Techniques and Technology

In 1678 Joseph Moxon of London began printing *The Mechanick Exercises* in which he described basic tools and processes for many crafts. He found an eager audience, and his material remained in print through 1703. By observing that "one Trade may borrow many Eminent Helps in Work of another Trade," Moxon recognized that particular techniques are not defined only by specific crafts.[10] Three centuries later curiosity about the "art and mystery" of crafts remains strong, perhaps enhanced by the numbers of objects surviving from earlier times that are no longer made and used. An understanding of craft techniques, which in turn affects how an object appears, makes the decorative arts more accessible.

Various inlay techniques, for example, were used in different trades and with different materials (figs. 46, 47, 48, 49).

[10] Joseph Moxon, *The Mechanick Exercises; or, The Doctrine of Handy-Works* (3d ed., 1703; reprint, New York: Praeger Publishers, 1970), preface. Crafts include smithing, joinery, house carpentry, turning, bricklaying, and sundial making.

Figs. 46, 47. Tumbler decorated with sulphide bust of Benjamin Franklin inlaid in base. Bakewell, Page and Bakewell (1808–82), Pittsburgh, Pa., ca. 1825, lead glass, H. 3⅜″ (acc. 57.76.1).

Fig. 48. Detail of a butterfly inlay on the drawer front of a dressing glass. New Jersey, 1800–1820, mahogany, inlays, H. (inlay) 2⅛″ (acc. 51.23).

Fig. 49. Turner decorated with three inlaid hearts. Probably southeastern Pennsylvania, 1800–1840, wrought iron, copper inlay, L. 13″ (acc. 65.1617).

Fig. 46

Fig. 47

Fig. 48

Fig. 49

Fig. 50

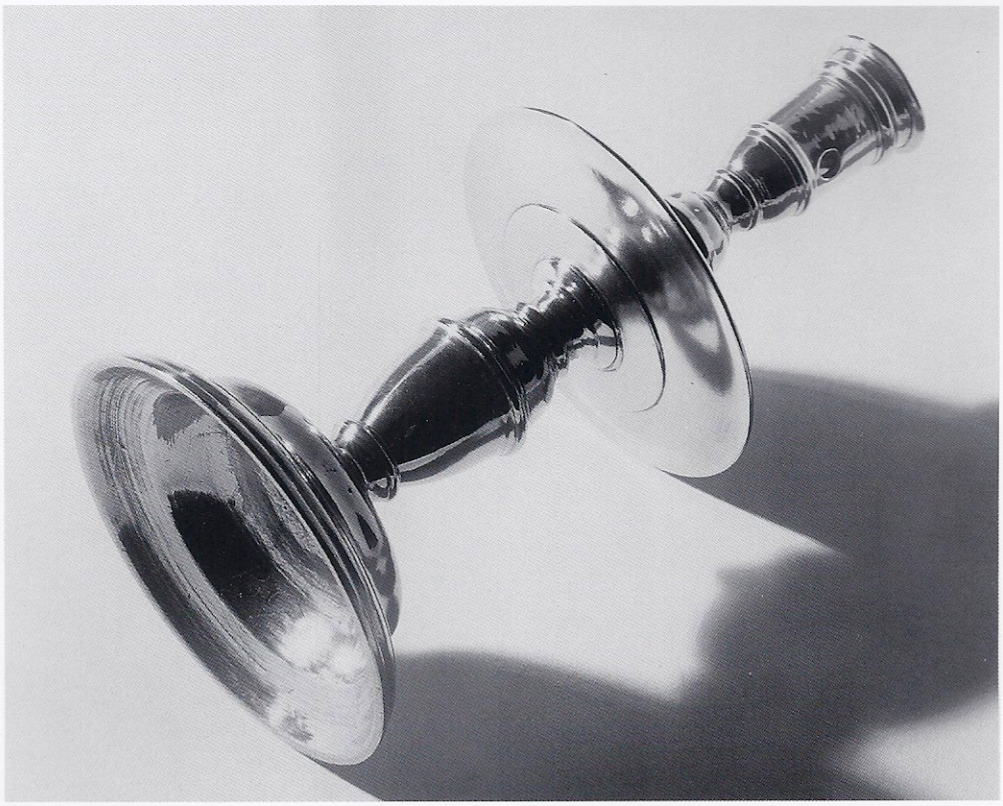

Fig. 51

Relationships among different trades based on commonly used techniques are also apparent in turning, a process that involves removing material from objects rotating on a fixed axis. Turning is fundamental to much furniture making in the manufacture of structural and decorative elements (fig. 50). Turning was also used by brass- and coppermakers, who cast candlesticks and other cylindrical objects and then placed them on lathes to skim the surfaces with "hooks" that sharpened the contours (fig. 51). Potters have used another kind of turning, evident in the making of a mochaware "engine-turned" bowl in which the geometric, ringed decoration was applied by a regulated turning mechanism (fig. 52). Carving, cutting, and engraving—all techniques that rely on freehand removal of material from a surface—represent other processes common to crafts as diverse as pottery making, glassmaking, printing, woodcarving, and metalworking.

Fig. 52

Fig. 50. Chest with one drawer, decorated with pairs of applied split turnings. Symonds shop tradition, Salem or Rowley, Mass., 1660–90, red oak, black walnut, maple, and white pine, H. 28¾″ (acc. 58.688).

Fig. 51. Candlestick with skimming marks visible around the candle socket and the underside of the base. Germany or the Netherlands, seventeenth century, brass, H. (standing upright) 9¼″ (acc. 54.554).

Fig. 52. Engine-turned bowl whose decoration was cut into the sides of the body by a rotating device that regulates a cutting point in a variety of patterns. Staffordshire, England, 1800–1825, pearlware, H. 3½″ (acc. 70.180).

Basic techniques for shaping clay into finished ceramic forms include "throwing," or raising, on a potter's wheel and casting slip (a watered clay) into molds (figs. 53, 54). Casting, a process of giving shape to liquified materials by pouring them into a mold and letting them harden without pressure, and raising are also essential techniques in metalworking. Silversmiths cast parts and whole objects, ranging from small finials to large platters (fig. 55). They also "raise" hollowware forms by repeatedly hammering silver disks and slowly turning them by hand (figs. 56, 57).[11]

[11] A parallel form of turning occurs with spinning, a process employed by pewterers to make vessels from sheets of britannia – an alloy of tin, antimony, and copper – by turning the disks on a lathe and shaping them against wooden forms. Although this technology was available by the early 1800s, the relatively few surviving examples of spun pewter suggest that most pewterers continued to cast and skim the metal.

Fig. 53

Fig. 54

Fig. 53. Thrown ceramic bowl. New England, probably eastern Massachusetts, eighteenth century, glazed earthenware, H. 3½″ (acc. 60.312).

Fig. 54. Porous molds used in slip casting were made (and remade) from master molds. Finely rendered surface details of this master mold for a cup contrast with the less distinct surface qualities on a similar cup. (The casting process and application of glaze both contributed to the softer design details on the cup.) Mold: Staffordshire, England, 1740–60, stoneware, H. 3⅝″ (acc. 70.424; gift of Mr. and Mrs. John Mayer). Cup: possibly Aaron Wood (1718–85), Burslem, Staffordshire, England, 1740–60, salt-glazed stoneware, H. 2¹¹⁄₁₆″ (acc. 58.873).

Fig. 55. Faint hallmarks below the rim indicate that the form of this slip-cast porcelain creamer was taken directly from an English silver creamer of 1773/74 similar to the one shown. Porcelain creamer: probably Pennington Factory, Liverpool, England, ca. 1774, soft-paste porcelain, H. 4⅝″ (acc. 69.135). Silver creamer: Thomas Smith, London, England, 1752/53, silver, H. 4¾″ (acc. 80.195; gift of Marshall P. Blankarn).

Figs. 56, 57. Lettering visible along the rim indicates that the silversmith made this ladle from a silver coin, an Austrian thaler. Joseph Warner (1742–1800), Wilmington, Del., 1763–1800, silver, horn, L. 13⅝″ (acc. 82.89).

Fig. 55

Fig. 56

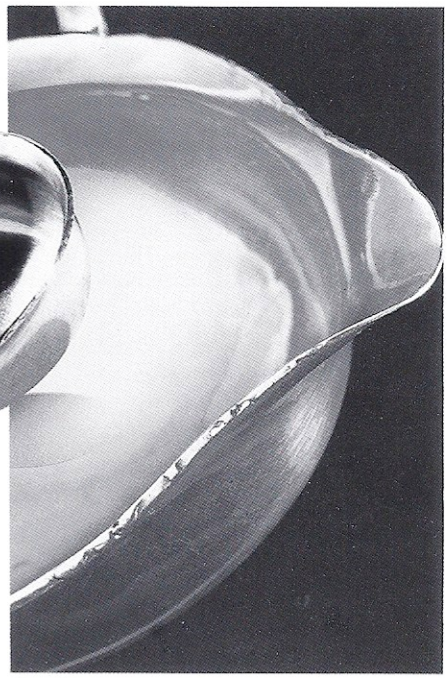

Fig. 57

Despite the similarities in processes among the various trades, tools and specific skills necessary to execute them varied significantly and required substantial investments of money to acquire them and time to learn their use. Certain processes have few parallels in other trades. Glassblowing, for example, has been a singular skill among the many tasks required to produce glasswares (fig. 58). The great demand for glassblowers and their migratory life-styles contributed to their distinct identity among tradesmen. Some emphasized glassblowers' individuality further by characterizing them as being "addicted to carousing and extravagance."[12]

[12] Quoted in Arlene Palmer Schwind, "The Glassmakers of Early America," in *The Craftsman in Early America*, ed. Ian M. G. Quimby (New York: W. W. Norton, 1984), p. 180.

Fig. 58. Glassmakers' products were made by more than one process. *Left:* vase blown into a part-sized paneled mold; probably Boston and Sandwich Glass Company (1825–88) Sandwich, Mass., 1835–55, lead glass, H. 7 11/16" (acc. 59.3140). *Middle:* free-blown bottle, probably midwestern United States, 1815–50, nonlead glass, H. 10¾" (acc. 68.194; gift of Charles van Ravenswaay). *Right:* blown and engraved pitcher having a tooled spout and applied handle. "W / I&E / 1810" engraved on body under spout, England or Ireland, 1810, lead glass, H. 6⅝" (acc. 61.18).

Fig. 58

Changes in techniques and processes have an impact on the shape and use of objects and on everyday life and culture. Lighting is a good illustration.[13] In the seventeenth and early eighteenth centuries, common lighting devices were betty lamps, candlesticks, and taper sticks, all of which burned oils and animal fats (fig. 59). Adjustable, portable stands allowed individuals to set the light source close to the work at hand (fig. 60). From the 1780s through the 1860s, many technical improvements in wicks and in fuel refining led to higher and more even levels of illumination, reduced the risk of accidental fires, and lowered levels of smoke and sparks (figs. 61, 62). These changes affected routines of daily life by extending people's ability to read and carry out other activities in nondaylight hours and by providing more flexibility concerning where such activities could take place in the home.

[13] Some other areas of study include heating, transportation, and numerous developments in various crafts.

Fig. 59. The inner bowl of a crusie lamp (distinguished from a betty lamp by an outer bowl to catch drippings) held oil that burned at a wick placed in the spout. Probably England, eighteenth century, iron, H. as shown 7¾″ (acc. 59.1993).

Fig. 60. The ratchet design of some stands allowed a user to adjust the height of the burning candle for best illumination. Stand: possibly New England, 1750–1800, maple and white pine, H. (as illustrated) 25¾″ (acc. 60.741). Candlestick: probably Birmingham, England, 1750–70, brass, H. 8¼″ (acc. 58.1902).

Fig. 61. The cylindrical burners of argand lamps produced bright and steady light; the refined oils, gravity fed from a reservoir to a burner that needed little adjustment, produced little soot or other residue. John Phipson and Abraham Lambley (1828–39), Birmingham, England, brass, iron, and glass, H. 20½″ (acc. 73.40.1–.2; purchased with funds from the Atwater Kent Foundation).

Fig. 62. The ring-shaped reservoir supporting the glass globe of a sinumbra lamp minimized shadows. Thomas Messenger and Sons (1829–46), Birmingham, England, 1829–46, brass, iron, and glass, H. 27¾″ (acc. 75.223; purchased with funds from the Claniel Foundation).

Fig. 60

Fig. 59

Fig. 61

Fig. 62