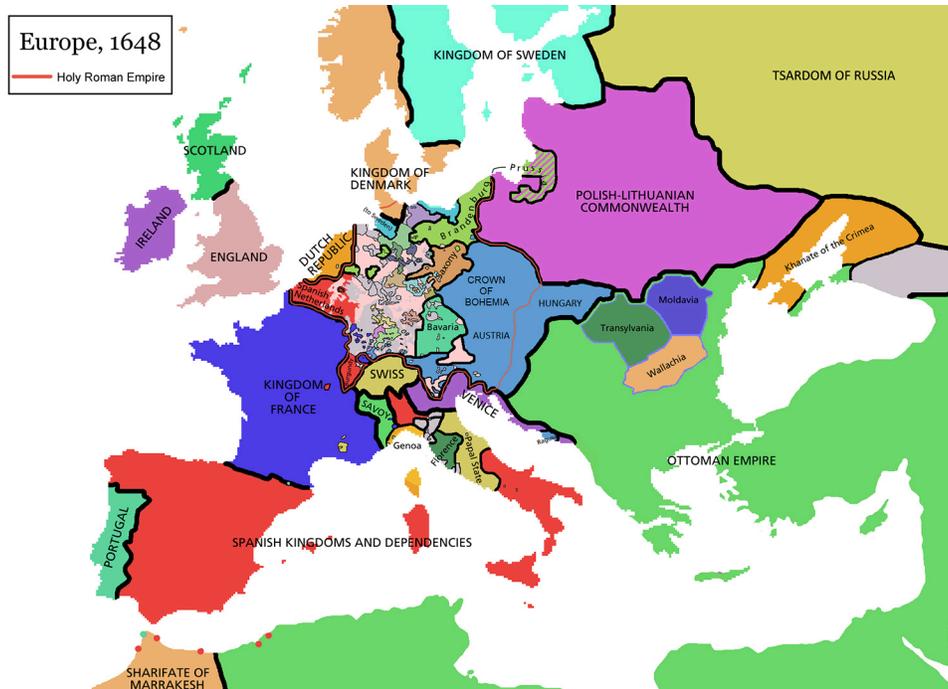
<https://www.gallerieaccademia.it/en/miracle-relic-holy-cross-rialto-bridge#&gid=1&pid=6>



Figure 10.32e Carol James, *Leggings*, wool sprang, 2019 (photograph by Chris Black Photography, 2019). <https://www.spranglady.com/sprang.html>

Chapter 11: Baroque, Rococo, and Neoclassical

Baroque Period (ca.1600-1760)



Europe in 1648. <https://w.wiki/DdSw>

The Baroque Period began around 1600 and lasted until about 1760. The style is dynamic, colorful, sensuous, and often classically inspired. This period was influenced by the newly fortified Catholic Church, the rise of the state, and advancements in science. Baroque Period scientists like Galileo (Italian, 1564-1642), Johannes Kepler (German, 1571-1630), and Isaac Newton (English, 1643-1727) made discoveries that changed our perception of space, time, light, and motion. The measurement of motion was made possible by the new mathematics of calculus and analytical geometry.

Few fabrics survive, but fortunately, painters like Rembrandt (1606-1669), took such great care depicting lace that this feature is used to authenticate his paintings. Lace was very expensive, so it was not only

decorative, but also served as a status symbol. The elegant woman in Figure 11.1 wears a triple scalloped **bobbin lace** collar over a lace partlet and a figured high-waisted, black silk gown, trimmed with rosettes. Her skirt is ornamented with metallic lace and both sleeves are capped with elaborate lace cuffs. The ensemble is accessorized with expensive pearl earrings, bracelets, and necklaces and a jeweled medallion hanging from a black ribbon around her neck. The fan she holds in her left hand was rare and precious in 1639.



Figure 11.1 Rembrandt van Rijn (Dutch, 1606-1669), *Portrait of a Woman, Possibly Maria Trip*, oil on panel, 42 1/8 x 32 1/4 in / 107 x 82 cm, 1639 (Rijksmuseum, Amsterdam).

<http://hdl.handle.net/10934/RM0001.COLLECT.5237>).

The fashionably dressed aristocratic man in Figure 11.2 is wearing *Cuffs* of “gros point de Venise,” a heavily textured **needle lace** worn by wealthy men and women between the 1660s and the 1680s. The cuff pattern features flowers surrounded by scrolls of leaves and flowers. His chest is covered with more of the same lace.



Figure 11.2 *Cuffs, linen “gros point de Venise” lace with flowers and leaf motifs, Venice, Italy, 1650-1700 (Victoria and Albert Museum).*

<https://collections.vam.ac.uk/item/O78892/pair-of-lace-unknown/>

Lace is an openwork fabric that has been made since the 15th century. Each of the lace centers that developed in Italy, Flanders, France, and Spain specialized in a specific technique. “Gros point de Venise” needle lace is made with a needle and thread (Figures 11.3a, 11.3b, and 11.3c) in Italy while thread-wrapped bobbins are used to make bobbin lace in Belgium and Spain (Figures 11.3d and 11.3e).

Linen threads from Flanders, imported silk threads from China, and gold and silver threads were used to make the finest laces during the Baroque Period. Its use was regulated by sumptuary laws and was so expensive that only royalty, the aristocracy, and the Church could afford it. In fact, lace collars and cuffs (Figure 11.2) were sometimes traded for entire farms and mills.

Lacemakers worked at home, in orphanages, convents, and prisons, but were paid very little. Changing fashions and the lace making machinery that was invented in the nineteenth century decreased the demand for handmade lace.

Women in Burano, Italy, still make Venetian needle lace by hand over a paper pattern attached to a tombolo (a rounded, stuffed cushion). After all the empty spaces have been filled in, they cut the tacking thread from the back of the reusable paper to remove the finished lace.



Figure 11.3a “Gros point de Venise” tombolo and sampler with the steps to make a needle lace butterfly in Burano, Italy, 2013 (Carol Ventura Collection, photograph by Carol Ventura, 2025).



Figure 11.3b Stitching over the lines of the pattern with a needle and linen thread in Burano, Italy (photograph by Carol Ventura, 2013).



Figure 11.3c Filling in the motifs with a needle and linen thread in Burano, Italy (photograph by Carol Ventura, 2013).



Figure 11.3d Bobbins, linen thread, and pinned pattern on rounded lace-making pillow at Kantcentrum in Bruges, Belgium (photograph by Carol Ventura, 2006).



Figure 11.3e Crossing linen threads back and forth to make a bobbin lace fish at Kantcentrum in Bruges, Belgium (photograph by Carol Ventura, 2006).

French King Louis XIV (1638-1715) founded several factories, including those that produced **tapestry** and furniture (Gobelins), **ceramics** (Rouen, Nevers), silk fabric (Lyon), and mirrors (Faubourg Saint-Antoine).

Charles Le Brun designed tapestries and directed the Gobelins workshop. The famous tapestry in Figure 11.4 that shows *King Louis XIV Visiting Gobelins* in 1667 is part of a series of fourteen tapestries about the King's life. As he stands proudly to the left, everyone scrambles to tidy up and present their work.



Figure 11.4 Charles Lebrun (French, 1619-1690) and Pierre de Sève the Younger (French, 1623-1695), *King Louis XIV Visiting Gobelins, October 15, 1667*, tapestry woven wool, silk, and gold thread, 12 ¼ x 19 ft / 3.75 x 5.8 m, Gobelins Workshop, Paris, 1729-34 reproduction of 1665-79 original (Chateau de Versailles).

https://collections.chateauversailles.fr/downloadimage.aspx?filename=GMTT+98.10_004.cci

Music Carpet in Figure 11.5 is one of ninety-three pile carpets designed for the Louvre Palace. The king changed his mind about installing them, so some became diplomatic gifts. Louis XIV sent a version of this design to the Siamese King in 1685.



Figure 11.5 *Music Carpet*, wool with 90 Ghiordes / Turkish knots per square inch, 15 3/4 x 29 1/3 ft / 90.42 x 48.26 m, Savonnerie, France, ca. 1685-1697 (The Metropolitan Museum of Art, Rogers Fund, 1952).

<https://www.metmuseum.org/art/collection/search/227588>

Inspired by Persian carpets, King Henry IV of France (1553-1610) established knotted-pile carpetmaking in the Louvre Palace to help revive industry and the arts after the Wars of Religion (1562-1598). In 1627 his son Louis XIII (French, 1601-1643) established the Savonnerie Carpet Manufactory in a former soap factory on the outskirts of Paris. Carpets to cover floors and tables were crafted with fine wool and silk pile, approximately ninety knots per square inch. The factory also produced wall-hangings, panels for folding screens, upholstery, and copies of oil paintings.

The Gobelins brothers originally set up a dying workshop around 1440 in Paris. In 1662 Louis XIV's Minister of Finance, Jean-Baptiste Colbert, turned it into the Manufacture Royale des Meubles de la Couronne / Royal Factory of Furniture of the Crown. Charles Le Brun, the first director, supervised the tapestry weavers, painters, **bronze** workers, furniture makers, and gold and silversmiths, as they produced royal gifts and objects for the king's palaces. Le Brun hired 250 Flemish weavers to get it started. In 1671 he supervised the series of 93 carpets for Louis XIV that would have covered the entire floor of the long gallery of the Louvre Palace. In 1825, Savonnerie joined the Gobelins tapestry manufactory. Gobelins was forced to close in 1694 but reopened in 1699.

Gobelins commissioned **cartoons** (full scale drawings) from leading painters, including Charles Le Brun, Jean-Baptiste Oudry, Charles Coypel, and Francois Boucher. Skilled weavers were paid according to the difficulty of the work; heads and flesh tones received the highest wages.

Today, Gobelins produces tapestries and pile carpets (Figure 11.6a and 11.6b) on high warp and low warp **looms**. The high warp loom is heavy and slow but enables weavers to produce very large **textiles**. Pile carpets are woven facing the front of the weaving (Figure 11.6a).



Figure 11.6a Cutting the pile of a carpet woven face forward at Gobelins Manufactory in Paris, France (photograph by Carol Ventura, 2001).



Figure 11.6b Detail of pile warp of a Savonnerie high warp loom at Gobelins Manufactory in Paris, France (photograph by Carol Ventura, 2001).

Wide tapestries are worked by several weavers at once facing the back of the finished fabric (Figure 11.6c and 11.6d). A mirror in front of the loom reflects the front of the weaving and the cartoon that is hanging behind the weaver.

The main lines of the design are marked on the warp as a guide. String **heddles** are attached to an overhead heddle rod and every other **warp**. Heddes are pulled by hand as needed to insert a **weft** bobbin (Figure 11.6c). A thick rod forms the other shed opening when the warp is under tension.



Figure 11.6c Pulling on the heddles to open the shed to insert tapestry weft on a high warp loom at Gobelins Manufactory in Paris, France (photograph by Carol Ventura, 2001).



Figure 11.6d Tapestry weaving on a high warp loom at Gobelins Manufactory in Paris, France (photograph by Carol Ventura, 2001).

Low warp tapestry looms are portable, so they can be moved from commission to commission. Groups of heddles are attached below the warp to short heddle rods tied to foot pedal mechanisms. The weaver faces the back of the tapestry (Figure 11.6e, 11.6f and 11.6g).

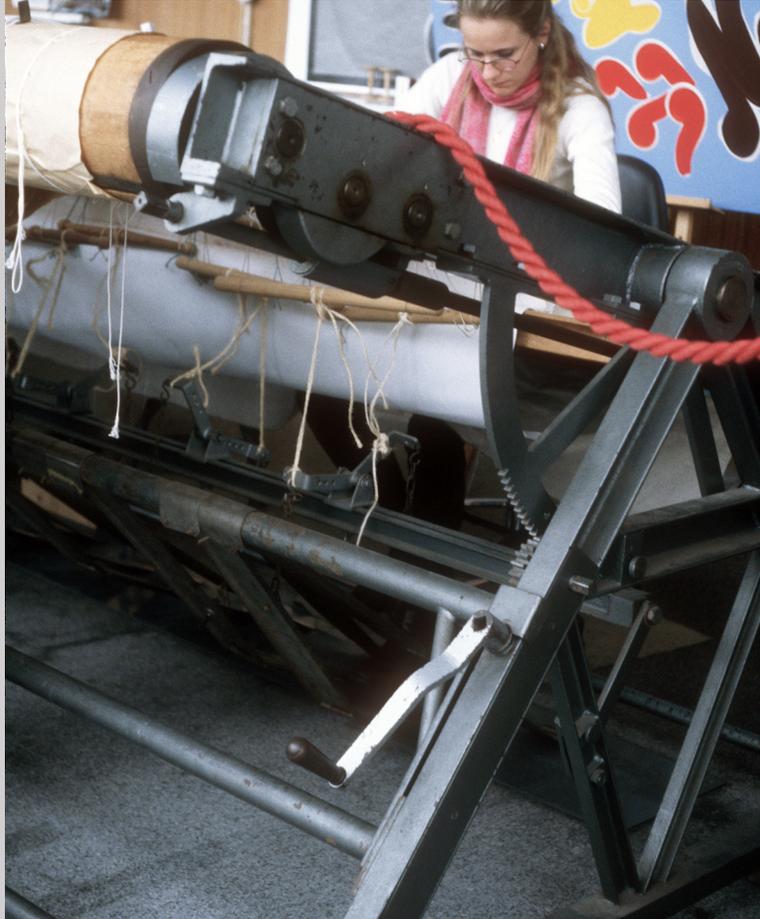


Figure 11.6e Tapestry weaving on Beauvais low warp looms at Gobelins Manufactory in Paris, France (photograph by Carol Ventura, 2001).



Figure 11.6f Tapestry weaving on Beauvais low warp looms at Gobelins Manufactory in Paris, France (photograph by Carol Ventura, 2001).

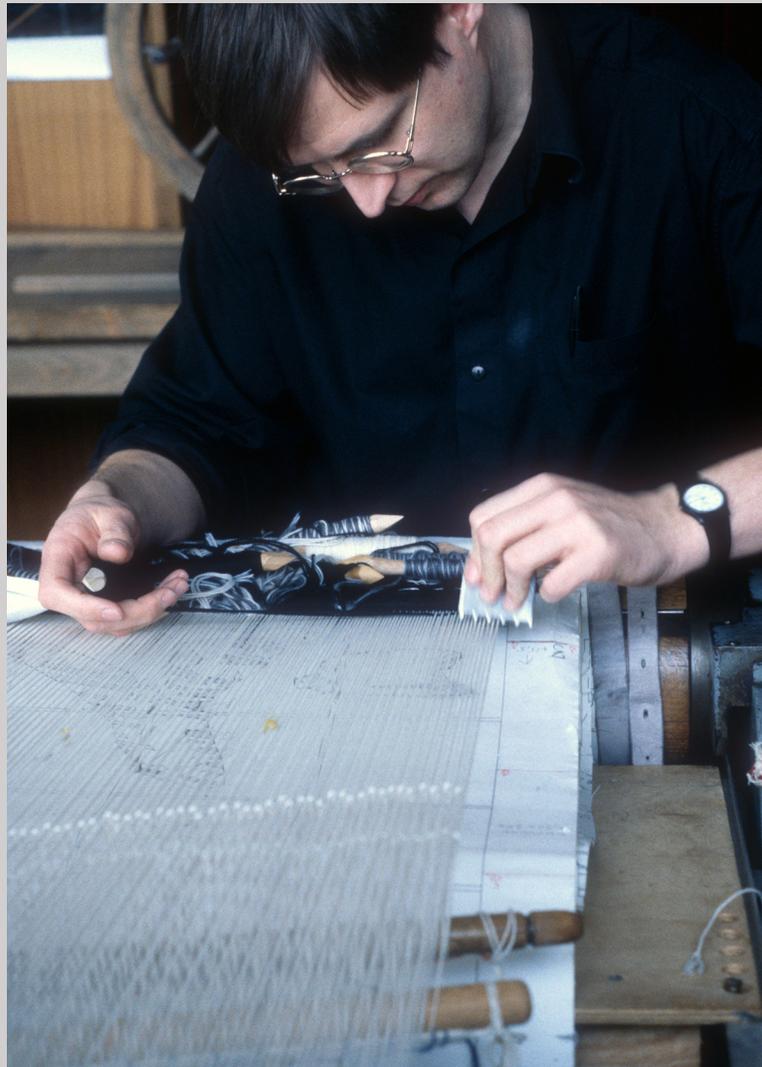


Figure 11.6g Beating the weft into place on a low warp loom - notice the paper cartoon (full scale drawing) below the warp at Gobelins Manufactory in Paris, France (photograph by Carol Ventura, 2001).

Slits formed between the colors are sewn together (Figure 11.6h) after the tapestry has been removed from the loom.



Figure 11.6h Stitching together slits formed between colors with a curved needle and red yarn on a tapestry at Gobelins Manufactory in Paris, France (photograph by Carol Ventura, 2001).

Latticino refers to a **glass** piece created with milk white **glass canes**. The technique that features parallel canes is called “vetro a fili,” “glass threads” in Italian. “Twisted glass” translates to “vetro a retorti” in Italian. The incredible *Goblet* in Figure 11.7 includes parallel plain and twisted white canes. Its undulating form and delicately patterned white canes are reminiscent of lace.



Figure 11.7 *Goblet*, blown latticino vetro a fili and vetro a retorti glass, 14 3/8 x 4 3/8 in / 36.4 x 11.3 cm, Venice, 1600-1650 (Corning Museum of Glass, Gift of Mr. Jerome Strauss).

<https://glasscollection.cmog.org/objects/8465/goblet?ctx=cac1d75db72b42b2186d4aedeb81072bcad88701&idx=0#>

To make glass canes, John Glass and Wes Copp bundle together several pieces of multicolored glass, heat them in a **kiln**, attach the bundle to hot glass on the tip of a **punty** (Figure 11.8a and 11.8b), then fuse them together with heat (Figure 11.8c) and pressure (Figure 11.8d). The other end of the molten glass is connected to a second punty (Figure 11.8e), then both punties are pulled apart (Figure 11.8f). The cane starts to harden as it stretches and is positioned onto pieces of wood on the floor. The stiff, hot cane is broken apart with tweezers (Figure 11.8g), then picked up with gloves (Figure 11.8h) and put into an **annealer** to cool slowly at the Appalachian Center for Craft in Smithville, TN.



Figure 11.8a Wes Copp (1990-) adds glass to a punty that John Glass (1983-) will use to pick up a bundle of hot glass in a kiln at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).



Figure 11.8b A bundle of hot glass in a kiln is attached to a punty and picked up at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).



Figure 11.8c The glass bundle is heated in a glory hole at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).



Figure 11.8d John rolls the hot glass on the marver to form it into a cylinder at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).



Figure 11.8e After reheating the bundle, John attaches the end of his molten glass to the hot glass on the tip of Wes's punty at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).



Figure 11.8f John and Wes stretch the molten glass to make a long cane at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).



Figure 11.8g John and Wes break the cane apart with tweezers at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).



Figure 11.8h Wes picks up the hot canes to bring them to the annealer at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).

The “*vetro a reticello*” (glass with a network) *Plate* in Figure 11.9 was made with 152 overlapping pieces of white and colorless glass canes. Small air bubbles resulting from the overlapping canes can be seen in the diamond-shaped sections.

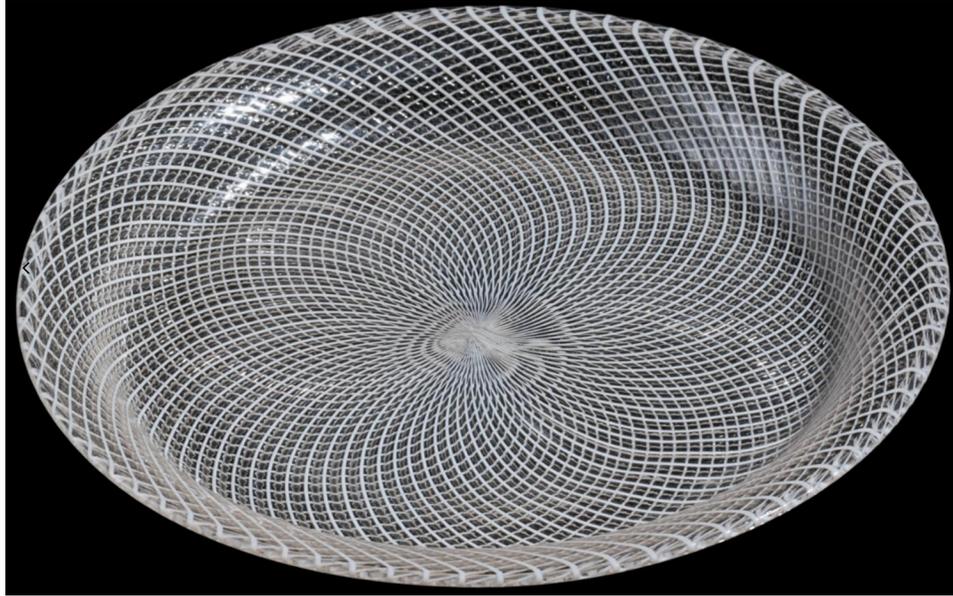


Figure 11.9 *Plate*, reticello glass, 5/8 x 5 7/8 in / 1.5 x 14.8 cm, Venice, 1600-1700 (Corning Museum of Glass).

<https://glasscollection.cmog.org/objects/33498/plate?ctx=863dfde05bb4529d95dbe9c6a760b3ba6404ece5&idx=0>

The tiny, evenly spaced holes in “vetro a reticello” (glass with a network) are made by trapping air bubbles between two layers of fused glass canes that slant in opposite directions. After making the glass cane (Figure 11.8), John Glass arranges them on a kiln-washed ferro (Figure 11.10a) between two kiln-washed ferretti. The kiln wash keeps the glass from sticking. Wes Copp picks it up with a metal pastorelli, inserts it into a 2250°F / 1232°C degree glory hole (Figure 11.10b), and waits for the canes to fuse together. Meanwhile, John dips a **blowpipe** into molten glass in the **furnace**, shapes the **gather**, then reheats it. After the canes fuse together, Wes removes them from the glory hole so that John can attach them to the molten glass on his blowpipe (Figure 11.10c).



Figure 11.10a A tool is used to push the bottoms of the glass canes to align them on a kiln-washed ferro between 2 kiln-washed ferretti at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).



Figure 11.10b The canes on the ferro are fused together in a hot glory hole at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).

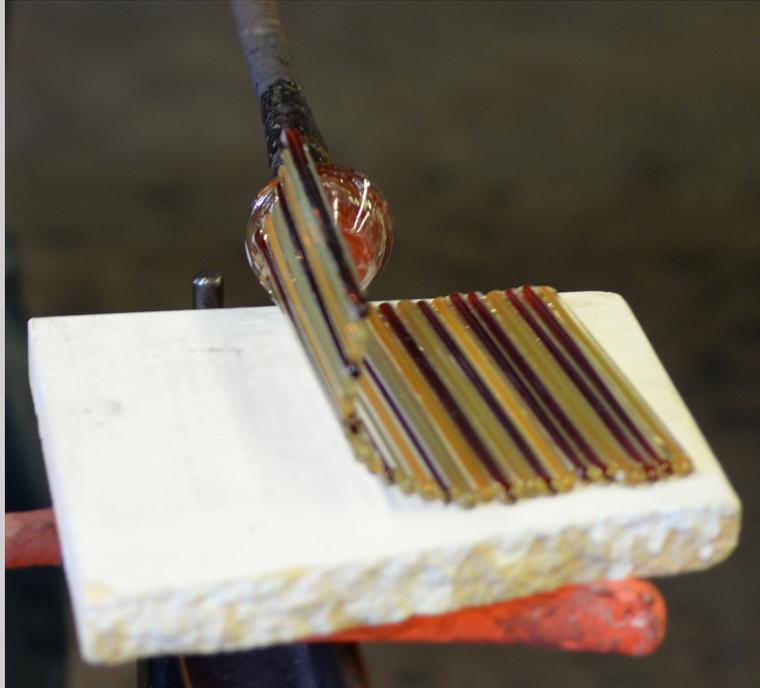


Figure 11.10c Fused canes are rolled onto a gather of molten glass on the tip of a blowpipe at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).

John pulls the open side of the hot, pliable glass cylinder together with tweezers (Figure 11.10d), reheates it, then shapes and twists the sides with jacks (Figure 11.10e).



Figure 11.10d John pulls the sides together with tweezers at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).



Figure 11.10e John shapes and twists the sides with jacks while rotating the pipe at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).

John rolls the vessel on the marver to further twist the canes (Figure 11.10f), cinches the end with jacks (Figure 11.10g), then cuts it off with shears (Figure 11.10h).

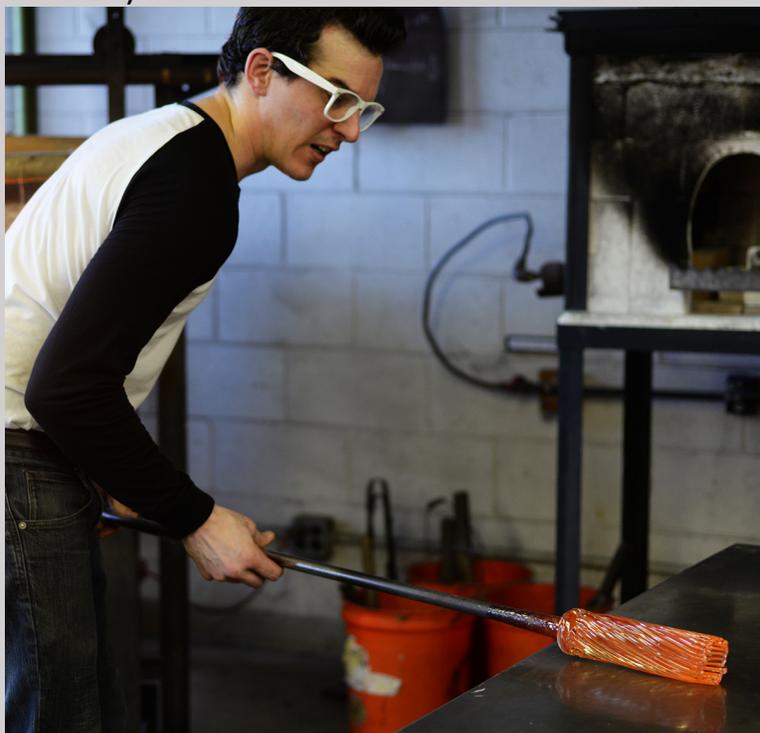


Figure 11.10f John rolls the hot glass vessel on the marver at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).



Figure 11.10g John rotates the pipe as he cinches and twists the top of the vessel with jacks at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).



Figure 11.10h John rotates the pipe as he cuts off the top of the vessel with shears while Wes shields John's hand from the heat with a wet wooden paddle at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).

John inflates the vessel by blowing through a hose connected to the other end of the blowpipe while shaping the vessel with jacks (Figure 11.10i). To cinch in the cane, he grabs the tip of the vessel with tweezers (Figure 11.10j), pulls and shapes it with jacks (Figure 11.10k), then shears it off to form a hole (Figure 11.10l).

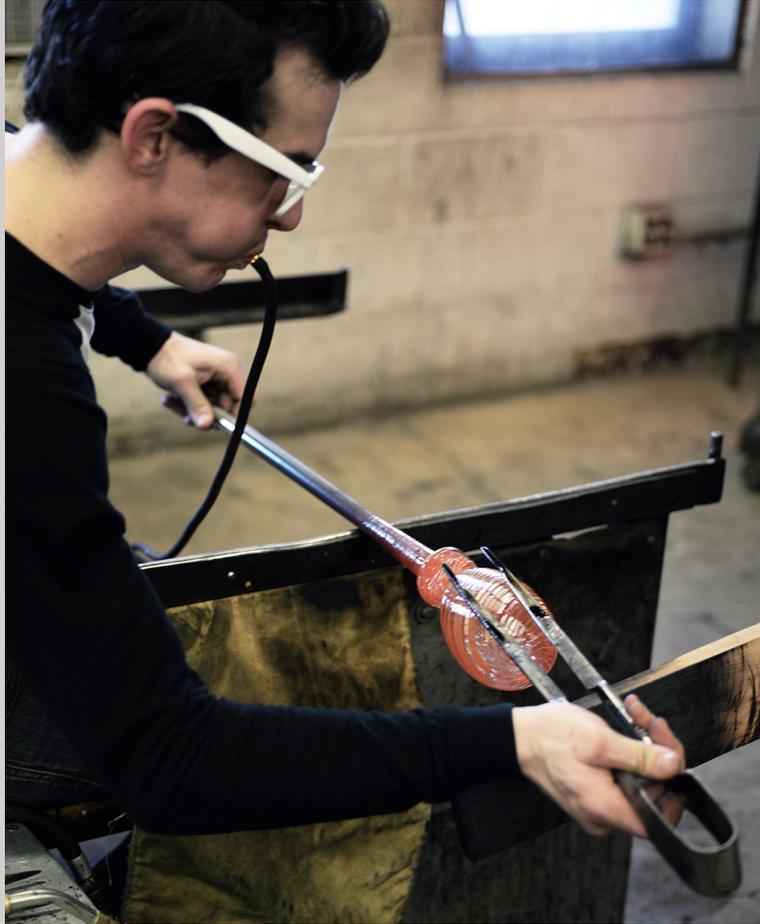


Figure 11.10i John rotates the pipe and blows through a hose connected to the end of the blowpipe to inflate the vessel while shaping it with jacks at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).

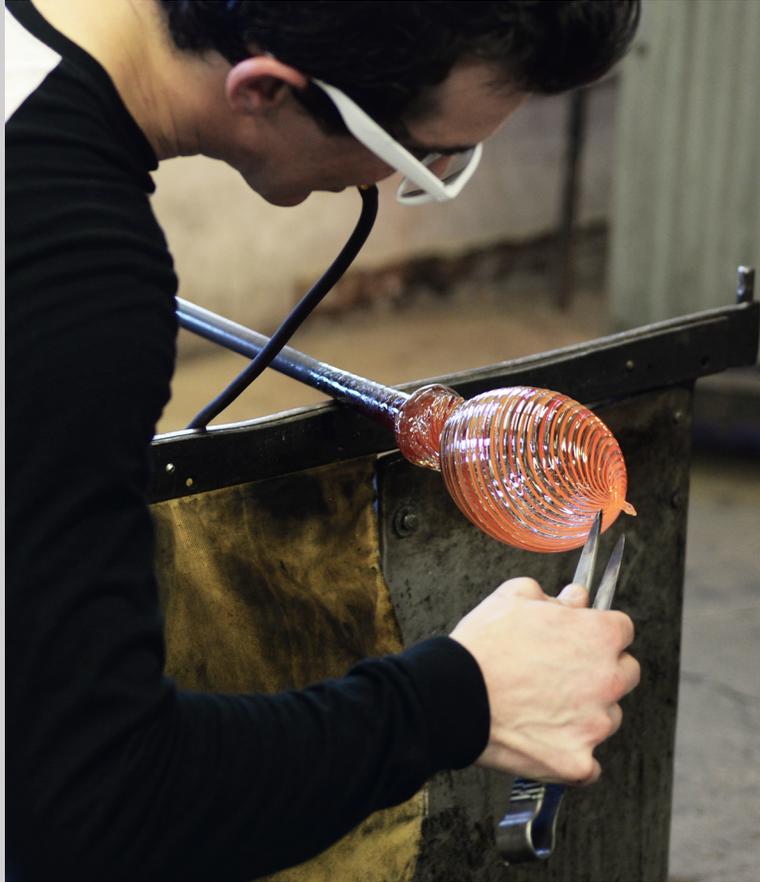


Figure 11.10j John rotates and blows into the pipe while grabbing the tip of the vessel with tweezers at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).

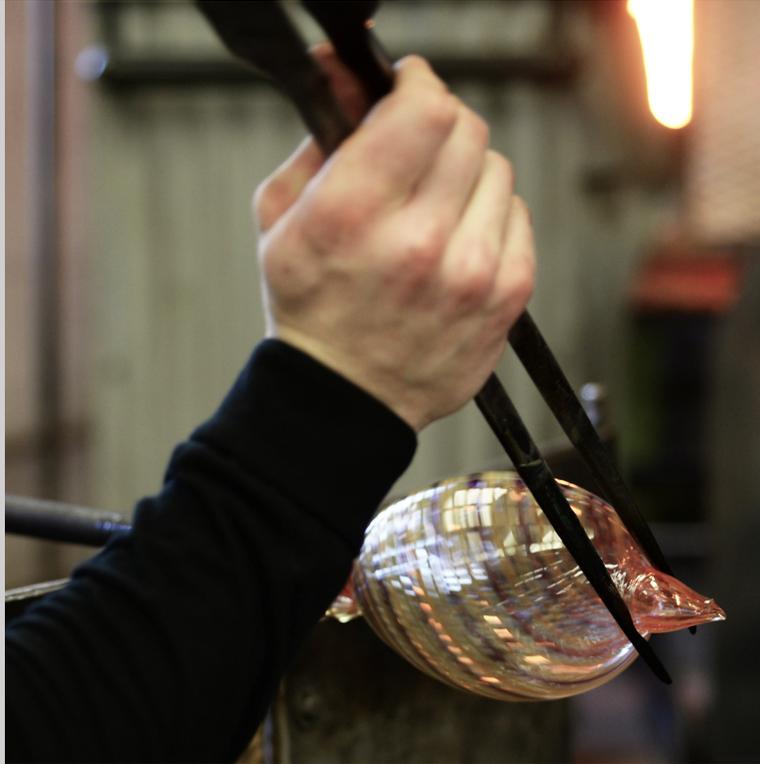


Figure 11.10k John cinches in the top with jacks as he rotates the pipe at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).

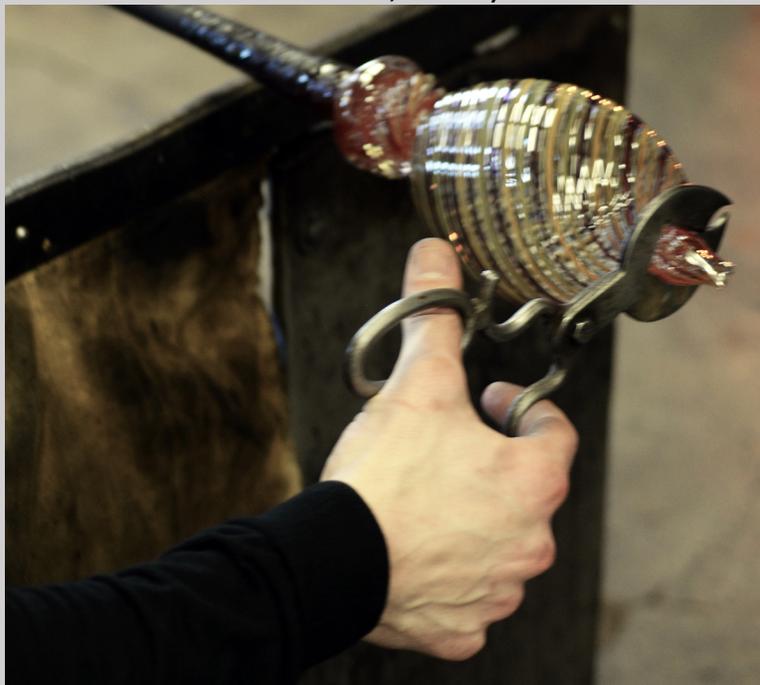


Figure 11.10l John cuts off the top with shears as he rotates the pipe at the Appalachian Center for Craft in Smithville, TN (photograph by Carol

Ventura, 2015).

John enlarges the hole while Wes steadies the jacks with a wet cherry wood paddle (Figure 11.10m). Since hot metal sticks to glass and drags on the surface, some metal tools are rubbed against beeswax to lubricate the surface. John uses wax-covered jacks to refine the shape. The wax can be seen vaporizing in Figure 11.10n.



Figure 11.10m John rotates the vessel while he enlarges the hole with jacks that Wes steadies with a wet wood paddle at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).



Figure 11.10n The shape is refined with wax-covered jacks as the pipe is rotated at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).

The vessel is removed from the pipe (Figure 11.10o) and placed in a kiln to keep it hot. The procedure is repeated, but the canes are twisted in the opposite direction, then the molten inner layer is carefully lowered into the hot outer layer (Figure 11.10p) to form air pockets where the ridges of the canes overlap. The double walled vessel is reheated, then a wad of wet newspaper is used to push on the outer walls while blowing air into the vessel through the pipe to shape and bond the layers (Figure 11.10q).



Figure 11.10o The vessel is removed from the pipe and placed in a kiln to keep it hot at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).

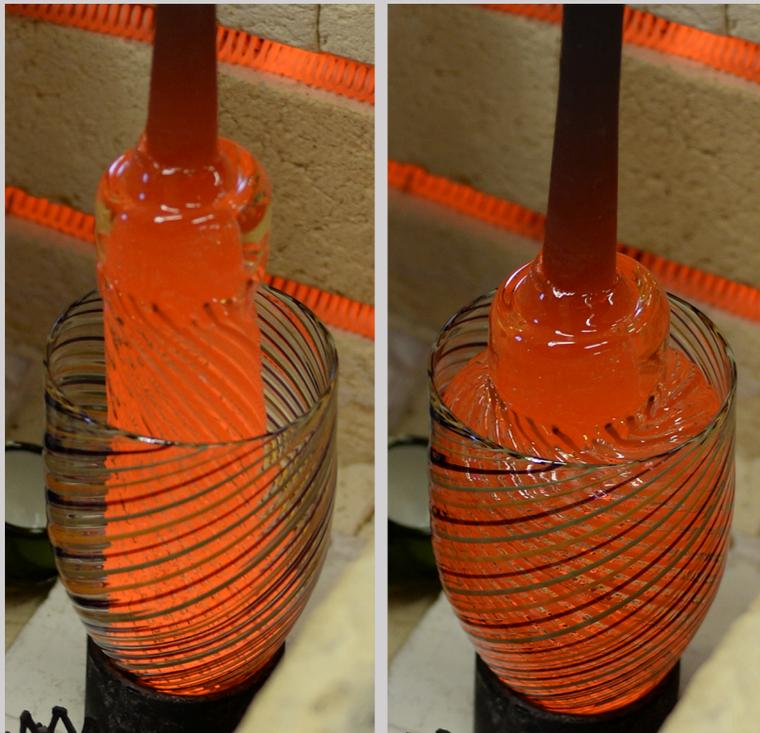


Figure 11.10p The molten inner layer is carefully lowered into the hot outer layer in a kiln at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).



Figure 11.10q John rotates the pipe while he blows into the double walled vessel and shapes the hot glass with wet newspaper at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).

The double walled vessel is marvered (Figure 11.10r), reheated, then tweezers pull together the ends of all the canes (Figure 11.10s) before the knob is sheared off (Figure 11.10t).



Figure 11.10r The double vessel is marvered, then reheated at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).



Figure 11.10s Tweezers pull together all the ends of the canes while the pipe is rotated at Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).



Figure 11.10t The knob is sheared off while the pipe is rotated at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).

More air is blown into the double-walled vessel as it continues to be shaped with wet newspaper, then the bottom is flattened with the paddle as air is blown into it (Figure 11.10u), then the neck is reduced with jacks to ready it for the punty, which is attached in the middle of the bottom of the double vessel with a sculpted hot glass punty (Figure 11.10v). This type of thick, cylindrical glass punty is less likely to damage the thin, delicate center of the vessel when it is removed.



Figure 11.10u The neck is cinched in with jacks as the bottom is flattened with a wood paddle while the pipe is rotated and air is blown into the vessel at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).



Figure 11.10v The neck is reduced with jacks to ready it for the sculpted punty, which is attached in the middle of the bottom of the double vessel at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).

A tap on the blowpipe separates the vessel from the blowpipe, so that it is only attached to the punty. The glass is reheated, then the hole in the top is enlarged with jacks (Figure 11.10w). A **bit** of hot glass is wrapped around the lip (Figure 11.10x), then the vessel is reheated and opened some more (Figure 11.10y).



Figure 11.10w The hole in the top of the hot vessel attached to the punty is enlarged with jacks at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).

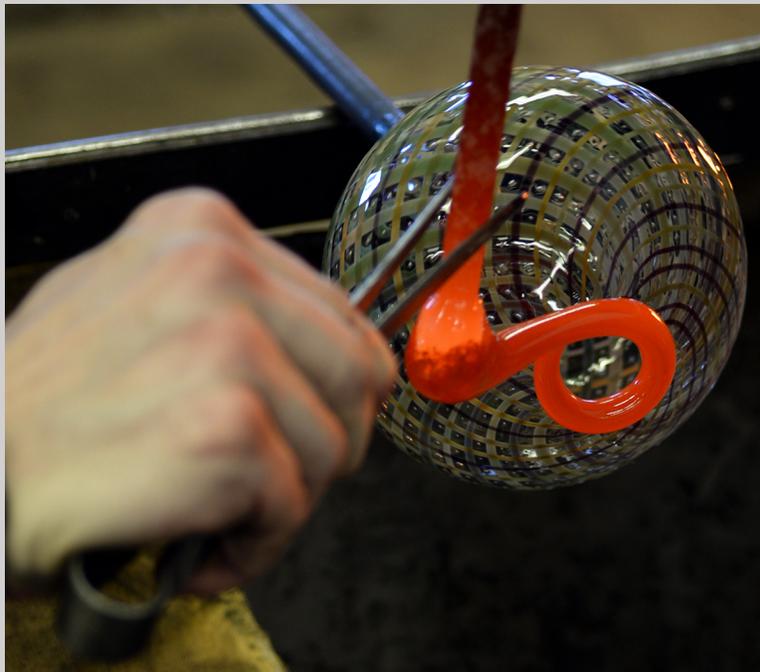


Figure 11.10x A glass lip wrap is applied at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).



Figure 11.10y The vessel is reheated and opened with jacks while rotating the pipe at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).

Tweezers place a drop of water on the end of the punty (Figure 11.10z), then it is tapped to break the joint so the bowl can be placed into the annealer. The punty glass is ground off after the reticello bowl has cooled in the annealer.

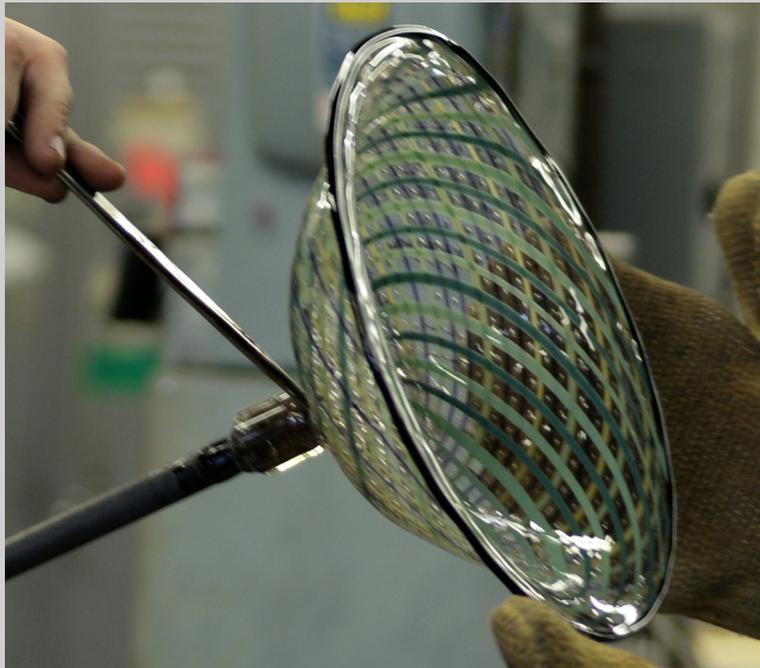


Figure 11.10z A drop of water to the glass punty helps break it off at the Appalachian Center for Craft in Smithville, TN (photograph by Carol Ventura, 2015).

Venetian glass was in high demand and very expensive, which enticed other countries to make their own. Despite the prohibition against emigrating, many Italian glassmakers left Murano and shared their glassmaking secrets. German and Bohemian (Czech Republic) glassmakers used Italian techniques to craft large, **enameled** cylindrical beer drinking glasses called “humpen” that feature patriotic designs, biblical and mythological subjects, coats of arms, and scenes from daily life.

The clear blown glass *Humpen* in Figure 11.11 is decorated with enamel that was painted onto the glass when it was room temperature. The glass was reheated to fuse the painted figures, labeled in Latin as “priest pray,” “nobleman and knights fight,” “peasants labor,” and “merchants devour all.”



Figure 11.11 *Humpen / Beaker*, enameled blown glass, 11 ¼ x 5 in / 28.6 x 12.7 cm, 1612 (The Metropolitan Museum of Art, Munsey Fund, 1927, CC0). <https://www.metmuseum.org/art/collection/search/195807>

Prunts on the stems of Northern European roemers provided a firm grip. The shape of the *Roemer* in Figure 11.12 is based on a medieval German style used for drinking wine. In 1674 George Ravenscroft of London received a patent for a glass formula that included lead oxide. Lead glass is crystal clear and easier to blow and engrave with stone wheels than other glass, and it rings like a bell when tapped. Unfortunately, his lead

glass production suffered from crizzling (tiny cracks that form over time and make the glass look cloudy) (Figure 11.12b). The diamond pattern was created by joining adjacent vertical ribs while the cup was still molten. The raven's head seal (derived from his coat of arms) replaces one of the raspberry prints on the stem (bottom center).



Figure 11.12a George Ravenscroft (English, 1632-1683), *Roemer*, blown and **molded** lead glass, 7 3/8 x 4 1/8 in / 18.8 x 10.6 cm, London, England, 1676-1678 (Corning Museum of Glass).

<https://glasscollection.cmog.org/objects/96>



Figure 11.12b George Ravenscroft (English, 1632-1683), *Roemer* with crizzling on the top; blown lead glass, London, England, 1676-1677 (Corning Museum of Glass). <https://glasscollection.cmog.org/objects/96>

The glass mirror factory that French King Louis XIV's minister, Jean-Baptiste Colbert (French, 1619-1683), established in 1665 invented a method to cast large sheets of glass in 1668. Expensive large mirrors were a sign of wealth and prestige, and their excellent reflective qualities doubled sunlight and increased the output of lamps and candles.

French interiors were very ornate, often combining architecture, painting, and sculpture, as seen in *The Hall of Mirrors* in the Palace of Versailles in Figure 11.13. Mirrors run along the 240 ft / 73.15 m long wall that faces large windows. During Louis XIV's reign (1643-1715), the room also included gold and silver chairs and bejeweled trees, but the furniture was melted down during the financial crisis at the end of his reign.



Figure 11.13 Jules Hardouin-Mansart (French, 1646-1708) and Charles Le Brun (French, 1619-1690), *Hall of Mirrors*, Palace of Versailles, 1678-1684 (photograph by Myrabella / Wikimedia Commons, CC BY-SA 3.0).
<https://commons.wikimedia.org/w/index.php?curid=15781169>.

The court style of French King Louis XIII (1601-1643) had a tremendous influence on European fashion. Men wore wigs, pumps, stockings, and jewelry. Women's **embroidered** hooped dresses were replaced with flowing gowns with puffed sleeves, low necklines, and floral motifs. Pearl necklaces, earrings, and bracelets were still very popular, and symmetrically arranged gemstones were trendy.

Louis XIV (1638-1715) loved diamond buttons and shoe buckles. England's King Charles I (1600-1649) owned a large collection of pearl buttons and wore a pearl earring in one of Van Dyck's paintings. Spanish men wore neck chains and hat badges, sometimes with chivalric or religious imagery.

Early 17th century European **lapidaries** invented the rose cut, consisting of a flat base and a domed top covered with small triangular facets. The angled cuts captured the light, making gemstones sparkle. The five large diamonds in the Spanish *Bodice Ornament* in Figure 11.14 were rose cut. It was crafted with gold from Central and South America and includes nearly 300 smaller diamonds. Most jewelry was recycled as fashions changed, but this ornament survived intact because it was part of the Treasury of the Cathedral of the Virgin of the Pillar, in Zaragoza, Spain. Eventually, diamonds were backed with foil to enhance their sparkle and

were set in silver to make them appear larger and to emphasize their whiteness.



Figure 11.14a *Bodice Ornament*, diamonds set in gold scrolling openwork, 3 ½ x 5 ½ x ¾ in / 9 x 13.5 x 1.9 cm, Spain, ca. 1700-1720 (Victoria and Albert Museum). <https://collections.vam.ac.uk/item/O116849/bodice-ornament-unknown/>



Figure 11.14b *Bodice Ornament* (back), diamonds set in gold scrolling openwork, 3 ½ x 5 ½ x ¾ in / 9 x 13.5 x 1.9 cm, Spain, ca. 1700-1720 (Victoria and Albert Museum).

<https://collections.vam.ac.uk/item/O116849/bodice-ornament-unknown/>

The *Lyte Jewel* (Figure 11.15) is a hinged enameled locket that contains a miniature portrait of young King James I (1566-1625) surrounded by twenty-five square table cut and four rose cut diamonds. Nicholas Hilliard painted the portrait on vellum, a fine parchment made from calf skin.



Figure 11.15a Nicholas Hilliard (British, ca. 1547-1619), *Lyte Jewel* (open), gold, enamel, 29 diamonds, and vellum, 3 ½ x 1 7/8 in / 8.9 x 4.8 cm,

England, 1610-1611 (© Trustees of the British Museum, CC BY-NC-SA 4.0)
https://www.britishmuseum.org/collection/object/H_WB-167



Figure 11.15b *Lyte Jewel* (closed), gold, enamel, 29 diamonds, and vellum, English, 2 ½ x 1 7/8 in / 6.4 x 4.8 cm, England, 1610-1611 (© Trustees of the British Museum, CC BY-NC-SA 4.0)

https://www.britishmuseum.org/collection/object/H_WB-167

The magnificent wrought iron *Grille* in Figure 11.16 is from the Chateau de Maisons in France. It now functions as the entrance to the Apollo Gallery in the Louvre. The men cleaning off the **patina** in Figure 11.16b provide a glimpse of the fine craftsmanship of the ironwork.



Figure 11.16a *Grille*, cast and **forged** iron, 14 $\frac{3}{4}$ x 8 $\frac{1}{4}$ ft / 4.5 x 2.53 m, France, ca. 1646-1650 (Apollo Gallery, Louvre Museum).

<https://collections.louvre.fr/en/ark:/53355/cl010117423>



Figure 11.16b Cleaning the *Grille* in the Louvre Museum, cast and forged iron, France, ca. 1646-1650 (photograph by Carol Ventura, 2009).

Boule work is a type of **marquetry** that features wood and metal of contrasting colors. It is named for André Charles Boule, a cabinet maker, architect, bronze worker, and **engraver** who worked for French King Louis XIV (1638-1715), King Philip V (1683-1746) of Spain, and the Electors of Bavaria and Cologne. Boule did not invent the technique, but he perfected it. The incredibly ornate desk in Figure 11.17 is an example of his expertise. Gilt cast bronze ormolu ornaments decorate and reinforce the curved legs.



Figure 11.17 André Charles Boulle (French, 1642-1732), *Writing Bureau of the Elector of Bavaria*, **ebony, brass**, mother of pearl, and leather, 78 $\frac{3}{4}$ x 63 in / 200 x 160 cm, 1715 (Louvre).

Expensive imported Chinese and Japanese lacquered chests and cabinets inspired new European furniture designs and finishes. The *Cabinet on Stand* in Figure 11.18 was used to store collections and curiosities. The painted surface imitates Asian lacquer and tortoise shell. Chinese landscapes and figures decorate the front, sides, and interior. The brass corner mounts, hinge straps, and escutcheon plate complete the Chinese theme.

The silvered crest and base were inspired by Louis XIV's gold and silver furniture. **Carved** scallop shells and foliate scrolls embellish the sides of the crest and base. The front of the symmetrically carved cresting incorporates a basket of flowers, scrolling foliage, and birds with outstretched wings. Flaming urns top the front corners. The carved stand

features eagles with outstretched wings holding swags of flowers between six baluster legs. Two pairs of scrolled cross-stretchers carved with acanthus foliage stabilize the base.



Figure 11.18a *Cabinet on Stand*, England, jappaned oak carcass with carved and silvered softwood and lime stand and cresting, brass hardware,

86 x 40 x 19 ½ in / 218 x 101.6 x 49.5 cm, ca. 1690 (Victoria and Albert Museum). <https://collections.vam.ac.uk/item/O53113/cabinet-on-stand-unknown/>



Figure 11.18b *Cabinet on Stand* with open doors, England, jappaned oak carcass with carved and silvered softwood and lime stand and cresting, brass hardware, 86 x 78 x 19 ½ in / 218 x 198 x 49.5 cm, ca. 1690 (Victoria and Albert Museum). <https://collections.vam.ac.uk/item/O53113/cabinet-on-stand-unknown/>

English furniture makers began to incorporate caned seats and bottoms into their chairs in the 1680s. The carved lamb and flag on the top of the caned *Chair* in Figure 11.19 suggest it might have been made for a religious organization. Seated maidens play pipes next to turned and

carved vase-shaped finials. Carved foliage and reclining cupids decorate the side pieces. More greenery covers the rails and arms, each of which terminates with a carved lion resting a paw on a lamb over a scrolled support. Eagle heads support the front legs above pierced scrolls and feet. The arched front stretcher features a central flaming heart, flanked by reclining women and blindfolded cupids firing arrows in foliage.



Figure 11.19 *Chair*, carved walnut with caned seat and back, 55 1/8 x 28 3/8 x 27 1/2 in / 140 x 72 x 70 cm, England, ca. 1700-1720 (Victoria and Albert Museum). <https://collections.vam.ac.uk/item/O7975/armchair-unknown/>

Wood is expensive, so woven seats are more affordable. They offer other benefits, too. The flexible woven seats of ancient Egyptian chairs (Figure 2.28) were comfortable and allowed air to circulate. The same can be said of the “French Caned” chairs first made in Europe in the 17th century that were inspired by imported Asian chairs. The “cane” is cut from the outer layer of the vine-like rattan palm tree.

The cane is soaked in water for a few minutes to make it more flexible, then it is inserted back and forth in the seat’s holes (Figure 11.20a), interwoven back and forth (Figure 11.20b), then woven diagonally across (Figure 11.20c), while being temporarily secured with wooden pegs.



Figure 11.20a Katrina Stone begins a “French Caned” seat by inserting a narrow piece of damp cane into the corner hole of her chair seat at John C. Campbell Folk School in North Carolina (photograph by Carol Ventura, 2025).

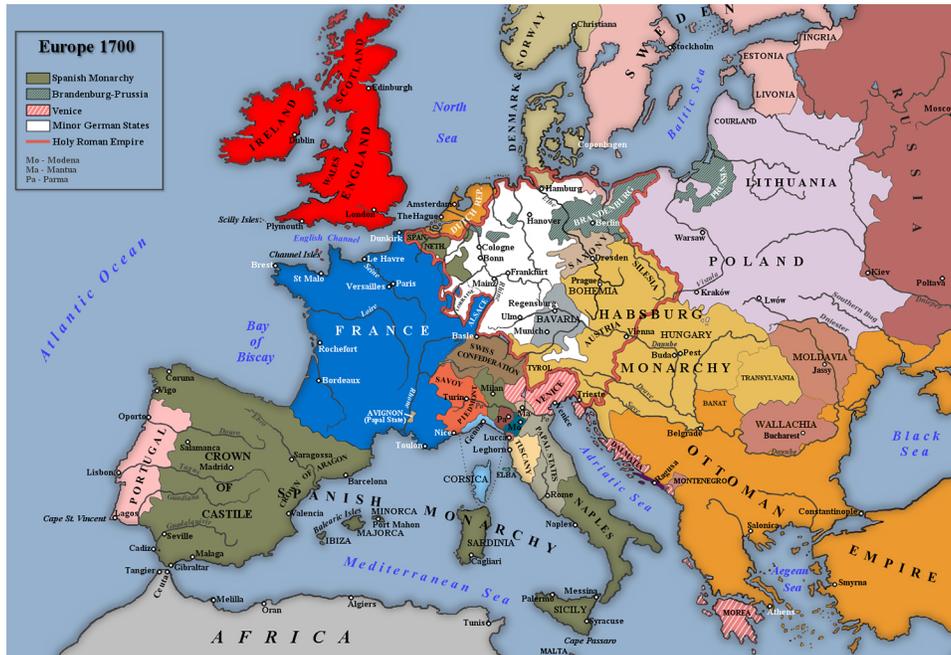


Figure 11.20b A damp cane is interwoven across the seat. Pegs temporarily keep the canes in place at John C. Campbell Folk School in North Carolina (photograph by Carol Ventura, 2025).



Figure 11.20c A damp cane is woven diagonally across a chair seat at John C. Campbell Folk School in North Carolina (photograph by Carol Ventura, 2025).

Rococo Period (ca. 1710-1789)



Europe in 1700 (map by Rebel Redcoat, Public domain, via Wikimedia Commons).

https://commons.wikimedia.org/wiki/File:Europe,_1700%E2%80%94941714.png

The transition from Baroque to Rococo reflected societal changes following Louis XIV's death in 1715. French Louis XV (1710-1774) and his powerful mistress, Madame de Pompadour (1721-1764), set the fashions for a lighthearted and colorful court style that was adopted around Europe.

Rococo celebrates love and feminine beauty. The word comes from "rocaille" (pebble) + "coquille" (shell) because the style is based on the curves and counter-curves found in shell, rock, and plant motifs. Elegant furniture, sculptures and playful ceramics complimented the relief sculptures and wall paintings of French interiors. White and pastel colors replaced the darker Baroque palette.

Fabrics with playful imagery and floral designs were very popular. Painted and printed cotton fabric from India could not meet demand, so in 1640 Europeans copied Indian techniques (Figure 5.32) and began their own production. French, English, Dutch, and Swiss at first imitated Indian

floral motifs, but eventually they designed their own landscapes, flowers, geometric patterns, and scenes from everyday life.

The *Printed Fustian* (thick **twill** cotton fabric) in Figure 11.21 features women in contemporary clothing. When colorful cotton cloth began to threaten the French and English wool, silk, and linen industries, laws were passed in the late 17th and early 18th centuries to forbid the importation and sale of cotton cloth. There was so much resistance, however, that the English and French laws were repealed in the late 18th century, allowing the development of the cotton industry in those countries.



Figure 11.21 *Printed Fustian*, block printed and madder-dyed cotton, 26 1/8 x 33 1/2 in / 66.3 x 66.3 x 85.1 cm, Alsace, France, ca. 1720-1750 (Victoria and Albert Museum).

<https://collections.vam.ac.uk/item/O225559/printed-fustian-unknown/>

Copperplate printing was adopted from printmakers to produce monochromatic imagery with fine lines on fabric. The cotton cloth in Figure 11.22a is a detail of the earliest dated copperplate printed textile. It includes the name of the printer, Robert Jones of Old Ford, Poplar, and the date of production, 1761. The complete repeat measures a little under 6 ½ ft / 1.98 m long and would have required 2 plates to print on a press (Figure 11.22b). This printing method was popular until the more efficient **copper** roller cylinder was patented in 1783. Rotating metal rollers produced continuous repeat patterns; a separate roller for each color. The first cylinder printing machines were hand-cranked, but improved versions were driven by belts, shafts, and cog wheels powered by steam or water (Figure 11.22c).

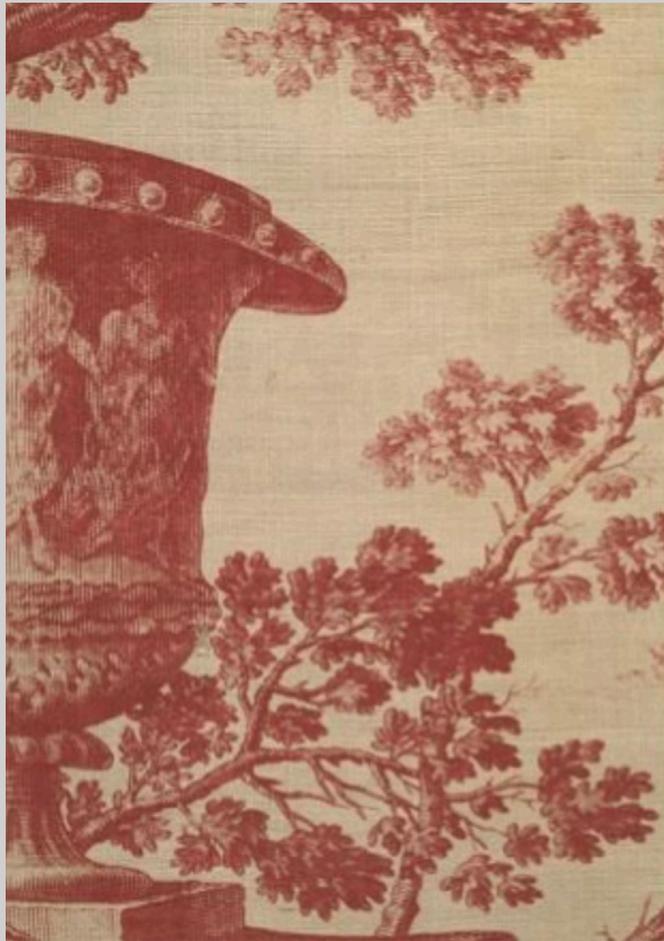


Figure 11.22a Robert Jones, copperplate printed **cotton** cloth, England, 1761 (© Whitworth Art Gallery).

<https://whitworthcollections.manchester.ac.uk/collections/item/c59207b2-7765-3250-880e-c9fb3c436bf2/?>

[s%3D%26filter%5Bmaterial.value.keyword%5D%5B%5D%3Dcotton%26filter%5Bdecade%5D%5B%5D%3Dfrom%3A1760%3Ato%3A1769&pos=2](#)



Figure 11.22b Jean Baptiste Huet, copper plate printing process depicted on copper plate printed cotton, 1783 (Le Musée de l'Impressionsur Etoffes, Mulhouse, France, n. 219).

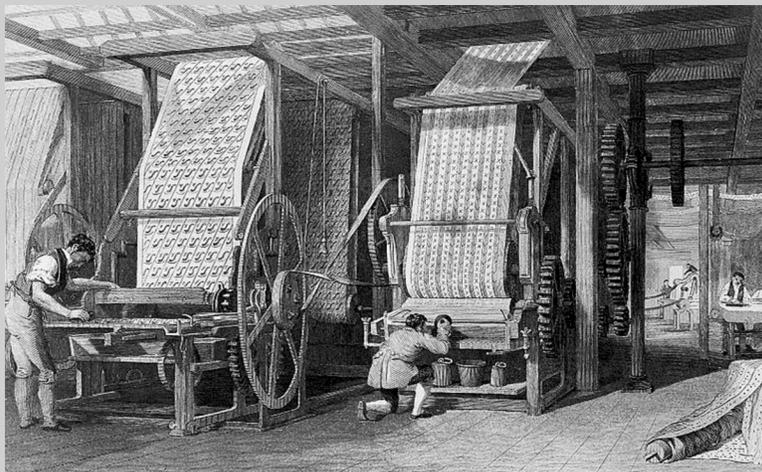


Figure 11.22c Calico printing with engraved copper rollers, 1835.
<https://lancashiremuseumsstories.wordpress.com/2020/11/20/roller-printing/>

Innovative Dutch artist, Frans Greenwood, decorated the Goblet in Figure 11.23 with the **stippling** technique that he invented. This method uses a diamond-pointed tool to make tiny dots on lead glass. Light areas are created by placing dots close together.



Figure 11.23 Frans Greenwood (Dutch, 1680-1763), *Goblet*, diamond-stippled blown lead glass, 10 x 4 1/8 in / 25.5 x 10.5 cm, Netherlands, 1746 (Corning Museum of Glass).

<https://glasscollection.cmog.org/objects/9/goblet?ctx=f9de54b1a525e499f8b91f3f172a9392f36d4d65&idx=0>

The Meissen factory in Germany mass-produced slip-cast red **stoneware** from its founding in 1710 until the dark clay was replaced with white porcelain in 1713. Most Böttger stoneware (described by Meissen as “red porcelain”) was slip cast in plaster molds (Figure 11.27b), often with the type of relief decoration seen in Figure 11.24. The shape of the *Teapot* imitated European metalwork. The burnished surface and dragon's head at the base of the spout were Chinese-inspired.



Figure 11.24 Johann Friedrich Böttger (German, 1682-1719), *Teapot*, slip-cast red Böttger stoneware, 6 3/8 x 5 1/8 x 2 3/4 in / 16.2 x 13 x 7.1 cm, Meissen, German, ca. 1710-1713 (Victoria and Albert Museum).

<https://collections.vam.ac.uk/item/O153416/coffee-pot-and-meissen-porcelain-factory/>

Johann Gregorius Höroldt succeeded Böttger as artistic director at Meissen. Höroldt was a color chemist and painter. He invented a range of

glaze colors and used them to paint different Asian- and European-inspired scenes of figures in landscapes on vessels of his own design. Höroldt designed the *Set of Five Vases* in Figure 11.25 with 54 Chinese-inspired scenes for a fireplace mantel. The bottom of each vessel is marked with “AR” for Augustus Rex, the monogram of the king who established the Meissen factory.



Figure 11.25 Johann Gregor Höroldt (German, 1696-1775), *Set of Five Vases*, polychrome enamel decoration and **gilding** on slip-cast hard-paste porcelain, 14 5/8 x 9 1/2 / 37.3 x 24.1 cm, Meissen, Germany, ca. 1730 (The J. Paul Getty Museum, Los Angeles).

<https://www.getty.edu/art/collection/object/103SHT>

Johann Joachim Kändler was Meissen’s most famous sculptor. For forty-four years, he designed dinner services and sculpted large and small figurines that were admired and imitated throughout Europe. The statuettes in Figure 11.26 are three of twenty-six characters in the theatrical production of *Commedia dell'Arte*. The active poses were inspired by their depictions in paintings by François Boucher (French, 1703-1770) and Antoine Watteau (French, 1684-1721).



Figure 11.26 Johann Joachim Kandler (German, 1706-1775), *Seated Harlequin with Tankard; Harlequin and Columbine Dancing; Pantalone from the Commedia dell'Arte*, hard-paste porcelain, 6.5 x 5 x 2.2 in / 16.5 x 12.7 x 5.7 cm; 8.5 x 8 x 4.5 in / 21.5 x 20.3 x 11.4 cm; 6.1 x 3.3 x 3.3 in / 15.5 x 8.5 x 8.5 cm, Meissen, 1735-1744 (photograph by Sean Pathasema / Birmingham Museum of Art, CC BY 3.0).
<https://commons.wikimedia.org/w/index.php?curid=18709788>).

Porcelain was imported from China so profitably it was called white **gold**, the incentive for Europeans to produce their own. Experiments led to the development of so-called soft-paste porcelain, which was not a true porcelain. It had different ingredients, was difficult to work, was fired at a lower temperature, and was not as strong or translucent as porcelain.

Augustus the Strong (Elector of Saxony and King of Poland, 1670-1733) imprisoned alchemist Johann Friedrich Böttger (German, 1682-1719) in a laboratory to turn base metal into gold. Unsuccessful, the king then ordered Böttger to help Ehrenfried Walter von Tschirnhausen (German, 1651-1708) discover how to make true **hard-paste** porcelain. In 1707 the two scientists successfully combined kaolin and feldspar to make red stoneware (Figure 11.24) similar to imported Chinese Yixing stoneware (Figures 5.19 and 5.20). The next year they substituted a lighter color kaolin to make porcelain. Two years after Tschirnhausen died, Böttger helped establish the first porcelain manufactory in Europe in Meissen under the patronage of Augustus the Strong. By the end of the century,

twenty-three factories were producing porcelain in Germany with the Meissen formula.

To make a slip-cast piece, it is first sculpted, then broken down as necessary to create individual molds for **casting** (Figure 11.27a). Details are carved and imperfections removed with hand tools (Figure 11.27c) and sponges (Figures 11.27e and 11.27f). Slip-cast porcelain components are joined together with slurry (liquid clay). Small decorative elements may be hand modeled or press molded, then attached (Figure 11.27g).



Figure 11.27a Rectangular press molds, cast figurines and their cast components, and hand tools in the Meissen Porcelain Factory Museum, Germany (photograph by Carol Ventura, 2009).

Since its founding in 1872, the Dresden Porcelain Factory has designed and produced intricate porcelain vessels and figurines by hand. Specialists perform each step, including slip casting in plaster molds (Figure 11.27b), sculpting, glazing, and **firing**.

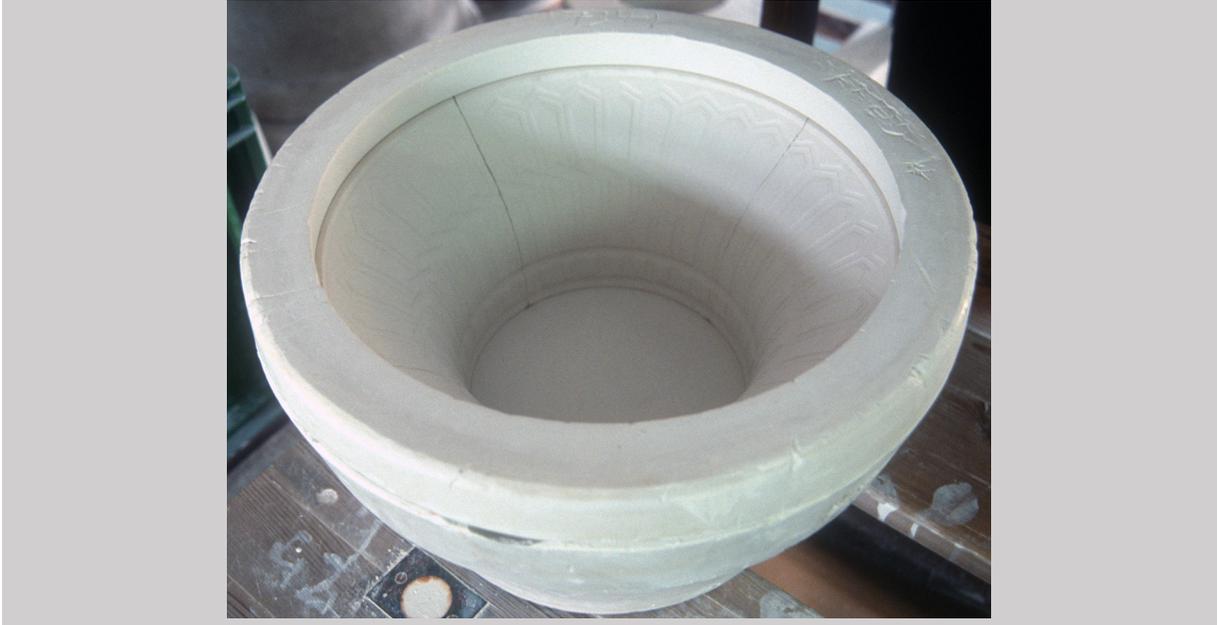


Figure 11.27b Plaster mold for the slip cast basket being pierced in Figure 11.27c at the Dresden Porcelain Factory, Germany (photograph by Carol Ventura, 2009).



Figure 11.27c The basket is pierced at the Dresden Porcelain Factory, Germany (photograph by Carol Ventura, 2009).



Figure 11.27d Partially pierced damp porcelain basket, upside down finished pierced porcelain basket, and circular two-piece mold in the Dresden Porcelain Factory, Germany (photograph by Carol Ventura, 2009).



Figure 11.27e Smoothing the damp porcelain basket with a sponge on a kick wheel in the Dresden Porcelain Factory, Germany (photograph by Carol Ventura, 2009).



Figure 11.27f Smoothing the surface of the damp porcelain basket with a sponge on a kick wheel in the Dresden Porcelain Factory, Germany (photograph by Carol Ventura, 2009).



Figure 11.27g Rectangular **sprig mold**, partially pierced slip-cast porcelain vessel, three finished pierced covered porcelain vessels embellished with press molded and modeled flowers and overglaze in the Dresden Porcelain Factory, Germany (photograph by Carol Ventura, 2009).

The assembled clay sculpture is **bisque** fired at a low temperature to produce a durable but porous surface. Cobalt blue under-glaze decorations are added, covered with clear glaze, then the piece is high fired to

maturity. Other colors fade in high temperatures, so **overglazes** are painted onto glazed ware (Figures 11.27h and 11.27i) and refired at low temperatures, sometimes multiple times for different colors.



Figure 11.27h Janett Novack paints a fired figurine with overglaze in the Dresden Porcelain Factory, Germany (photograph by Carol Ventura, 2009).



Figure 11.27i Painting overglaze on a fired porcelain dish in the Dresden Porcelain Factory, Germany (photograph by Carol Ventura, 2009).

The Vincennes porcelain manufactory was established in 1740 in France to compete with Meissen. The French factory moved to Sevres in 1756 at the request of Madame de Pompadour (French, 1721-1764). Three years later, French King Louis XV (1710-1774) designated Sevres as the "Royal Porcelain Manufactory" to produce luxury porcelain for the royal family, the court, and the aristocracy.

Soft-paste porcelain was first produced in Europe in 1738. This white translucent ware imitates porcelain but is made by mixing white clay with frit (a glassy substance that was a mixture of white sand, gypsum, soda, salt, alum and potassium nitrate). Lime and chalk are used to fuse the white clay and the frit, the mixture is fired at a lower temperature than hard-paste porcelain, so it is not as hard.

Sevres manufactured **low-fired** soft-paste whiteware through 1804, even after hard-paste porcelain manufacture began in 1769 when kaolin was found in France. Production included playful and imaginative tableware, vases (Figure 11.28a), lamps, containers, decorative objects, and ornamental plaques for furniture.

Jean-Claude Duplessis was the artistic director of the Vincennes porcelain manufactory and Sèvres from 1748 to his death in 1774. He designed the "Rose Pompadour" pink man-of-war potpourri vase (Figure 11.28), the earliest known example of this boat-shaped vase and the most expensive.



Figure 11.28a Jean-Claude Duplessis (French, ca. 1695-1774), *Lidded Potpourri Vase*, slip-cast and modeled **soft-paste porcelain** with overglaze painting, 17 5/8 x 14 3/4 x 7 5/8 in / 44.8 x 37.5 x 19.4 cm, Sévres, 1757-1758 (The Metropolitan Museum of Art, Gift of Samuel H. Kress Foundation, 1958, CC0).

<https://www.metmuseum.org/art/collection/search/202193>



Figure 11.28b Jean-Claude Duplessis (French, ca. 1695-1774), *Lidded Potpourri Vase* (other side), slip-cast and modeled soft-paste porcelain with overglaze painting, 17 5/8 x 14 3/4 x 7 5/8 in / 44.8 x 37.5 x 19.4 cm, Sévres, 1757-1758 (The Metropolitan Museum of Art, Gift of Samuel H. Kress Foundation, 1958, CC0).

<https://www.metmuseum.org/art/collection/search/202193>

Eighteenth century cabinetmakers steam bent wood to craft *Commodes* (Figure 11.29), desks, and other furniture with swelling **bombé** sides. Decorative gilt bronze helped reinforce the **carcass**. Etienne Doirat stamped his name on the top, under the marble.



Figure 11.29 Etienne Doirat (French, ca. 1675-1732), *Commode*, oak and fir veneered with kingwood and amaranth with walnut drawers and gilt-bronze mounts; 34 x 66 ½ x 28 ¼ in / 86.4 x 168.9 x 71.7 cm, Paris, ca. 1725-1730 (The J. Paul Getty Museum, Los Angeles).

<https://www.getty.edu/art/collection/object/103SEC?canvas=b2ba291b-f837-4fb3-a770-b1dfc0a86ea0>

Silver, gold, and gilt bronze were wrought to produce dishes, candlesticks, clocks, furniture decorations, and other decorative items. Louis XV's *Astronomical Clock* in Figure 11.30 is one of the many amazing mechanical timepieces in his collection. This imposing astro chronometer was designed by engineer Claude-Siméon Passemant. The mechanism is by clockmaker Louis Dauthiau and the gilt-bronze housing was sculpted by Jean-Jacques Caffieri and his son, Philippe Caffieri. Time, the phases of the moon, and the Copernican sun-centered movements of planets are designed to work until 31st December 9999. The celestial sphere includes a rotating bronze globe engraved with countries and their major cities.



Figure 11.30a Claude-Siméon Passemant (French, 1702-1769), Louis Dauthiau (French, 1730-1809), Jean-Jacques Caffieri (French, 1725-1792), and Philippe Caffieri (French, 1714-1774), *Astronomical Clock* (planets rotate around sun on top), **gilded** bronze, 79 in / 200.66 cm tall, 1753 Versailles (photograph by Trizek - Own work, CC BY-SA 3.0).

[https://en.wikipedia.org/wiki/Passemant_astronomical_clock#/media/File:Pendule_astronomique_de_Passemant_\(25\).JPG](https://en.wikipedia.org/wiki/Passemant_astronomical_clock#/media/File:Pendule_astronomique_de_Passemant_(25).JPG)



Figure 11.30b Claude-Siméon Passemant (French, 1702-1769), Louis Dauthiau (French, 1730-1809), Jean-Jacques Caffieri (French, 1725-1792), and Philippe Caffieri (French, 1714-1774), *Astronomical Clock* detail of the planets rotating around the sun, gilded bronze, 1753.

<https://en.chateauversailles.fr/press/restaurations/passement-clock-extraordinary-restoration#an-artistic-and-scientific-masterpiece>

Thomas Chippendale (English, 1718-1779) was a cabinetmaker and interior design supplier. The furniture in his widely distributed book, *Gentlemen's and Cabinet Maker's Director*, was influenced by French Rococo, Chinese, Gothic, and Queen Anne styles. Furniture makers around the world copied his designs, spawning the Chippendale style. Some of his pieces were carved, like the mahogany ribbon-back chairs in Figure 11.31. Mahogany is an insect-resistant, fine-grained tropical hardwood.



Figure 11.31 *Chippendale Style Chairs*, mahogany and tent stitch embroidery on canvas, 39 1/2 x 23 x 19 1/2 in / 100.3 x 58.4 x 49.5 cm, British, ca. 1755-60 (Metropolitan Museum of Art, Gift of Irwin Untermyer, 1964, CC0). <https://www.metmuseum.org/art/collection/search/203749>

Neoclassical Period (ca. 1760-1820)



Europe in 1812 (map by Alexander Altenhof, CC BY-SA 3.0)

https://commons.wikimedia.org/wiki/File:Europe_1812_map_en.png

The American Revolution (1775-1783), the French Revolution (1789-1799), and the Industrial Revolution (1760-1840) dramatically changed society as monarchies fell and machines began to replace people in the workplace. An uneasiness towards the extravagance of the upper class led to the Neoclassical style that emphasized symmetry and order and often referenced the art of Classical Greece and Rome.

Paul Revere was Boston's leading silversmith for almost 50 years. He worked with sheet silver produced on a rolling mill (Figure 10.16h). Revere shaped and **soldered** flat metal into three dimensional shapes, which is much faster than **raising** the forms. Revere owned a small mill for silver and later started a large industrial mill to roll copper.

Revere's *Sons of Liberty Bowl* (Figure 11.32) honors the ninety-two members of the Massachusetts House of Representatives who refused to rescind a letter protesting the Townshend Acts (1767), which taxed tea and other items imported from England. The rim is engraved with the names of

the members of the secret organization (to which Revere belonged) who commissioned the piece.



Figure 11.32 Paul Revere, Jr. (American, 1734-1818), *Sons of Liberty Bowl*, silver, 5 1/2 x 11 in / 14 x 27.9 cm, 1768 (Museum of Fine Arts, Boston).

<https://collections.mfa.org/objects/39072>

Josiah Wedgwood (1730-1795) was the most successful British manufacturer of ceramics inspired by Roman **cameos** (Figure 4.30), **earthenware** reliefs (Figures 4.35 and 4.36), and the Portland Vase (Figure 4.21). His Etruria factory in England produced high-fired tableware (Figure 11.33) and plaques for jewelry (Figure 11.34) and furniture (Figure 11.35) that featured white reliefs on a colored background. Called jasperware, it was made with a special, fine-grained stoneware that could be tinted while the clay was being mixed, or the pieces could be dipped in color. Most were blue (Figure 11.34), but green (Figure 11.33) and yellow were also popular.



Figure 11.33 Josiah Wedgwood (English, 1730-1795), *Vase*, jasperware stoneware, 10 $\frac{3}{4}$ x 5 in / 27.3 x 12.7 cm, Etruria, England, ca. 1785 (Victoria and Albert Museum). <https://collections.vam.ac.uk/item/O148633/vase-josiah-wedgwood-and/>

Glass, ceramic, and cut steel jewelry were respectable enough to be worn at court at the end of the century. Steel was inexpensive, but the labor-intensive faceting made it costly. Polished multifaceted steel studs reflected the light, mimicking diamonds. Unfortunately, only a few pieces have survived because of their brittleness and tendency to rust.

Wedgwood's jasperware plaques were set into fashionable cut steel buttons, belts, and buckles. The cut steel and jasperware *Button* in Figure 11.34 features six Zodiac signs (Capricorn, Sagittarius, Scorpio, Libra, Pisces, and Aquarius) framed with white clay garlands and faceted steel studs.



Figure 11.34 Josiah Wedgwood (English, 1730-1795), *Button*, cut steel with blue jasperware plaque, 1 $\frac{3}{4}$ x $\frac{1}{2}$ in / 4.4 x 1.3 cm, 1780-1800 (Victoria and Albert Museum). <https://collections.vam.ac.uk/item/O74131/button-josiah-wedgwood-and/>

The exquisite *Drop-Font Desk* in Figure 11.35 was one of Marie-Antoinette's (1755-1793) most treasured possessions at Versailles. Designed and crafted in France, the multi-media secretary showcases a large hand-painted Sevres soft-paste porcelain tile, fifteen Wedgwood jasperware medallions, and gilt bronze and painted metal ornaments set onto an oak carcass veneered with burl thuya, amaranth, mahogany, satinwood, holly, and ebonized holly.



Figure 11.35a Adam Weisweiler (French, 1744-1820), *Drop-Font Desk*, veneered oak, painted metal, soft-paste porcelain plaque, Wedgwood jasperware medallions, gilt-bronze mounts, marble, and leather, 51 x 27 x 16 in / 129.5 x 68.6 x 40.6 cm, Versailles, ca. 1787 (The Metropolitan Museum of Art, Gift of Samuel H. Kress Foundation, 1958, CC0).
<https://www.metmuseum.org/art/collection/search/202163>



Figure 11.35b Adam Weisweiler (French, 1744-1820), *Drop-Font Desk*, veneered oak, painted metal, soft-paste porcelain plaque, Wedgwood jasperware medallions, gilt-bronze mounts, marble, and leather, 51 x 27 x 16 in / 129.5 x 68.6 x 40.6 cm, Versailles, ca. 1787 (The Metropolitan Museum of Art, Gift of Samuel H. Kress Foundation, 1958, CC0).
<https://www.metmuseum.org/art/collection/search/202163>

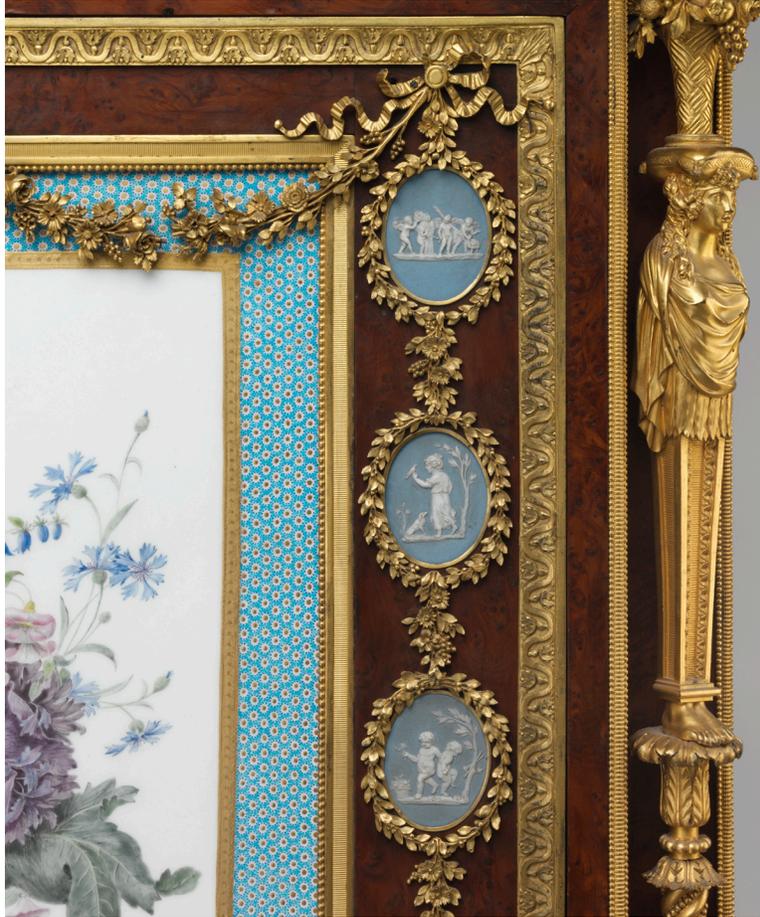


Figure 11.35c *Drop-Font Desk* soft-paste porcelain plaques by Edme François Bouillat père (French, 1740-1810) and Geneviève Taillandier (active 1774-98), Wedgwood jasperware medallions, gilt-bronze mounts by Pierre Rémond (French, 1747-1812), Versailles, ca. 1787 (The Metropolitan Museum of Art, Gift of Samuel H. Kress Foundation, 1958, CC0).

<https://www.metmuseum.org/art/collection/search/202163>

Bold Text Glossary

Adinkra – Cloth from Ghana hand-printed with symbolic motifs.

Adire – Yoruba cloth that is resist-dyed in indigo from Nigeria.

Agave / Maguey / Sisal – Bast fiber extracted from the pointed leaves of large succulents native to the Americas.

Albarelo – Cylindrical ceramic jar used to store drugs and medicinal ingredients.

Alloy – Two or more metals mixed together while molten.

Amate / Bark “Paper” – Paper-like material made in Mexico by macerating, cooking, then beating the inner bark of certain trees.

Amphora – Double-handled ceramic vessel used to store wine and oil.

Annealer – A kiln used to slowly cool glass.

Anneal (glass) – To cool finished hot-worked glass slowly in a kiln so that the thick and thin parts cool at the same rate to prevent stresses within the glass.

Anneal (metal) – Metal is heated, then cooled to make it more pliable.

Anvil / Stake – A tool used to support metal during raising. Usually made of hard steel, stakes come in a variety of shapes and sizes.

Art Glass – Glass that is decorative and often functional.

Asymmetrical / Persian Knot – Used to create pile in rugs. The right and left sides of the knot are not the same.

Attica / Attic – The region around Athens, Greece.

Backstrap Loom – Warp is tensioned between a stationary object and the weaver’s body on this loom.

Barkcloth / Tapa – Fabric made by pounding the inner bark of suitable vines, shrubs, and trees to the desired width and length.

Basse-Taille Enamel – French for “shallow cut.” Low relief on metal covered with translucent glass enamel.

Bast – Fiber extracted from the stem of a plant or the inner bark of a tree.

Batik – Wax resist is applied to select areas, then removed after the fabric has been dyed.

Bentwood Lamination – Thin strips of wood are glued, joined together, then clamped to a curved form to produce a strong, curvilinear piece.

Bezel – Rim that holds a cabochon or other media in place.

Bisque / Biscuit – Fired unglazed ceramic that is durable, but absorbent enough for glaze application.

Bit Work – Molten glass sculpted and/or added to other hot glass.

Black Figure – Greek Archaic and Classical terracotta ware that features large black figures on a red background.

Blacksmith – A metalsmith who forges and shapes hot iron and steel.

Blowpipe – Hollow metal tube used for blowing air.

Bobbin Lace – Threads wound around bobbins are moved back and forth around pins (stuck into a pattern mounted on a pillow) to form an open fabric.

Bombé – The “blown out” shape of 17th century French Louis XIV Rococo style furniture.

Bone China – A type of white, translucent porcelain containing a high percentage of bone ash.

Boule Work – Sixteenth, seventeenth, and eighteenth-century marquetry technique using metal (often brass or pewter), wood veneer, and/or tortoise shell; perfected by André-Charles Boulle (1642-1732), the French cabinetmaker of Louis XIV.

Box Joint – Two pieces joined together with interlocking “fingers” cut at right angles.

Bow Drill – A drilling tool consisting of a bow and string.

Brass – An alloy of copper and zinc, sometimes with other trace elements.

Brooch – A woman’s ornament worn pinned to clothing at or near her neck.

Brocade – Cloth with decorative discontinuous supplementary weft. The extra weft is inserted into part of the textile as it is woven.

Bronze – An alloy of around 9 parts copper and 1 part tin, sometimes with other trace elements. Bronze is harder than copper and melts at 1742°F / 950°C, a lower temperature than copper.

Burnish – To rub the surface with a hard, smooth object.

Butt Joint – Two pieces joined together along their edges either on the same plane or at a right angle.

Cabochon – Semiprecious stone with a curved, convex face and flat back.

Cage Cup – Roman glass vessel that incorporates an intricately carved free-standing outer layer of glass.

Camelid – Fiber from alpaca, llama, and vicuña used to produce fabrics.

Cameo – Stone, shell, glass, or ceramic with multicolored layers whose top has been selectively removed to create a relief that contrasts in color with the background.

Canting – Batik tool used to draw lines and dots of molten wax resist onto fabric.

Cap – Copper block batik tool used to apply patterns of molten wax resist onto fabric.

Carcass – The framework of a piece of furniture.

Card Weaving / Tablet Weaving – Individual warp threads are inserted into holes punched into the corners of sturdy cards. The warp is tensioned, then one or more cards are turned to produce the various sheds for the weft to pass through to weave narrow bands of patterned warp faced fabric.

Carnelian – A brownish-red semi-precious stone.

Cartoon – A full-scale preparatory drawing.

Carve – Cutting into a surface to create a pattern.

Cased glass – Glass composed of differently colored glass layers fused together with heat.

Cassapanca – Long wooden Italian bench with a back, sides, and hinged seat that opens for storage, popular during the Renaissance.

Cassone – Carved wooden Italian marriage chest with a hinged lid, popular during the Renaissance.

Casting – The process of filling a hollow mold with molten or flexible media. Once the medium solidifies, the mold is removed to produce the product, called a cast.

Celadon – Greenish high fired stoneware and porcelain glaze of Chinese origin.

Ceramic / Pottery – Clay that has been fired to maturity.

Ceramist / Potter – A person who makes functional and/or non-functional objects with clay.

Champlevé Enamel – French for “to gouge out,” recesses in metal filled with opaque or translucent glass enamel.

Chasing – Hammering metal punches into the front side of metal to create or refine textured decorations. Often used in conjunction with repoussé to create a relief.

Chasuble – An ornate sleeveless outer vestment worn by some Christian priests when celebrating Mass.

China Clay / Kaolin – White firing clay that is the essential ingredient of hard paste porcelain.

China Paint / Enamel – A colorful low-fired overglaze.

Chiton – A loosely fitting rectangular linen garment worn in ancient times by Greek men and women.

Chintz – Cotton cloth printed or painted with floral patterns in India.

Cloisonné Enamel – Cloison is French for “cell.” Compartments formed by thin metal bands on a metal base filled with opaque or translucent glass enamel. The exposed tops of the bands add a linear element to the design.

Coil Building (clay) – Clay is squeezed and rolled into long, slender cylinders that are joined together in a spiral, then the joints are smoothed over.

Coil Building (basketry) – A flexible material is wrapped around a core and connected to its neighbor to form a spiraling structure.

Colloidal Fusion Welding / Colloidal Hard Soldering – A mixture of an organic binder (like tragacanth gum) and copper salts is painted where two pieces of metal meet. The piece is then heated to 1634°F / 890°C in a reducing atmosphere, which allows the copper to diffuse into both pieces at the point of contact. No solder is used, so “Colloidal Fusion Welding” is the correct term.

Combing – Manipulating bands of color on the surface of clay or glass with a pointed tool.

Compound Weave – Has more than one set of warp and weft elements, manipulated individually for weaving a patterned textile.

Copper – A reddish-brown colored metal that melts at (1984°F / 1085°C).

Core-Formed Glass – A mixture of clay, sand, and dung was shaped and attached to the end of a metal rod. The dry core was heated, coated with glass, then shaped by rolling on a smooth hard surface. After reheating, it was wrapped with strands of different colored hot glass,

the rod and core were removed, then the glass was slowly cooled to produce a small striped vessel.

Cotton – Seed fiber of several *Gossypium* plants grown in shades of white, brown, and green.

Coverlet – Bedcover woven with a loom-controlled pattern.

Crochet – French for “hook.” Interlooped fabric made with a hand-held hook.

Damascene – Soft metal inlaid with pressure into hard metal—usually gold, silver, brass, or copper forced into engraved depressions in steel, bronze, or nickel.

Damascus Steel / Wootz – Flattened iron is heated, folded, and forge-welded many times until hundreds of layers are formed. Carbon absorbed while heating converts the metal to wrought iron.

Damask – A monochrome reversible patterned textile made by weaving a single warp and weft together, using warp face and weft face satin weaves to create the figure and ground.

Depletion Gilding and Silvering – An alloy of copper and gold or silver is bathed in acid to dissolve the copper on the surface, leaving an almost pure layer of gold or silver.

Diamond Point Engraving – Diamond tipped tool used to scratch decorations on the surface of glass.

Die – A mold made of metal, wood, or stone.

Die Forming – Method of shaping metal, plastic or other material into a relief by pressing it into a concave die or between a pair of convex and concave dies.

Ding – Container for cooking, serving and storing food items. When made of clay, they were used for daily cooking, serving, and storing food. Cast bronze dings (Figure 5.1) were used during elite feasting and ceremonies.

Discontinuous Weft – Does not extend across the textile from selvage to selvage.

Dovetail Joint – Two pieces joined together with interlocking “fingers” cut at slight angles.

Drawloom – A loom with harnesses to weave the ground and individual heddles that are raised by draw boy (assistant) to produce a textile with complex imagery.

Dye – Soluble natural or synthetic colorant that soaks into fiber.

Earthenware – Clay that matures at temperatures below 2100°F / 1150°C.
This low fired porous ceramic is often glazed to make it more watertight.

Ebony – Very hard, black or extremely dark colored fine-grained wood.

Egyptian Paste / Egyptian Faience – Mixture of ground quartz or sand and natron (a naturally occurring mixture of sodium carbonate and sodium bicarbonate found on dried-out salt lakes in the Nile Delta) that is mixed, molded, dried, and fired. At around 1600°F / 870°C, some of the carbonate migrates to the surface and forms a glaze. Copper, manganese, or iron oxides are added to produce blue or black. It is sometimes used to glaze stone.

Electroforming – Electrodes are attached to source metal and an object (coated with a metallic surface) in the same electrolytic bath, then a low-voltage current dissolves the source metal to deposit a thick layer on the other piece.

Electroplating – Electrodes are attached to source metal and an object (coated with a metallic surface) in the same electrolytic bath, then a low-voltage current dissolves the source metal to deposit a thin layer on the other piece.

Electrum – Naturally occurring alloy of gold and silver.

Embossing – A soft sheet of metal is placed onto leather (or another yielding surface) or over a mold, then the metal is rubbed with a tool to create a raised line or shape on the other side.

Embroidery – Decorative stitches usually applied to fabric with a threaded needle.

Enamel – Glass fused to the surface of glass or metal with heat.

Enamel / China Paint – In ceramics, it is a colorful overglaze that matures at a relatively low temperature.

Engobe – A clay slip that may be applied before or after bisque firing.

Engrave – To remove part of a surface with a sharp tool or rotating abrasive disk.

Etch – To remove part of a surface with acid.

Ewer – A vessel to hold and pour a liquid, like water or wine.

Fabric – From the Latin word, “fabricare,” to fabricate. Many construction techniques can produce fabric, including bobbin lace, crochet,

knitting, needle lace, weaving, etc.

False-Filigree – Thin wax threads are used to create a piece that is transformed into metal through the lost-wax process. These cast pieces are often confused with the fine soldered wirework of true filigree.

Faience (vitreous) – Crushed quartz core covered with ceramic glaze.

Fiber – Plant, animal, or synthetic material capable of being spun into thread or yarn.

Fibula / Fibulae – A decorative Roman or Medieval pin (like a large safety pin) used to fasten clothing.

Filigree – Open or backed delicate pattern made with fine metal wires.

Firing / Fire – Heating clay until it matures and transforms into a hard ceramic.

Fire Gilding / Mercury Gilding – Technique used to deposit a thin layer of gold or silver on the surface of another metal. A mixture of mercury and gold or silver was applied then heated until the mercury evaporated, leaving only the precious metal.

Flamework / Lampwork – Glass worked with a torch.

Flashed Glass – A clear or tinted piece of glass fused to one or more thin layers of colored glass.

Flax – The stem of this plant is processed to produce fiber to make linen.

Float – A warp or weft thread that passes unbound over or under two or more of the opposite elements.

Flux (clay and glass) – Ingredient that lowers the melting temperature.

Flux (metal) – Applied to metal components to be joined together to prevent oxidation during fusing, soldering, and welding. Clean surfaces are essential during these processes. Different fluxes are used with different metals.

Foot Loom / Treadle Loom – Foot-operated harnesses control the warp while weaving a textile.

Forge – A blacksmith's workshop. A furnace used to heat metal with solid or gas fuel.

Forge Welding – Hammering together two or more fluxed pieces of metal heated to just below the melting temperature.

Forging / Forged – Forming or shaping cold or hot metal by placing it against a hard surface, then stretching or compressing it with a

hammer or press.

Furnace – An oven / kiln that can achieve the high temperatures needed to melt glass or metal.

Fuse / Fusing (glass and metal) – Two or more materials joined together or melted together with heat.

Gaffer – The glassblower who does the most critical steps when working glass on a blowpipe or pontil.

Gather – In glassblowing, the blob of molten glass on the end of the pipe.

Ghiordes / Turkish / Symmetrical Knot – Used to create pile in rugs; the right and left sides of the knot are the same.

Gilding / Gilded – Applying a very thin layer of gold or silver to the surface of an object. Techniques vary, according to the medium (see Depletion Gilding, Leaf, Luster, and Mercury Gilding).

Glass – Made by melting together silica (sand or crushed quartz), flux (soda ash), and a stabilizer (lime) at temperatures around 2400°F / 1316°C. It is worked cold (room temperature), warm (around 1251°F / 677°C), and hot (2000°F / 1093°C).

Glassblowing – Air is blown through the mouthpiece of a hollow metal blowpipe to inflate a bubble of molten glass on the other end.

Glass Cane – A slender rod of glass.

Glaze – A glassy mixture applied to the surface of clay, then fired. Various ingredients determine the color and melting temperature and whether it will be glossy, matte, or clear.

Gold – A lustrous yellow metal that does not easily corrode. Pure gold is expensive and soft, so it is often mixed with another metal to make it less expensive and more durable. The final color of the alloy depends on the type and quantity of metal added; the most popular being yellow, white, pink, and green.

Granulation – A small piece of gold or silver is heated until it melts and forms a ball, then it is cooled. Multiple balls are arranged in a decorative pattern on another piece of metal, then heated to fuse them to the surface without solder.

Greenware – Dry clay object before it has been fired.

Handbuilding – Forming clay by hand without the use of a potter's wheel.

Hard-Paste – European term for true porcelain.

Harness / Shaft – A frame that holds a group of heddles on a loom.

Heddle – A warp thread is held by a heddle on a loom. Heddles are moved up and down to weave cloth.

High Fired – Kiln temperatures between 2192°F / 1200°C and 2552°F / 1400°C used to mature stoneware and porcelain.

Huipil – A traditional blouse worn by Indigenous women in Guatemala and Mexico made with one or more pieces of fabric joined together into a rectangular shape then folded in half with a head opening in the center. The sides are usually sewn together, leaving openings for the arms.

Hydria – A three-handled Greek vessel used to hold water.

Ikat / Kasuri / Jaspe – Sections of warp and/or weft are wrapped to resist dye. The wrapping is removed after the thread has been dyed, then the threads are woven to produce a patterned cloth.

Interlace – Decorative, intertwined linear elements.

Intarsia / Inlay – From Italian for inlay, “intarsiare,” some of the surface is removed, then filled with decorative stone, wood, ivory, metal, shell, etc.

Iron – A gray hard metal that turns melts at 2800°F / 1538°C.

“Istoriato” – The Italian word for “history,” features colorful figurative scenes painted with glaze onto 16th century Italian ceramics.

Ivory – From animal teeth and tusks; elephant ivory being the most common.

Jacquard Loom – Invented by Jacquard in 1804, a mechanized loom with ground cloth harnesses and punched cards that control individual warp heddles for producing textiles with complex imagery.

Kaolin / China Clay – Essential high fire clay ingredient of porcelain.

Kente – Strip cloth woven in Ghana.

Kilim / Kelim – A sturdy weft faced slit tapestry woven from Eastern Europe.

Kiln – An insulated chamber that is heated to fire clay or to fuse, slump, or cast glass.

Kline – Greek and Roman reclining couch or bed.

Klismos – A curvy wooden chair that developed in 5th century Greece; the back and front legs curve in the opposite direction.

Knit – Interlooped fabric made with a pair of hand-held knitting needles or a knitting machine.

Krater / Crater – Large Greek and Roman ceramic bowl, often with a tall foot.

Lamination – Several thin layers joined together.

Lampas – A double layered cloth with a reversible pattern that was first woven in 11th century Iran on a drawloom with two sets of warp and weft; each set of warp and weft of the same color.

Lampwork / Flamework – Glass worked with a torch.

Lapidary – Cutting and polishing precious and semi-precious stones.

Lapis Lazuli – A blue semi-precious stone mined in Afghanistan for more than eight thousand years.

Lathe – Machine that rotates a workpiece on a horizontal axis.

Leaded Glass – Clear pieces of flat glass held together with strips of lead.

Leaf – A very thin piece of metal.

Leather-Hard – Clay that is dry enough to be stiff, but damp enough to work.

Lekythos – Slender Greek ceramic vessel used to hold oils and perfumes.

Linen – Fiber and fabric made from flax.

Loom – Weaving device that holds warp in sequence and under tension so that weft may be inserted to produce a textile.

Looping – A strand is crossed over itself, leaving an opening for the free end and full length to pass through.

Lost-Wax Casting – A wax model is covered with plaster or clay to create a mold. The mold is heated to melt out the wax, molten metal or glass is poured or melted into the cavity, then the mold is removed to reveal the casting.

Low Fired – Kiln temperature below 2100°F / 1150°C used to mature earthenware and overglaze.

Luster – Metal oxides painted onto the surface of cold glass or clay, then fired to create a metallic appearance.

Maiolica / Majolica / Faience – Earthenware with bright colors over a white tin-based opaque glaze; originally made to imitate porcelain.

Marquetry – Geometric patterns or pictorial compositions created with contrasting colors of veneer or other thin media fitted together and

glued to the surface of a support.

Medium / Media (plural) – Raw material.

Mercury Gilding / Fire Gilding – Mercury is mixed with gold, then applied to the surface of a piece to be gilded. The object is heated to evaporate the mercury, leaving a thin layer of gold.

Mesoamerica – Geographical area bounded by Central Mexico in the north and Honduras and El Salvador in the south that was home to many Pre-Columbian people (including the Maya and Aztec) that shared cultural traits.

Mesopotamia – The valley between the Tigris and Euphrates rivers corresponding to modern-day Iraq, southwestern Iran, Kuwait, northeast Syria and southeastern Turkey.

Miter / Mitre – Joint formed by abutting two 45 degree-angled surfaces at right angles.

Mokumé Gane – Japanese metalworking technique; alternating layers of non-ferrous metals are forge-welded, then manipulated to create patterns.

Mold – Negative impression that is used to replicate a positive three-dimensional form.

Mold-Blown Glass – Molten glass on a blowpipe is inserted into a mold, then inflated.

Mordant – French for “to bite,” it is used to fix dye to fabric. Mordants help dyes “bite” into cloth to keep the colors from washing out.

Mortise and Tenon Joint – Formed with a tongue (tenon) inserted into a hole of the same shape (mortise).

Mosaic Glass / Millefiori – Italian for “thousand flowers,” murrini or slices of a multicolored bundle of fused glass are placed closely together, then fused with heat to form a single piece.

Murrini – Small colorful glass cylinders and cubes made by cutting cross-sections of cane.

Needle Lace – Made by stitching with a needle and thread over a pattern.

Niello – Black inlay on metal made by filling depressions on metal with a mixture of ground silver, lead, copper, and sulphur. It is fused to the surface with heat, cooled, then polished.

Overglaze / Enamel – A colorful glaze that cannot be high fired is applied to the surface of a ceramic piece that has already been glazed and fired.

The piece is then fired at a low temperature.

Oxidation – Firing with an oxygen-rich atmosphere.

Paper – Made with macerated pulp mixed with water, strained, and dried.

Papyrus – Laminated fabric made by slicing papyrus reed into strips, then aligning, layering, and pounding them together.

Parquetry / Parquet – Pieces of wood arranged in repeating geometric patterns on furniture or floors.

Pâte de Verre – French for “glass paste,” it is produced by pressing a mixture of glass granules, a binder and flux into a mold. The filled mold is left to dry, fused with heat, cooled, then cleaned.

Patina – Coloration that forms on a surface as it reacts to environmental elements.

Pectoral – A large ornament worn on the chest.

Penannular Brooch – Used to fasten clothing, it consists of a long sliding pin attached to a C-shaped metal ring.

Peplos – A long, rectangular woolen garment folded at the top and gathered at the waist, worn by Greek women.

Pigment – Insoluble coloring agent that adheres to the surface.

Pile – Decorative loops or tufts formed by hand-knotting or with supplementary warp that protrude above the surface of a textile.

Pithos / Pithoi (plural) – Large Minoan ceramic storage vessel(s).

Plain Weave / Tabby – A balanced weave made by passing a single weft over one then under one warp, reversing the sequence in each row. Both the warp and weft are visible on the finished cloth.

Plaiting – Diagonal interlacing of two or more elements, often used to produce baskets and fabrics.

Ply – Number of spun fibers twisted together.

Porcelain / Hard Paste – Ceramic developed in China that becomes vitreous, nonporous, white, and translucent when fired to between 2192°F / 1200°C and 2552°F / 1400°C.

Potter’s Wheel – A disk on a vertical rotating shaft that enables a potter to form a cylindrical clay object with both hands.

Potter / Ceramist – A person who uses clay to make functional or non-functional objects.

Pottery / Ceramic – Clay that has been fired to maturity.

Press Molding Clay – Soft clay is pressed into a decorative mold.

Press Molding / Pressed Glass – Molten glass is poured into a patterned metal mold, followed by a plunger, to quickly form a decorative glass object.

Punty / Pontil – Solid metal rod that supports the bottom of a molten glass piece after it has been removed from the blowpipe.

Quilt – A top fabric composed of many pieces is sewn to a backing fabric, usually with a layer of batting in between. Decorative stitches secure the layers.

Raising – A technique that transforms a flat sheet of metal into a three-dimensional form by hammering the surface into a hollow form or against an anvil or stake.

Raku – Originally a Japanese firing method; red-hot glazed ceramics are removed from the kiln and cooled quickly.

Red Figure Ware – Greek Classical Period terracotta that features large red figures on a black background.

Reduction – Firing with an oxygen-starved atmosphere.

Reliquary – Container for a relic.

Repoussé – Hammering or pressing into the reverse side of metal to shape the form or to raise the surface on the front. Often followed by chasing to refine the details. From the French word, “repousser,” which means, “to push back.”

Resist – Applied to a surface before glazing, printing, or dyeing to prevent absorption in the covered area.

Rhyton – Cylindrical drinking vessel that usually includes a sculpted head on the bottom.

Sagger – Ceramic container used to protect delicate clays and glazes in a kiln during firing.

Sagging / Slumping – Glass is placed over a mold in a kiln, then heated until the glass is flexible enough to collapse into / onto the mold.

Salt Glaze – Sodium chloride introduced into the kiln at its maximum temperature vaporizes and combines with silica on the surface of high fired clay to form a textured glaze.

Sandblasting – Sand is forcibly sprayed onto a surface to remove the outer layer.

Sarong – Traditional cloth worn wrapped around the lower body of Malay men and women.

Satin – Smooth, glossy textile with intermittent warp floats on one side and weft floats on the other side.

Sgraffito / Scraffito – From Italian “graffiare” (to scratch); a sharp tool cuts through an unfired layer of slip or glaze to reveal the contrasting clay below.

Selvedge / Selvage – Finished edge of a textile where the warp or weft turns around.

Shard / Sherd – A broken piece of fired clay.

Shed – Temporary opening created by raising or lowering select portions of warp for passage of the weft while weaving on a loom.

Shibori – Japanese resist dye technique for cloth using stitches, gathering, folding, binding, and/or twisting.

Shuttle – Holds the weft and passes it through the shed during weaving.

Silk – Strong protein filament produced by a silkworm while making its cocoon used to produce fabrics.

Silver – A lustrous white metal that tarnishes to black. Fine silver is 99.9% silver, but too soft for most applications. Sterling silver is alloyed with 7.5% copper to make it stronger.

Slab Building – Clay is rolled into a flat slab, cut, then joined together while still soft or leather-hard.

Slag – A glass-like by-product of smelting.

Slip – Fine clay suspended in water, sometimes colored, used for mold casting, for joining together pieces of clay, or for decorating damp clay surfaces.

Slow Wheel – Base with a moveable disk on top that is rotated by hand; used by a potter to produce symmetrical clay vessels. A stone example from Mesopotamia (dating to 3500 BCE) has a central shaft on the bottom that fits into a hole in the base. Another type, consisting of two convex ceramic disks placed curve to curve, is utilized in Coyotepec, Mexico, to make earthenware vessels.

Slumping / Sagging – Glass is placed over a mold in a kiln, then heated until the glass is flexible enough to collapse into / onto the mold.

Smelting – Extracting metal from ore in a furnace.

Soda Glaze – Sodium carbonate and water mixture sprayed into the hot kiln at the end of the firing vaporizes and combines with silica on the clay surface to form a glaze.

Soft Paste Porcelain – Low fired European white translucent ware made to imitate porcelain.

Solder – An alloy used to join hot metal together. Solder melts at a lower temperature than the metals it is uniting.

Songket – Brocade fabric hand woven in Indonesia (and some neighboring countries) with real or synthetic gold and silver threads on a silk, rayon, or cotton base cloth.

Spindle (fiber) – A notched shaft with a weight towards one end that is rotated to twist loose fiber, transforming it into yarn or thread. A drop spindle spins freely in the air.

Spindle Whorl – The circular weight placed towards the bottom of a spindle to help maintain momentum and keep the spun yarn from sliding off the bottom.

Spinning (fiber) – The process of twisting loose fibers together to produce a continuous strand.

Sprang – Warp is fixed at both ends and crossed over one another, twisting the top and bottom elements then securing the central part.

Sprig Mold – Mold made of fired clay, plaster, or other material, with a decorative concave surface. Damp clay is pressed into the mold then removed and attached to leather-hard clay.

Stained Glass – Colored and painted window glass held together with strips of metal.

Stake / Anvil – A tool used to support metal during raising. Usually made of hard steel, stakes come in a variety of shapes and sizes.

Stamping – A patterned punch or stamp is hammered into a surface to impress or print a decoration.

Steel – A gray-colored alloy of iron, carbon, and other elements.

Stippling – A pattern of dots that forms a picture.

Stoneware – Ceramic that developed in China that becomes vitreous, nonporous, and stone-like when fired between 2192°F / 1200°C and 2372°F / 1300°C in a kiln.

Supplementary Warp / Supplementary Weft – Non-structural warp or weft used to embellish a textile during the weaving process. If this extra warp / weft is removed, the ground cloth is still intact.

Symmetrical / Ghiordes / Turkish Knot – Used to create pile in rugs; the right and left sides of the knot are the same.

Tabby / Plain Weave – Textile with a single weft passing over a single warp then under a single warp, reversing the sequence with each pass of the weft.

Tablet Weaving / Card Weaving – Individual warp threads are inserted into holes punched into the corners of sturdy cards. The warp is tensioned, then one or more cards are turned to produce the various sheds for the weft to pass through to create warp faced fabric.

Tapestry – Patterned textile of weft faced tabby or twill weave with multiple colors of discontinuous wefts.

Tapa / Barkcloth – Fabric made by pounding the inner bark of suitable vines, shrubs, and trees to the desired width and length.

Terracotta – Latin for “baked earth” so it is both the raw clay and fired clay. A type of porous earthenware that matures around 1000°F / 538°C. The high iron content lowers the melting temperature and colors the body red orange to brown.

Terra Sigillata – Glossy terracotta ceramic made by applying highly refined slip, then burnishing and polishing the slipped surface before firing.

Textile – From the Latin word, “texere,” to weave, it specifically refers to cloth that has been woven on a loom. Although all textiles are fabrics, the reverse is not true.

Throwing – Clay is centered on the head of a spinning potter’s wheel, then formed by hand.

Torc – A metal neck ring with a front opening worn by high-ranking tribal men in Europe from the 8th century BCE through the 3rd century CE.

Treadle Loom / Foot Loom – Foot-operated harnesses / shafts control the warp while weaving a textile.

Turkish / Ghiordes / Symmetrical Knot – Used to create pile in rugs; the right and left sides of the knot are the same.

Twill Weave – Textile with diagonally aligned floats, formed by passing the weft over two or more warp elements, then under one or more warp elements in sequence, moving over one or more warp elements with each pass.

Twining – Two or more wefts pass in front and behind warp and then twist together between the warp to produce a basket or fabric.

Underglaze – Colorful oxides applied to clay, then covered with a transparent glaze.

Velvet – As it is being woven, wires are inserted into the open shed to form loops of supplementary warp over all or part of the surface of a fabric. Cut velvet is produced by cutting the loops before removing the wire.

Veneer – Thin slices of decorative wood glued to the surface of less expensive, more stable wood.

Vitrify – Transform into glass.

Vitreous – Glass like and not porous.

Volute – A spiral or “S” curved ornament.

Wabi-Sabi – Japanese aesthetic of imperfection.

Warp – Lengthwise elements held in tension on a loom.

Warp Faced – Warp placed close together to mostly or completely cover the weft of the textile.

Washi – Hand-made Japanese paper.

Wax resist – a protective layer of wax is applied to protect a cloth, ceramic, or other material, from being dyed, glazed, or painted. The original surface is revealed when the wax is removed.

Weaving – Interlacing warp and weft elements at right angles to each other to produce a textile.

Wedging Clay – Kneading or pounding clay until it has a uniform consistency and air pockets have been removed.

Weft – Crosswise elements inserted over and under the warp to produce a textile.

Weft Faced – Weft placed close together to mostly or completely cover the warp of the textile.

Woodturning – Cutting wood on a horizontal axis while it is spinning on a lathe.

Wool – Protein fiber shorn from sheep used to produce fabrics.

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Professor Carol Ventura taught the Paleolithic through twenty-first century art surveys, Mesoamerican art, and craft history at Tennessee Technological University until her retirement in 2021.

In addition to a PhD in Art, she has an MA in Ceramics and an MFA in Printmaking, Papermaking and Book Arts. Her award-winning ceramics, fiber art, glass, jewelry, and photographs have been included in more than a hundred invitational and juried exhibitions. Carol has also taught batik, ceramics, photography, printmaking, silversmithing, cloisonné enameling and weaving on the college level. Her studio background adds an extra dimension to her teaching and writing because she understands how crafts and art are made and includes that information in her classes and publications.

Carol worked with a weaving cooperative in Guatemala as a Peace Corps volunteer from 1976-80. She later wrote *Maya Hair Sashes Backstrap Woven in Jacaltenango/Cintas mayas tejidas con el telar de cintura en Jacaltenango*, Guatemala, a bilingual book based on her dissertation. Carol also authored three books about tapestry crochet, a craft she learned while in Guatemala.

Carol has interviewed and photographed craftspeople around the world - some of which are included in this book. More may be found on the web pages linked to her home page at <https://www.carolventura.com/>. She has presented papers at international conferences, including the 47th International Congress of Americanists, The 6th Annual Conference on Textiles, The Handweavers Guild of America International Conference, and the College Art Association.

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Carol Ventura surrounded by first millennium Mochica portrait vessels at the Larco Museum in Lima, Peru, 2017.