Chapter 1

HALLS OF MIRRORS

[I]t is as if the mirrors paint themselves. The mirrors make paintings so true to life and so brilliant as to delight and dazzle the eye in equal measure.

—JEAN-AYMAR PIGANIOL DE LA FORCE, *NOUVELLE DESCRIPTION DES CHÂTEAUX ET PARCS DE VERSAILLES ET DE MARLY*, PARIS, 1702

Mirrors, the narrated effects of which we would view as a fairy tale and a wonderment far beyond belief . . . mirrors form pictures in which imitation is so perfect that it equals nature itself in the illusion it creates before our eyes.

—ETIENNE LA FONT DE SAINT-YENNE, *RÉFLEXIONS SUR QUELQUES CAUSES DE L'ÉTAT PRÉSENT DE LA PEINTURE EN FRANCE AVEC UN EXAMEN DES PRINCIPAUX OUVRAGES EXPOSÉS AU LOUVRE LE MOIS D'AOÛT 1746*, PARIS, 1747

I. VERSAILLES

In the December 1684 issue of the Parisian monthly gazette, *Le Mercure Galant*, a lengthy review article celebrated the recent opening of the Grande Galerie de Versailles, or Galerie des Glaces as it would later become known (Fig. 5). Written under the nom de plume of 'M. Lorne, *peintre*', the essay was in fact

Fig. 5 Jules Hardouin-Mansart, Grande Galerie des Glaces, Château de Versailles, 1678–84.
Photo: Wikimedia

by the King's painter, academician, and decorator of this gallery's vast ceiling, Charles Le Brun, in praise and explication of his own work (Fig. 6).[1] Over the preceding few years the *Mercure*, as the official review of culture and the arts under the auspices of Louis XIV since its foundation in 1672, had published intermittent reports on the progress of the Galerie at Versailles, as with all other projects of the crown. Le Brun's text was entirely devoted to the allegorical elaboration of his painted history of Louis' rule, narrated across the great ceiling vault of the Galerie. His ceiling constituted a pictorial emulation of such panegyrics of monarchy as Rubens' cycle for Marie de Médicis and (though never completed) her husband Henri IV. The historic innovation of the Versailles Galerie, however, was the displacement of painting from its walls in favour of mirrors. For the back wall of the Grande Galerie, distinct from the painted or marbled surfaces of its architectural forebears, was instead lined with an arcade of fictive arches, each panelled with mirrors, facing onto the correspondingly arched windows overlooking the gardens.[2] As the royal historiographer, Jean-Aymar Piganiol de la Force, described in his illustrated guide book to Versailles of 1702: 'the windows of this gallery were made with such art, and placed so ingeniously to face the landscape, it is as if the mirrors paint themselves. The mirrors make paintings so true to life and so brilliant as to delight and dazzle the eye in equal measure.'[3]

To the Parisian art critic Etienne La Font de Saint-Yenne, in his considered *Réflexions sur la peinture* of 1747, such mirrored surfaces were also a source of wonderment that could rival, even surpass painting, for their capacities of imitation. Writing over half a century after the opening of

https://doi.org/10.1017/9781009448833.002

Fig. 6 Charles Le Brun, *Histoire de Louis XIV*, painted ceiling of the Grande Galerie des Glaces, Château de Versailles, 1678–86.
Photo: Wikimedia

the Galerie at Versailles, La Font de Saint-Yenne reflected critically on the usurpation of painting by mirrors in the 'Rococo' interiors that would sweep through the subsequent decoration of Versailles, other royal residences, eighteenth-century Parisian *hôtels*, and across the courts and palaces of Europe. La Font de Saint-Yenne readily perceived the intervention of the mirror-image in its transformation not only of the history of interior decoration but of painting itself. For if the mirror was deployed as a decorative replacement for painting, as at the Galerie of Versailles, then its reflected image had come to be seen as a specular simulacrum of painting's subject. At Versailles, the reflected image of the king in the Grande Galerie in his capacity as head of state in reception of foreign embassies, or the fêtes that marked royal dynastic marriage alliances and births, was a veritable counterpart to the painted images of Le Brun's ceiling above, celebrating the chief events of his reign. Painting and mirroring were thus sister arts in the encomia of the *grande manière* of the king and of history painting, defined as the illustrious deeds of great men. In the Parisian Rococo interior, however, as La Font de Saint-Yenne saw, the subject of the mirror reflection became instead that of *petit genre*. Albeit of the heightened civility of aristocratic pastimes, yet the effect of the eighteenth-century mirror interiors inaugurated by the Grande Galerie would, in his view, alter the course of painting from the grandeur of history to *petits sujets*.[4] What Paganiol and La Font de Saint-Yenne's commentary capture so powerfully is the question of the relationship between painting and mirroring, which the

https://doi.org/10.1017/9781009448833.002

Galerie at Versailles had posed through their comparative juxtaposition. Like the structuring matrix of the decorative order in the Galerie at Versailles, La Font's critical perception rested on a long-standing art-historical realisation of a conceptual equivalence between painting and mimetic mirroring manifest in the earliest theoretical treatises on art of the Renaissance inaugurated by Leon Battista Alberti's *Della pittura*. As Le Brun would also acknowledge, albeit through a considered variation of painting's illusionistic space projected onto the ceiling vault of the Galerie, painting and mirroring were commensurate forms of the Albertian specular view of art.[5]

Marking the transition to a new historical episteme for the mirror as the centrepiece of a decorative order in what would become the eighteenth-century Rococo interior, yet the Grande Galerie may also be understood as the culminating monument of their reciprocally mimetic 'Baroque' comparison. Analysis of the Grande Galerie thus rests on a full consideration of the early modern mirror in its ontology, both as a material object and as a cultural metaphor, as an artefact and as an idea. This chapter therefore divides into two parts, the first concerned with Versailles, the second with the cultural significances of the mirror. For the example of Versailles prizes open the complex cultural relations of the early modern mirror-image across a prismatic enquiry that ranges from a politics and science of light, illumination, and reflection within the spatial forms of architecture, the emblematic 'mirror reflection' of the intellect and the psyche, and its related if deeply bivalent conceptualisation as an instrument of mimesis and illusion. The mirror itself is therefore the subject, as an object and as an allegory of illumination. Across the temporal cusps of late medieval, Renaissance, and early modern conceptualisations of reflection in both word and image, the mirror was the sign of the intellect as of the psyche, and so of thought itself. To address the larger cultural parameters of the early modern mirror metaphor through its interrelated facets, which range across disciplinary as well as geographical boundaries, constitutes a vast intellectual history of the specular image.[6] The example of Versailles as the Baroque apogee of this confluence between painting and mirroring thus opens up to consideration the early modern mirror's broader histories. In its exacting mimetic reflection of the visible field the mirror-image was perceived as an optical instrument of illusion, just like painting, in which the world was both impalpably present and absent. Tracing the early modern mirror-image metaphor across this chapter is to engage a wide range of cultural contexts: the subject of scientific study in the conduct of light, the many faces of reflections in devotional and romance poetry, the instrument of spectacular light effects in theatre's illusions, and the artist's mirror reflection as the very image of 'art' itself.

THE MIRROR OF PRINCES

Among the vast royal collections inherited by Louis XIV, and in which he took direct interest, was a series of early Renaissance illuminated manuscripts concerned with classical imagery of the 'mirror of princes', or the richly elaborated ancient theme of ideal rule. Some had been prestations to Charles VI and Queen Isabeau of France, others descended from the dukes of Burgundy, as a cadet line of the Valois monarchy, including early fifteenth-century manuscripts from the ambit of Jan van Eyck. Manuscript illumination was an art form much favoured by the dukes of Burgundy, van Eyck's patrons, in which the painter was likely first trained, and which flourished to an exceptional degree at the Burgundian court. It was also one which Louis XIV particularly heralded as a

historic manifestation of French royal lineage and dominion, as both a collector and a patron. Among them were a number of celebrated manuscripts on good government that included depictions of painted inset mirrors as emblems of royal wisdom. In Christine de Pizan's celebrated *Cité des dames* of 1405, Reason, alongside further personifications of regal virtue such as Rectitude and Justice, was configured with a tondo mirror upheld in her hand as the sign of tempered reflection and a cardinal virtue of monarchy.[7] Within the narrative conventions of panegyric this literary convention would also, much later, underpin Rubens' Marie de Médicis cycle for the Palais du Luxembourg and its intended counterpart of the life of Henri IV. Based on antique literary texts of exemplary virtue as prototypes, this was a genre of both literature and art titled *speculum principis*, or the 'mirror of princes', that would flourish across antiquity, the Middle Ages, and Renaissance with a major efflorescence in the Baroque.[8] It took many forms, from treatises written to princes upon accession to their throne to urge wisdom, fine judgment, and just rule, to political tracts on the exercise of power as the manifestation of magnificence, to encomiastic celebrations of the great deeds of their reign in both word and image. Such painted panegyrics of princely rule would reach an apogee across seventeenth-century court decoration, from Pietro da Cortona's Barberini ceiling in Rome to Rubens' London Whitehall ceilings. This is also the *topos* of Le Brun's heroic *Histoire du roi* series for the vault of the Grande Galerie at Versailles, and indeed the larger decoration of all royal residences under Louis XIV, as pictorial manifestations of his grandeur.

Le Brun's painted *speculum principis* took its place alongside the specular ornamentation of the Galerie's mirror arcades as an allegory of royal magnificence within the matrix of architecture and the decorative arts. Along the length of the gallery, the correspondence of mirror- and window-arcades forged a new decorative order of specular splendour predicated on the brilliance of natural light redoubled through its mirror reflection.[9] This association of the mirror with the enhancement of light was long-standing, in its capacities as an instrument and so emblem of reflection that was, from antiquity, read in cosmic allegories of the sun. The Galerie's display of specular light as an emblem of royalty was further heightened by myriad gilt chandeliers and wall sconces, magnified in their cut-crystal prism pendants. In the words of its illustrious literary visitors: 'This beautiful gallery is like a luminous walkway, lit as if by the sun itself, whose mirrors lend further perspectives that redouble its size' (Fig. 7).[10] 'The mirrors are counterfeit windows facing the real ones, and multiply this hall a million times over so that it seems almost infinite.... The lights are a thousand times redoubled in the mirrors, to form perspectives as brilliant as fire."[11] '[The enfilade] appears of an infinite length; imagine the éclat of a hundred thousand candles ... a July sun is less radiant.'[12] In the brilliant light of Louis' mirrors, the grandeur of the gallery was itself multiplied infinitely to form a specular cascade of glittering reflection.

As contemporaries also noted, the display of thousands of candles (at vast expense) in the Galerie's sconces and chandeliers was multiplied by their light reflection in the great mirrors of the hall.[13] For state receptions this brilliance was enhanced by the disposition of Louis' magnificent silver furnishings, no longer extant but known from descriptions in the *Mercure Galant*, as well as paintings and prints of state receptions such as the embassies of Genoa in 1685 and Siam in 1686. The display of princely silver included rows of gleaming chased vases, ewers, coffers, braziers, andirons, gilt caryatid torchères, and girandole candelabra, as well as tables inlaid with gold and precious stones along the Galerie walls. This sumptuous display culminated in the king's silver throne to signify Louis' magnificence (Fig. 8).[14] Among the king's gifts to the Siamese ambassadors were five

https://doi.org/10.1017/9781009448833.002

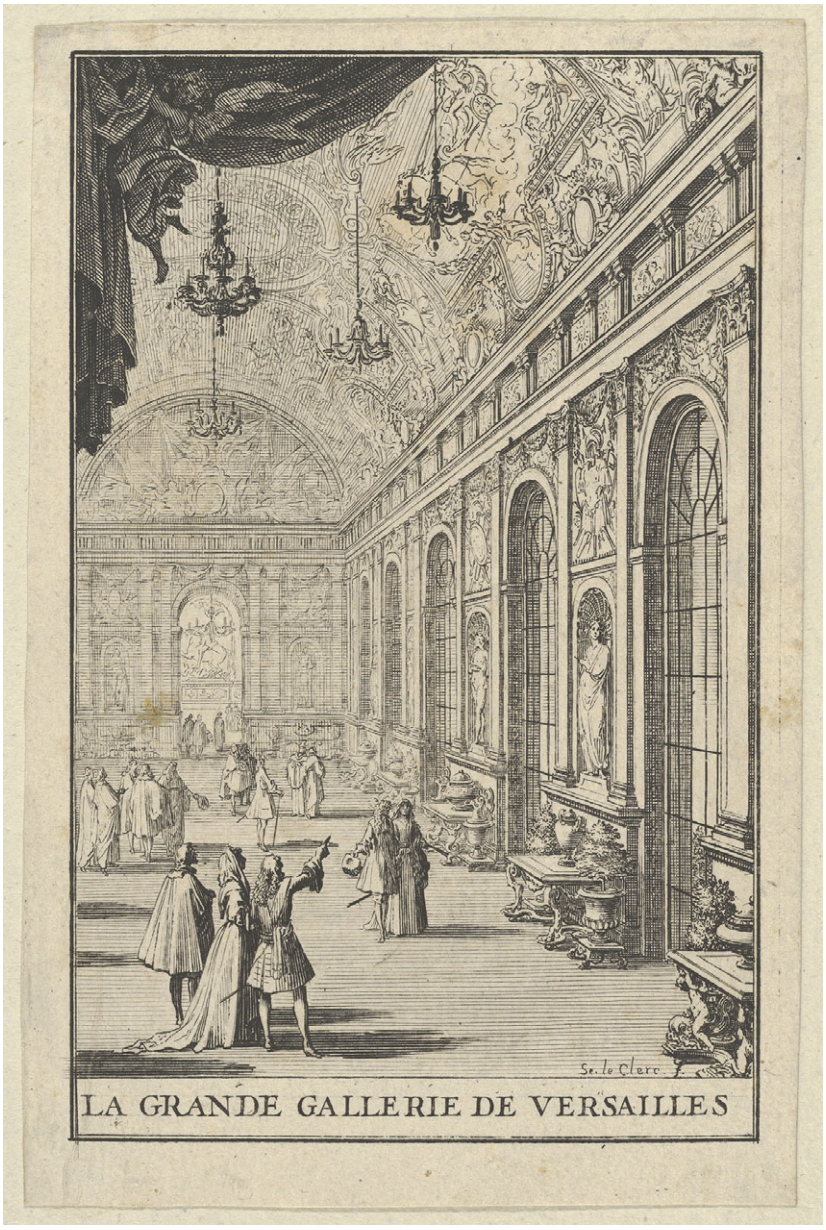

Fig. 7 Sébastien Le Clerc, *La Grande Gallerie de Versailles*, frontispiece to Madeleine de Scudéry, *Conversations*, I, 1684, etching, 15.5 × 10.2 cm.
Photo: Metropolitan Museum of Art

rock-crystal mirrors in richly worked crystal frames, as tokens of his '*splendeur*'.[15]

The king himself appeared dressed in a robe of spun-gold silk encrusted with diamonds as a further manifestation of his own devise, the sun. While the epithet of 'Sun King' was a nineteenth-century appellation for Louis XIV, yet the image of the sun was the king's chosen emblem from the inception of his personal rule in 1661 and the decision to move the court to Versailles, thus inextricably linked with the grandeur of this palace.[16] These lustrous textiles and furnishings amplified the rich effects of the Galerie's gilt architectural ornament: garlands of flowers and fruit, roses, crowns, royal devises, and trophies of arms, as well as its display of antique sculptures of sparkling crystalline white marble and rich polychrome portrait busts.[17] The painted colours of Le Brun's gallery vault are throughout of the most precious and lustrous pigments, particularly

https://doi.org/10.1017/9781009448833.002

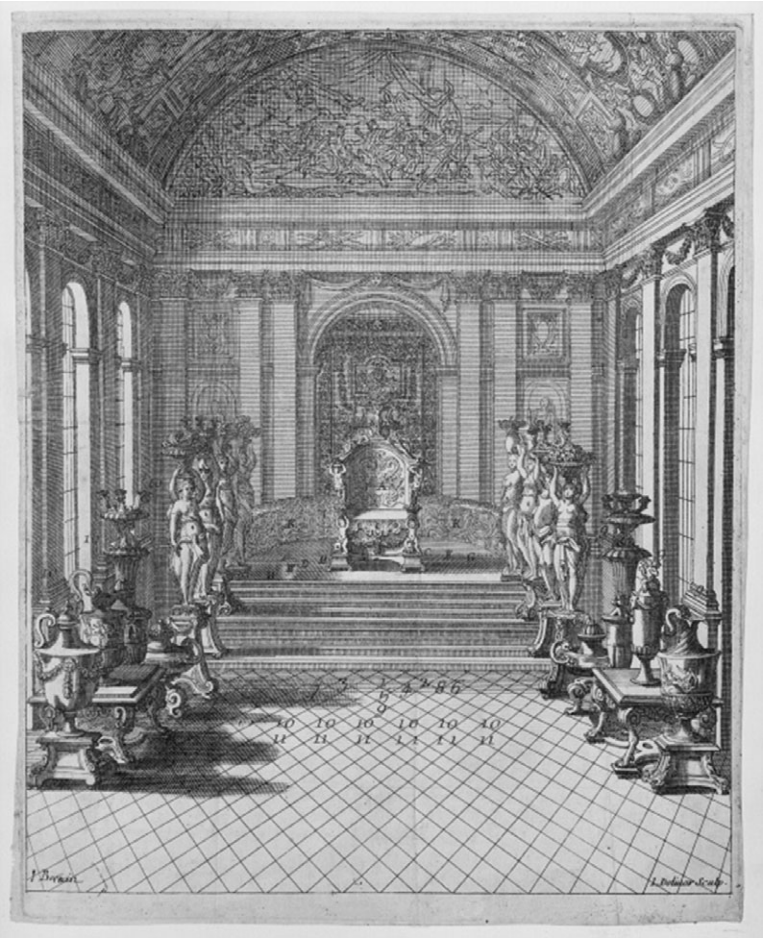

Fig. 8 Juan Dolivar (after Jean Berain), *Grande Galerie with Throne and Silver Furnishings,* September 1686 for *Mercure Galant*, engraving, 22.3 × 18.5 cm, Château de Versailles, inv. Gravures 111.
Photo: Réunion des Musées Nationaux

gilt and lapis lazuli, lit by hidden oculi to heighten their éclat.[18] Moreover, Louis' silver and gilt furnishings were themselves surfaces of scintillating light effects, furthered by their secondary reflection in the Galerie mirrors.

Most directly, the Galerie's arcade of mirrors reflected the light of the corresponding bay of windows on the opposite wall. The full-length windows of the Galerie were, in themselves, an architectural innovation of early modernity, dependent on incremental developments in glass-making to facilitate ever-greater panes and thereby increase interior light.[19] To this, the spectacular advent of the Galerie mirror arcades redoubled the fall of natural light within the hall. The mirrors also reflected the window view giving onto the gardens beyond, thus forging a 'landscape' background to the panoply of court ceremony captured in the hall's mirror reflections (Fig. 9).

Immediately beneath the windows of the Galerie, the gardens orchestrated by André Le Nôtre as part of Louis' aggrandisement of the château across the 1660s and '70s comprised a succession of *parterres d'eau*, or reflecting pools, lined with sculptures of Ovidian myth in gilt lead and bronze. These pools reflected the sky above, enhancing the light cast through the palace windows onto the mirrors of the gallery (Fig. 10). The parterres were ornamented with cascading jets of water in a sparkling display of fountains with myriad light refractions in their spray to enhance their luministic effects. Thereafter, canals of water extending into the distance shaped the celebrated perspectival axis of Le Nôtre's garden geometry as viewed from

Fig. 9 Jules Hardouin-Mansart, Grande Galerie des Glaces, Château de Versailles, 1678–84.
Photo: Wikimedia

the Galerie windows. Like an Albertian window frame of the landscape, Le Nôtre's *grande allée* rendered the park in terms of a perspectivally framed optical demonstration for the dominion of the royal eye as viewed from the windows of the Grande Galerie. The compass of Le Nôtre's orchestration of the park was that of a monumental landscaped sundial as homage to the Sun King.[20]

Fig. 10 André Le Nôtre, garden parterres, Château de Versailles, c. 1660s.
Photo: Réunion des Musées Nationaux

The sign of the sun was, of course, an archaic symbol of kingship and divinity as Louis surely knew from studies of Egyptology and myth. Its solar power was understood to reside in its specular reflection, as the source of Promethean fire and of Ceres' harvests. Successive sequences of fountain statuary across the garden elaborated an allegory of Louis as Apollo. The charioteer of the sun, Apollo, drove its course from dawn to dusk across the gardens of Versailles as a metaphor of Louis' *gloire* extending across the world.[21] Within the further apartments of the king's rooms beyond the Galerie, on the north side, a succession of planetary rooms to revolve around the Sun King was also conceived as a *speculum principis* in emulation of the heroic series executed by Pietro da Cortona for the Medici at the Pitti Palace in Florence.[22] The southern apartments were given over to collection cabinets (no longer extant) of the king's chosen treasures for display. These comprised books and cabinet pictures, but also the precious reflective materials so highly prized by Louis – bronze medals and armour, gold and silver filigree, gemstones and carved rock crystal, and mirrors to enhance their display.[23] Throughout, the imagery was of splendour and light, of which the Galerie's mirrors were the fullest manifestation.

Though the documentation does not permit certainty, it was likely the king's own suggestion to supplant painting with the brilliant effects of reflective mirrors in the arcades of his Grande Galerie, while Le Brun's painted ceiling above narrated the

https://doi.org/10.1017/9781009448833.002

historia of his reign as the château's culminating 'mirror of princes'.[24] Louis' personal devise of the sun was thus brilliantly reflected through the Galerie windows onto the mirrors, alongside the specular image of himself at court and the painted panegyric above. The Galerie's alignment of mirrors with painting therefore was an architectural manifestation of royal magnificence, their cascading reflections forging an infinite multiplication of the Sun King's resplendent image.[25]

MIRROR MANUFACTURES

The technology of mirror manufacture of the size and scale of the Galerie arcades was a newly-won and much-vaunted accomplishment of the French crown under the astute direction of the king's minister of his personal rule, Jean-Baptiste Colbert.[26] The fashion for mirrors was a long-standing one at the sixteenth-century French court, however, through imports from Italy. Seemingly inaugurated by Queen Catherine de Médici's *cabinet de miroirs* (no longer extant), this dressing room panelled with over a hundred prized Venetian mirrors was considered the acme of princely decorative reflection across Europe. Catherine may have brought the taste for mirror cabinets with her from Italy; although remaining material evidence is elusive, documentary sources suggest there were Italian *camerino* cabinets of this kind already in the fifteenth century. By the sixteenth century, as Anton Francesco Doni described in his 1566 treatise on architecture, he recommended 'a small cabinet faced on all sides with the largest mirrors to be found'. Thus the principle of the mirror cabinet was an established one, even if little material evidence remains. The likelihood is that the mirrors were still very modest in size, and set within an alternating sequence of either painting, textiles, or panelling.[27] In mid-seventeenth-century Paris, both the cabinets of Louis XIV at Versailles and of his finance minister Nicolas Fouquet at his nearby estate of Vaux-le-Vicomte comprised increasingly larger inset mirrors within exquisitely painted wood panelling as an architectural ornament of princely display.[28] Louis XIV's cousin, Anne-Marie Louise d'Orléans, duchess of Montpensier, at both her apartments at the Luxembourg Palace and her country estate at Saint-Fargeau, had installed small dressing cabinets or wardrobes 'all of mirrors'.[29] If the mirror cabinets of queens were intimately associated with their dress and jewels, those of the king and his ministers were for the display of princely collectibles, comprising lightsome precious materials such as crystal, gems, gold, and silver.[30] Such inset-mirror cabinetry presaged its subsequent Rococo dispersion into wall-length interior decoration, following the great *exemplum* of the Galerie des Glaces, as La Font de St Yenne aptly described.

Mirror décor also lent lustre to early modern occasional decoration for princely celebration and entertainment of the French court. The *Gazette de France* reported an evening with dancing at the Hôtel de Chevreuse on 19 February 1633 in the presence of the Queen in which 'the rooms of this sumptuous mansion were lined with silver mirrors and tapestries'.[31] Similarly, André Félibien described a dinner set among mirrors and orange trees as floral ornament in the gardens of Versailles in 1674.[32] At a fête for Anne-Geneviève de Bourbon Duchess of Longueville in May 1651, the walls were decorated with fifty Venetian mirrors 'serving as gracious tableaux' to represent the beautiful figures of the guests. The description speaks to a perception of the mirror reflection as a pictorializing scenography of court life.[33] The extension of such mirror cabinets and courtly ephemeral decorations into a royal mirror gallery was already established with the (no longer extant) Salón de los Espejos at the Alcazar in Madrid, in which gilt-framed mirrors and royal portraits hung side by side along the great walls of this magnificent hall, as orchestrated by Velazquez in his capacity as court decorator.[34] While the Madrid gallery

appears to have used mirrors of local manufacture, as the Galerie des Glaces at Versailles would also do, the call in Paris as elsewhere had been, from the early sixteenth century, for the celebrated '*cristallo*' mirrors of the Venetian Murano glass-makers as the acme of princely taste.

The exorbitant expense of importing such foreign luxuries as Venetian mirrors drove a nascent French 'nationalisation' of the arts as part of a broader cultural and economic mercantilist policy under Louis XIV and Colbert, emblematised in the Galeries des Glaces as French mirrors-of-state.[35] In this Colbert was heir to his predecessors, Cardinals Richelieu and Mazarin, for the establishment of those 'nationalising' institutions of French culture embodied in the *académies* and *manufactures* of the crown. This began with the French Academy for language under Louis XIII (of which he would himself become a member), and for painting and sculpture under Louis XIV, to which he would subsequently add academies for the sciences as well as architecture, music, and literature. In addition, in Colbert's role as minister of finance, he established the royal manufactures for the luxury decorative arts and crafts so highly prized by the king, specifically those that were, at the time, costly imports from abroad. This formed part of a larger economic policy of patriotic protectionism and cultivation of the arts at home. Among the most renowned of princely imports were mirrors from Venice, alongside tapestries from Flanders, and fine marquetry for cabinet-making in exotic woods, all of which were then vastly more expensive than painting. Thus, alongside the earlier foundation of the Gobelins for French tapestry-making, Colbert further institutionalised, among a range of such royal productions, the Manufacture royale de glaces de miroirs in 1665. Fostering a culture of technological and scientific advancement in the production of luxury goods, Louis XIV's mirror-glass manufacture would go on to produce what is perceived as one of the key historical advances in their production: the escalating development of wall-length casts for pouring molten glass into flat panes of ever-greater size.[36] An ancient technology in the production of small decorative objects such as beads and cameos, and subsequently of Renaissance ocular lenses, cast glass under Colbert's jurisdiction would be patented in 1688 and thereafter rapidly industrialised for the first time, in its extension to panes for full-length window glazing and wall-sized mirrors. By such means Colbert effectively supplanted the early Renaissance practice of blown-glass window and mirror manufacture by the end of the century. It was this development that facilitated the fabrication of single-pane windows and monumental mirrors for the interior architectural decoration of the early eighteenth-century Rococo interior.[37]

Blown glass was, however, still in use for the royal commission of the mirror panels for the Galerie at Versailles, as also for the windows. Some 70 per cent or more of the original mirror glass is still in situ, which is wholly exceptional in the artefactual history of the early modern mirror. To forge window-length mirror arcades, the blown-glass globes were slit and laid flat before hardening to form flat panes in the Venetian manner. Notwithstanding the exceptional skill of long-acquired artisanal practices in blowing and cutting glass within a craft culture of constant experimentation of glass-making from the late Middle Ages on, these methods of production had precluded larger panes, which became possible only with the industrial development of poured glass methods after 1688. Hence the mirror arcades at Versailles are composed of portrait-sized glass plates knit together by gilt bronze fillets in the form of laurel branches (Fig. 9). Thereafter the quest of French crown mirror production was for incremental technological innovation to produce ever-larger glass panels as manifestations of '*le grand goût*'.

At the same time, there was ever-accelerating demand for the technical skills of glass grinding and polishing, not only for the window and

https://doi.org/10.1017/9781009448833.002

mirror plates of interior décor but also for the developing lenses and instruments of scientific vision that grew up alongside the early modern history of glass manufacture, from late medieval spectacles and magnifying glasses to seventeenth-century microscopes and telescopes. These required exacting scientific precision in the curve of the glass to the finest mathematical calculation. While the specialised skill of the oculist arose as a distinct profession of early modernity, it is also the case that scientists engaged in research on the optics of light reflection such as Galileo, Descartes, and Newton either ground their own lenses or worked in very close collaboration with a highly skilled lens-maker in this crucial aspect of their studies.[38]

Renaissance developments in mirror-silvering also converged on the much longer history of manufacture of metal mirrors, of all sizes and shapes. In the domain of the princely palace interior, the silver or silvered-glass mirror flanked by silver torchères, as at Versailles, was the hallmark of a royal décor.[39] As the metal of the highest reflective brilliance, silver was the preferred material for such luxury decorative mirrors, whether of silvered-metal plate or fronted with glass over a silver foil. Their orchestrated disposition served to augment interior light, of both lit sconces, torches, and chandeliers as well as window light. The use of mirrors and metal reflectors as a method of interior lighting was their chief purpose in an era before electricity, able to reflect and multiply both sunlight and torchlight, as well as the ornamentation of architectural interiors. While the silver furnishings designed for Versailles are no longer extant, they certainly comprised mirrors, which were displayed within the planetary rooms and apartments housing precious objects of the royal collections. A drawing by Le Brun of their design illustrates his early orchestration of their display alongside silver guéridons and above console tables also of silver. Their ornate frames, chased with an abundance of classical ornament, were surmounted by the royal crest (Fig. 11). These were evidently then made to Le Brun's design under the auspices of Girard Debonnaire in 1677 as royal goldsmith and master of the Paris Corporation des orfèvres. Apparently over three metres in height and weighing some 500 kilos each, Debonnaire described them as decorated with 'trophies and festoons of flowers and fruit, a drapery on either side to form a pavilion and above the arms of France within a cartouche surmounted by the crown flanked by angels.[40]

Metal mirrors continued to be used throughout the early modern period alongside glass, particularly for scientific and industrial uses pertaining to the concentration of light for the purposes of smelting and combustion. Generally made of burnished white steel, metal *speculae* might also be 'silvered' in the same way as glass mirrors to achieve more highly reflective surfaces, extending to the use of liquid-silver itself. Because of its inherently composite material nature, mirror-making across the Renaissance remained closely linked to both glass-making and metal-working. This is evident from the complex historical web of guild relations governing their production from the late Middle Ages. Both glass and metal mirrors were forged metamorphically through liquified forms in fiery furnaces, under the sign of Vulcan as the ancient god of armoury and metalwork. Thus the decorative unity of reflective mirrors and picture windows with the silver furnishings and gilt architectural ornament at the Galerie of Versailles was wholly in keeping with the larger history of the ornamental mirror as a decorative object, as an armorial emblem of princely valour, and as a reflector of light. At Louis' visit to the new Royal *manufacture* of mirrors in April 1666, the king was reported to be '*incantato*' – under the spell – of the mirror, whose 'enchantment' he would later bring to the orchestration of his Grande Galerie at Versailles.[41]

https://doi.org/10.1017/9781009448833.002

Fig. 11 Charles Le Brun, mirror frame design, c. 1677, red and black chalk drawing, 38.1 × 23.6 cm, Musée du Louvre.
Photo: Musée du Louvre

SPECULUM

As was characteristic of Baroque princely patronage, Louis' collecting interests extended to the newly developed mirror- and glass-lens instruments of vision that led early modern scientific development. These were chiefly telescopes and microscopes, arising out of late medieval optics and spectacle lenses. Astronomy, in particular, was considered the 'science of kings', through its solar and cosmic associations with astrology. Its instruments – astrolabes, quadrants, and above all telescopes made up of different types of glass lenses and mirrors – became royal collectibles made of luxury materials assembled in the collectors' cabinets of the European courts, including France.[42] Along with the establishment of an Academy of Sciences in 1666, Louis and Colbert would also establish the French Royal Observatory the following year, attracting Europe's chief astronomers to become the leading centre for research of the second half of the seventeenth century. Among them was the election of the brilliant Dutch scientist and astronomer Christiaan Huygens, whose telescopic sightings first identified Saturn's ring and moons. Huygens' research was furthered by the Italian G. D. Cassini in the early 1670s as the first director of the Paris Observatory. Their discovery was reflected in the painted ceiling decoration of the planetary rooms at Versailles, a manifestation of royal interest in the progress of astronomical science that the king also practised himself. On the ceiling of the Grande Galerie in the opening panel of the hall, the figure of the king's '*Gloire*' bathed in golden light holds aloft an astrolabe as she drives the king's chariot on.[43]

Louis' personal interests in the science of mirrors also extended to the purchase of a very costly concave or parabolic metal mirror. Termed a '*miroir ardent*', its carefully calculated curve was capable of lighting, igniting, melting, or vitrifying different materials depending on their varying points of combustion. Related to broader interests in the chemistry (and alchemy) of materials practiced at court, these were manifest throughout the king's cabinets.[44] In this Louis doubtless had recourse to one of antiquity's most celebrated accounts of 'burning mirrors' (likely metal shields), apparently deployed by the Greek mathematician Archimedes. Designed to destroy enemy ships at the siege of Syracusa, the story related to Louis' broader interests in naval warfare as well as navigation. A print by Sébastien Leclerc depicts the king's visit to the Académie des sciences in 1671, in which an astrolabe, a telescope, and a burning mirror are on display for his examination, while the view through the windows captures the building of the Royal Observatory in the distance (Fig. 12). His heirs, Louis XV and XVI, would pursue these interests even to the extent of opening up the royal residences for astronomical demonstrations, notably at the Grande Galerie.[45]

It is also the case that the advanced hydraulic technology underpinning the fountains of Versailles was effected through the use of the field telescope as an instrument of land reconnaissance, as it was by Louis' armies, and indeed all the states of Europe by the mid-seventeenth century. [46] These were precisely the years in which Isaac Newton developed his theory of prismatic light refraction in water droplets, informed by the study of mirrors and glass magnifiers, of certain interest to the king as he laid the foundations for the great display of fountains at Versailles and the collection of crystals and prisms illuminated by means of mirrors in his cabinets. His Academy appointment, Christiaan Huygens, would go on to publish his *Treatise on Light* of 1690 in dialogue with Newton. Regarded as the first early modern mathematical theorisation of light rays based on observations of mirror reflections, it was testament to the fecund cultures of research centred on mirrors, optics, and

https://doi.org/10.1017/9781009448833.002

Fig. 12 Sébastien Le Clerc, *Louis XIV Visiting the Royal Academy of Sciences*, 1671, etching, sheet: 41.9 × 30.8 cm.
Photo: Metropolitan Museum of Art

https://doi.org/10.1017/9781009448833.002

light that nurtured scientific and artistic developments side by side. The nature of this research drew on, and furthered, a rich interplay between catoptrics – the study of the visual effects of reflection through mirrors – with dioptrics – the science of light's passage – instanced in the analytical calculation of its refractions. Thus the 'mirror of princes' took many forms at Versailles, across early modern arts, letters, and sciences.

In the recent spate of publications pertaining to the newly completed conservation of the '*grand décor*' of the Galerie at Versailles, curator and conservator Nicolas Milovanovic drew attention to the restoration's revelation of Le Brun's painted ceiling in its use of colour.[47] Champion of *dessein* within the debates of the Académie de peinture et sculpture, yet the full restoration of Le Brun's colours demonstrated his close interest in their optical effects. Noting the development from the painter's early, modulated use of colour in the manner of a musical harmony of tones following the precepts of his teacher and artistic model, Poussin, Milovanovic argued for a visible shift in Le Brun's compositional matrix. Increasingly structured around a concerted antithesis of lights and darks within an arrangement of colour, it emulated the style of Pietro da Cortona. As Milovanovic further observed, Le Brun's use of colour at Versailles was, in full accordance with academic precepts of artistic decorum, always in concert with the symbolic import of his imagery. It was surely also, as Poussin himself might have argued, orchestrated in a considered variation according to the architectural situation of the commission, whether a cabinet-sized easel painting or a vast ceiling painting such as that of the Galerie. Poussin was the clear model for the former. As the pre-eminent French painter of seventeenth-century cabinet paintings, Poussin was the model for works intended to be hung independently on picture gallery walls and viewed at close quarters.

Ceiling paintings, particularly those for the great spaces of palatial reception rooms such as Cortona's at the Barberini Palace or Le Brun's at Versailles, were determined by very different viewing conditions: from below, from a far greater distance, and from within a much grander architectural space. This required concerted variation as to the nature of the relationship between mirroring and painting, to pose the question of art's specular mimesis.

In the Grande Galerie, Le Brun's overarching decorative syntax was to structure the ceiling as a rhythmical progression of fictive architecture. In concert with the windows and the mirror arcades, Le Brun framed the ceiling with six broad bands of simulated gilt coffering. In the manner of Cortona, and as a 1652 treatise on painting attributed to Cortona with the Jesuit author G. B. Ottonelli advised, it is intended to offer a doubled view. An initial panoramic 'all-at-once' perception elicited awe and wonder at the richness of both the narrative and its painting. This ceded to a progressive reading 'bit by bit' as the viewer proceeded through the gallery.[48] Four painted panels on the sloping sides of the vault are rendered as '*quadri riportati*', apparently composed of framed cabinet paintings like an illusionistic picture gallery fictively placed on the ceiling, in the manner of Annibale Carracci for the Farnese palace in Rome or indeed the Sistine ceiling. The central panels of the Grande Galerie are instead painted '*di sotto in su*', as if illusionistically piercing the architecture of the vault with a view of the skies beyond, as well as by figures that seem to project forward into the very space of the hall. This was in keeping with the rich legacy of Italianate models of illusionistic ceiling painting exemplified in the seventeenth century by princely artists such as Pietro da Cortona for the papacy, at both the Barberini and the Medici palaces. Le Brun's strong contrasts of light and shadow rendered in rich colouring coalesce, Milovanovic noted, around a central burst of light, against which the leading narrative figures of the *historia* are pushed into visual prominence (Fig. 13).

https://doi.org/10.1017/9781009448833.002

Fig. 13 Charles Le Brun, *Histoire de Louis XIV: Le roi gouverne par lui-même et fastes des puissances voisines de la France*, 1678–86, painted ceiling of the Grande Galerie des Glaces, Château de Versailles.
Photo: Réunion des Musées Nationaux

A compositional means of heightening narrative clarity within a wealth of pictorial and decorative ornament, it was a mode of picture-making perfectly in accord with the éclat of Louis' royal *gloire*. Such compositional syntax was one that Cortona had also articulated in his own princely painted ceilings in Florence and Rome, and in his putative 1652 treatise on painting.

To achieve the requisite effects of perspectival adjustment across the great vaulted space of the Grande Galerie at Versailles, Milovanovic suggested Le Brun's use of a convex or 'fishbowl' lens or mirror as an optical device. Broadly deployed by early modern draughtsmen across arts, architecture, engineering, and sciences, mirrors in general were much-used instruments in the transposition of all manner of visual information, which could then be transcribed into drawing, as Chapter 3 discusses further. Plane mirrors were optical devices of perfect perspectival rendering for both reduction and enlargement commonly used in the visual translation of scale. The mild 'fishbowl' distortion of a blown-glass spherical mirror could also render fully calibrated perspectival adjustments across spatial curvature, such as at the vault of the Galerie des Glaces. But what Milovanovic specifically postulated was Le Brun's use of a convex mirror as a means of bringing into perfectly measured optical prominence the figures at the centre of each composition of his painted 'panels' within the Galerie ceiling. The blown-glass curved mirror would, at the time, still have been as common as the flattened panes of glass being installed on the walls of the Galerie. The use of such a mirror was, moreover, a method promulgated by Le Brun's fellow academician and rival in debate, the art theorist and critic Roger de Piles, who advocated for the convex mirror as a compositional aid in his treatise for painters of 1668. Part of a larger discussion on the perspectival use of colour in order to focus the eye on the main figures of a narrative, de Piles argued that the convex mirror was a ready means of creating the illusion that the central figures of a composition appear to project forward towards the viewer from the picture plane.[49] While precise documentary evidence of such use of a convex mirror in artistic practice may be elusive, it is suggestive of the inter-related ties between the arts and sciences wrought by means of mirrors, which the rich history of the Grande Galerie as a place of art, optics, astronomy, and royal magnificence exemplifies.

Le Brun's earlier portrait of the great collector-Maecenas, Everhard Jabach, with his family c. 1660, also suggests the use of mirrors in this painter's practice, for the artist has represented himself in the act of painting in a mirror reflection directly behind his patron. It is Le Brun's pictorial homage to Jabach, but also surely to Velazquez' 1656 depiction of the Spanish royal family in *Las Meninas*, in the great mirror-picture gallery of the Royal Alcazar.[50] By the same token, the Grande Galerie's orchestrated equivalence between painting and mirroring emblematises the specular conception of painting that Alberti had inaugurated. Thus the Galerie represents the fullest spectrum of early modern painting's elision with the mirror-image, but also of its resonance across the arts and sciences, as the agent of reflected 'light'.

The summative example of the Grande Galerie as the preeminent manifestation of the early modern elision of painting with mirrors characterises the broader cultural perception of the mirror not only as the sign of the image but also as the instrument of light's conduct and reflection. In consequence of its capacities of lightsome reflection that could compose images like the mind's eye, the mirror became the metaphor of the reflective intellect, as also the inner reflections of the soul. The expanded and entwined cultural conceptualisation of the mirror metaphor, as image, as light, as inner reflection, and so of thought in all its manifold

https://doi.org/10.1017/9781009448833.002

manifestations, is the province of this chapter's further analysis. This is in order to elucidate the cultural import of early modern painting's prevailing theoretical approximation to the mirror, as the potent metaphor of its representations. What follows is a fully interdisciplinary consideration of the early modern mirror as an emblem of light and reflection from its earliest archaic histories. The intention is to highlight the centrality of the mirror motif across early modern cultural domains, and so its critical configuration within painting as the sign of its own art.

II. THE ART OF THE MIRROR

> *There is a story that once a Phoenician traders' ship with a cargo of saltpetre stopped [at a beach along the Belus River near Mount Carmel] . . . to make a meal. Since there were no stones suitable to support their cauldrons, they used lumps of saltpetre from their cargo. As these heated with the fire, the salt crystals mingled with the sand on the beach, from which a wondrous translucent liquid flowed forth in streams. And this, it is said, was the origin of glass.*[51]

Pliny the Elder's great compendium of the Roman world, the *Natural History* of 79 CE, set out to describe and classify all entities found in nature or derived from it in an encyclopaedia of ancient material knowledge. Comprising botany, mineralogy, metallurgy, zoology, astronomy, geography, ethnography, and physiology, it also catalogued their husbandry in mining, medicine, agriculture, and art. His tales of their historical origins were figuratively metamorphic, like the transformative materiality of glass as he described it. Pliny's perception of glass, as also metalwork, was touched by a cultural imaginary of marvellously wrought metamorphoses that extended across ancient literary forms, from Hesiod to Ovid. Pliny's account of glass epitomised the material transformations brought about by fire, in which the pale vitreous sands of the Belos melded with saltpetre crystals to form a clear and glistening liquid.[52] Cooled by the banks of the river, this flow of molten streams congealed naturally into glass.

The earliest traces of glass production, to be found along the banks of the Belos among other locations in the Middle East, lie within the obscure and diffuse histories of archaic periodisations. Like 'bronze age' metalwork, what may be reconstructed depends on the fugitive and happenstance survival of artefactual objects, all the more so in the case of glass due to its greater fragility. Obsidian or volcanic glass arising naturally from lava flows was widely used for tools and decorative objects in archaic and ancient cultures as Pliny also recorded (36:67), further complicating the little remaining archaeological evidence concerning any account of early glass manufacture.[53] Archaeologists generally agree that the earliest glass was cast, whether by nature or humankind, and then cut or carved. The technology for blowing glass appears to have emerged around the Mediterranean circa the first century BCE. Just as Pliny recounted, the marvellous metamorphosis of its 'glassy' materiality was composed of sand, mixed with saline plant ash (saltpetre or soda) to make a paste, then liquified in fire,and cast into an ice-like set of seemingly immaterial ethereality. With respect to mirrors, while glass reflectors of both volcanic obsidian and human manufacture were known and used throughout antiquity, what documentary and archaeological evidence remains is chiefly of metallic mirrors, in tempered sheets

https://doi.org/10.1017/9781009448833.002

of bronze, copper, tin, or silver, as the metals with the highest degrees of reflectivity.[54] Ancient glass production appears to have been mainly for the manufacture of bottles, drinking vessels, and glass beads used as currency in trade.

Following the early origins of glass in archaic times, historians surmise a general decline in evidence for European glass-making from late antiquity to the late middle ages, before these vitreous trades and skills were again revived, above all through trade with the Levant. Concomitantly, the material history of archaic metallic mirrors is also, within the larger purview of classical archaeology, of necessity limited to their chance survival. Thus any attempt to reconstruct their uses, and so their cultural significance, lies perforce between a detailed object-based specificity to particular archaeological finds and larger contextualising histories of a more anthropological kind. At their broadest, these histories offer insight into the rich complex of cultural associations surrounding the mirror from its earliest manifestations, and which are of interest here because many of these legends survived, though often latently, into the mirrors of early modernity. To give a cultural account of early modern mirrors as artefacts thus requires us to consider their *longue durée* histories, as well as those of their Renaissance manufacture. We must also consider the history of materials, for both glass-making and metalwork. Such artefactual studies are, in scholarly terms, still in their infancy, as of general accounts of the history of mirrors more broadly, in a field that lies between the disciplines of history, archaeology, anthropology, and art-historical study of decorative arts. These interdisciplinary perspectives are brought together here, in a prismatic analysis of the mirror's polyvalent materiality and cultural reach over time and place.

***

Seemingly from earliest archaic times, sheets of polished beaten metal were used in cultic ritual, as reflectors and magnifiers of light able to ignite fire and conjure illusionistic displays of light and shadow. They were symbols of the sun as the source of life itself. In their progress from archaic to ancient cultures, like myth, mirrors were freighted with every kind of symbolic reference. Polyvalent, paradoxical, and ambiguous, they were embraced, adulated, venerated, and feared equally. In an anthropological continuum of belief from within archaic cultures, cultic and folkloric, the perceived ability to 'capture' the human image within the mirror's sphere of reflection was seen as a haunted one. Still today, the broken mirror of superstitious misfortune issues from this archaic fault line, in which the fate of the reflected image may be understood as entwined and prophetic. Across archaic cultures, archaeologists have found that burial goods often included small disc-shaped metal mirrors attached to the chest of the dead as the carrier of their reflection and so the seat of the soul, intended to safeguard its passage to the beyond in a *mythos* of specular resemblance apparently possessed of spiritual agency. For this reason, within folklore the mirror-image of the self is often regarded as the presentiment of death. This archaic belief would seem to survive within a Christian conception of 'mirroring' into early modernity. In the account of the death of Walter Devereux First Earl of Essex, in 1576, among his last acts was to call for his 'glas, that I might carie the remembrance of my countenance with me that I shall apeare with before my Lord Jhesus Christ'.[55] Similarly, the Christian pilgrim carried small metal mirrors with which to reflect and so 'capture' the image of a relic as a means of retaining its miraculous power. Such pilgrimage mirrors were made and used throughout the medieval period and well beyond, as also devotional texts titled 'mirrors' of the soul for pilgrims to carry with them. These were reportedly produced, among many others, by the Nuremberg metalsmith Johannes Gutenberg as he was developing moveable type in metalwork letters for the printing press.[56]

https://doi.org/10.1017/9781009448833.002

If mirrors may be understood as carriers of latent cosmological associations from their earliest archaic manifestations, yet they were also evidently artefacts of domestic utility across antiquity. On the one hand, they were instruments of illumination in their ability to direct and focus reflected sunlight. In this regard they were also the technology of fire and so of industry and manufacture, not least of themselves. In their form and fabrication they were close to metal armoury and particularly shields, the emblems of martial valour, so acquiring a wealth of related heraldic associations. On the other hand, they were agents of reflection, able to reproduce any visible field before them. In such manifold quotidian deployments they acquired rippling accretions of meaning over time. As Françoise Frontisi-Ducroux and Jean-Pierre Vernant have eloquently argued, the mirror-as-light became a metaphor of thought and so the sign of the scholar, while the mirror-as-reflection became the signifying emblem of beauty and thus the female domain.[57] In this latter capacity, the mirror would become an entwined trope of beauty in art and poetry coupled with the depiction of the female form.

Ancient mirrors of the female toilet made of polished precious metals with decorative backs or covers of ornamental relief commonly depicted scenes of the female nude as myth's archetype of beauty (Fig. 14).[58] Such objects were fashioned as luxury artefacts, often as gifts of courtship and marriage and so of its poetic allegorisation. Cast in the portable dimensions of hand mirrors, they were understood to manifest a close identification between the object and its bearer, as the emblem of womanhood's graced beauty and her gift in marriage. Much of their decorative imagery was self-referential, depicting themes of the female nuptial toilet and the bathing nude: of dressing the body, the hair and the face, with ornamented ewers of scented water, draperies, jewels, and attendant cupids as the preludes to love. In the sign of Venus, their tondo or disc figuration bearing the reflection of their owner's face was thus both the instrument and the emblem of her beauty. Silver-bright like the moon, her sphere was illuminated by the sun of her love. In the refrains of the poets, to capture the image of the beloved in a mirror reflection was both to captivate and to offer love's gift in return. In a cultural metaphor of marriage, the female nuptial mirror was perceived as the 'mirror-image' or specular counterpart of the circular bronze shield of male valour in emblematic reduction. The polished metallic ceremonial shield, in itself, was broadly conceived as a reflective 'mirror' of masculinity within cultures of knightly valour, and long remained a sign of his 'colours', both in arms and for his lady. Thus the idea of the mirror arose in a full complex of cultural significations. In its enduring historical reach from antiquity throughout the middle ages, dainty roundel mirrors as nuptial gifts were rendered in luxury materials of gold, silver, or finely-carved ivory. Ornamented with troubadour scenes of *amour*'s valiant pursuits, they might also be studded with small light-reflecting jewels as the 'mirrors' of love (Fig. 15).[59]

As the light of knowledge, the mirror sign was also embodied in reflective lamps as the emblem of intellectual contemplation and study. Generally circular and metallic in form, such mirror reflectors were set on small pedestals to form desk lamps as the material companions of a bookish contemplation, able to capture and focus natural or candle light onto the scholar's page.[60] They were also the agents of any type of detailed study, whether of books or objects and artefacts of all kinds. In the sixteenth-century Neapolitan polymath Giambattista della Porta's discussion of catoptrics, or the science of mirror reflection, as a utility he enlisted the use of mirrors as a method of lighting that ranged from how 'to read letters in a dark night' to lighting up a great hall for feasts and evening entertainments.[61] In this

https://doi.org/10.1017/9781009448833.002

Fig. 14 Handle mirror illustrating Leda and the Swan, Boscoreale, late first century BCE to early first century CE, silver with repoussé decoration, height: 28.7 cm; diameter: 16.7 cm, Musée du Louvre.
Photo: Musée du Louvre

regard, the mirror reflector was also the locus and sign of much scientific research on the nature and conduct of light reflection throughout antiquity and beyond, best known in the writings of Euclid. In addition to Euclid's work on optics was a putative text on catoptrics as the specific study of mirror reflection and so the visible proof or demonstration of the conduct of light in the form of perspectival rays. These texts remained the most widely used and influential books on the subject up to the early twentieth century, with an exceptional history of successive elaboration and demonstration across antique, late medieval, and early modern thought.[62] From this ancient legacy of science, myth, and myriad usage, the early modern mirror emerged as suffused with a fulsome range of cultural reference. It was at once the sign of light and so the human

https://doi.org/10.1017/9781009448833.002

Fig. 15 German (Rhine) mirror case illustrating the *Siege of the Castle of Love*, 1325–50, ivory, height: 13.5 cm; width: 13 cm; thickness: 1.7 cm, Musée du Louvre.
Photo: Wikimedia

soul, of science and scholarship, industry and armoury, and female beauty and love.

Already the cultural locus of a vast wealth of significations within the metallic forms of ancient and medieval fabrication, the mirror's further material and hence idiomatic configuration in the medium of glass would burgeon from the fifteenth century with a gathering diffusion across early modernity. Thus conceived between bronze, silver, and glass, the cultural imaginaries of the mirror were those of a changeable and metamorphic materiality, between liquid and

https://doi.org/10.1017/9781009448833.002

solid, as shifting and elusive as the mirror reflection itself to which the history of its materials was wed. In its incremental though never exclusive material translation from metal to glass, the Renaissance mirror also gathered a rich range of cultural significations pertaining to other lightsome materials. In this regard, its cultural associations ranged across a wide spectrum of related artefactual histories, from jewellery-making and metalwork to glass itself.

As an object of jewel-like reflections, the mirror's sign was drawn into the domain of gemstones and precious metals prized for their lustre. As scholars such as Sarah Dillon have argued, this apparent association with gemstones lent glass a commensurate value with the precious materials. These comprised metals and gems able to refract and reflect high degrees of light, above all silver and crystal, as well as diamond and other quartz or crystalline stones.[63] In a Plinian *paragone* of art and nature, luxury Renaissance decorative glass manufacture explicitly sought to imitate the prismatic effects of gemstones, as of other precious materials. In the words of the fifteenth-century Venetian scholar Marcantonio Sabellico, 'there is no type of precious stone in existence that has not been imitated by the glass industry; a sweet contest between nature and man'.[64] This formed part of a broader interest in the apparently alchemical properties of glass, in its seeming transformation from one material into another. It also drove much glass-making experimentation in the realm of recipes that could imitate the effects of ruby, emerald, diamond, or sapphire.

Rock crystal, in particular, represented within nature the aspirations of glass-making to produce a material of utter transparency and clarity of reflection that could magnify and refract light. Among the most plentiful of crystalline stones, crystal was always recognised for its prismatic powers of light intensification, magnification, and refraction.[65] Precious mirrors made within the domain of royal jewellery might therefore be of rock crystal itself, backed with a silver foil and framed by further gemstones in various colours – amethyst, citrine, blue or rose quartz, as well as the most valuable crystalline jewels such as emerald and diamond (Fig. 16). These were stones recognised for their light-filled refraction or 'sparkle', from archaic times. Like the earliest metal mirrors, crystals were also accreted with a full complex of mythic associations connected with rituals of sun-, moon-, and star-light. These comprised cult, love, and death's transport, as well as amuletic healing and protective properties, in a perceived magic of solar-reflected light. As gemstones they were further used in a range of decorative arts from earliest antiquity and throughout the middle ages. Crystals were also ground for the purposes of luxury glass-making and enamels, producing works of brilliant sparkle and hue. Their manifold lore was passed on through the textual tradition of the lapidaries, on the nature and meanings of minerals and stones from across the classical and medieval worlds into early modernity.[66] The allegorised perception of crystal's light-filled reflection infused every sphere of intellectual endeavour, from the perceived symbolism of majesty to science and technology, the language of poetic allusion, and religious belief in the 'crystalline firmament' of the heavens.

Within the scientific domains of optical study, prismatic crystalline stones were used for scholarly investigations into the mathematical geometry of light reflection, which would also be the case with premium lenticular glass made from fused white quartz crystal. Within the long history of optical aids, rock crystal, as among the most plentiful of the quartzes, was in continuous use from early antiquity as a means of enhancing vision due to its 'crystal' clarity and capacity for magnified enlargement. With subsequent developments in Renaissance glass-making, increasingly clear 'crystalline' glass could be precision-cut into any

https://doi.org/10.1017/9781009448833.002

Fig. 16 French (Ile de France) mirror from the crown jewels, c. 1630–35 (so-called Marie de Médicis' mirror), gilded brass or enamelled gold (opaque white enamel, light green, light blue, purple, translucent dark blue enamel, green, orange, red, black enamel), rock crystal, agate, sardonyx, garnet, emerald, ruby, diamond; height: 40 cm; width: 28 cm; depth: 5 cm, Musée du Louvre.
Photo: Réunion des Musées Nationaux

number of curved or prismatic forms for the purposes of magnification and enlargement, enabling the development of those scientific instruments of vision of early modernity that would become telescopes and microscopes, as well as the earlier history of reading glasses or spectacles.[67] Thus optical glass, and specifically the glass lens, was as indispensable to the so-called Galilean revolution of scientific vision as to the history of reading and literacy.

Distinctively, an early modern lexicon of the mirror blurred the boundaries of its specific materiality, whether metal or glass. The specificities of its materials, from the exact type of crushed stone or sand to the sources and composition of the plant ash, or the metallic make-up of the foils, were also often obscured, as a consequence of their carefully guarded history as valuable artisanal recipes. Instead, the vocabulary for mirrors emphasised their various functions, and above all their instrumental capacities, for reflection, refraction, and combustion, but also for enlargement and reduction, and so their roles within the arts and sciences of vision and illumination. As the French Jesuit and scholar of optics Jean Leurechon put it in his *Récréations mathématiques*: 'Here I understand by the name "mirrors", not only those of glass or steel but also all reflecting surfaces that can bear images by dint of their polish.'[68]

Turning to the histories of their fabrication, while the Renaissance manufacture of premium optical glass would reside chiefly in Florence, in the production of luxury decorative glass and mirrors Venice took the lead. According to the extensive archival research of Luigi Zecchin on Venice's illustrious history of glass manufacture, the Serenissima's decision of the late thirteenth century was to situate all civic glass-making on the tiny outlying island of Murano.[69] The effect, intended or otherwise, was to create a close-knit community of glass-making island families, some of whom would rise to great wealth and renown over the next four centuries, celebrated for the exquisite luxury of their wares and for the European-wide princely admiration and wealth they brought to the lagoon. Doubtless rivals among themselves, yet to the outside world and under the protection of the Venetian governing council, Murano's glass-making workshops and their recipes remained closely guarded secrets for some hundreds of years, passed on orally within family traditions. As Colbert, who sought to break the monopoly by 'spiriting away' Murano's glass workers, astutely recognised, the question was not simply one of secret recipes for the paste, but also of a highly developed expertise in the conduct of glass through the elaborate processes of its blown facture, and above all one of reputation.

What the French crown sought, at the moment of the foundation of its own royal manufacture of glass and mirrors in 1665, was the perceived technological know-how of a great shift in the workshop chemistry of their Venetian production, generally dated to the mid-fifteenth century, and attributed to the glass-making artisanal families of Murano, particularly the Barovier. Jealously guarded by the Venetian state for centuries in order to protect its valuable exports, this was purportedly the glass-making recipe for a completely transparent glass known as '*cristallo*', on the basis of its much sought-after perceived resemblance to rock crystal.[70] For earlier glass was generally marked throughout by the imperfections of its process, resulting in a glistening light-filled material that was highly translucent but not fully transparent, greenish in tinge through the use of forest fern as flux, flecked with tiny bubbles, and of a thickness that precluded the greater clarity of fine sixteenth-century *cristallo*. In the case of Venetian *cristallo* glass, made from crushed white sand and saline plant ash, it was heralded as exceptional for its clear 'whiteness' then blown into glass of such ethereal lightness as to endow it with an

unparalleled transparency. With constant experimentation across the course of the fifteenth century, the glass-makers of Murano were seen to have overcome all production difficulties to produce a glass of a crystal clarity and ethereal fineness unsurpassed elsewhere. The quest for Murano's colourless, featherweight, and flawless glass was laden with great symbolic as well as technical significance, as a manifestation of its artisanal refinement and therefore *virtù*.

Attending to the chemistry of ingredients for glass (as for its gemstone colouring) with different methods and combinations for making the paste, Murano's fifteenth-century experimentation with recipes may be likened to those that underpinned the development of oil paint in the early years of the fifteenth century in Flanders in the ambit of van Eyck. Based on the use of boiled linseed and walnut oils in combination with different mineral and herbal pigments, these painters similarly sought to create newly lustrous translucent oil glazes that could approximate the luministic effects of gemstones, enamel, and stained glass. In the case of Murano glassware, its illustrious patronage would include figures such as Isabella d'Este, Ferdinand and Isabella of Spain, and the Medicean French Queen Catherine among a constellation of European royalty. Murano's glassworks also became a celebrated attraction for courtly visitors of all kinds, according to the Venetian chronicler Marin Sanudo's diary, including the Queen of France Anne of Brittany in 1502, Charles Bourbon Duke of Vendôme in 1515, Federico Gonzaga the future Duke of Mantua in 1517, Cardinal Ippolito d'Este in 1520, Alfonso d'Este Duke of Ferrara in 1531, and Francesco Maria della Rovere Duke of Urbino in 1532.[71]

Again according to Zecchin, mirror-making was a late fifteenth-century addition to the history of Murano's glass production. In Zecchin's account, this was fostered particularly by the Ballarin, also one of Murano's long-standing families of glassmakers, and would become a leading speciality of Venetian Renaissance glass. Venetian mirror manufacture was institutionalised by the civic foundation of its own trade corporation over the course of the 1560s, the Arte degli specchiari, with responsibility for overseeing the training of apprentices. Venetian mirrors were renowned for the transparency of their glass and for the beauty of their frames, made of decorative glassworks in the form of enamel, floral, inlay, or filigree ornaments. Murano's now-burgeoning sixteenth-century manufacture of mirrors of increasing size depended on incrementally changing paste recipes and ever-developing technical skill in glass-blowing, to produce cylindrical glass 'bubbles' of greater size and above all length in the ongoing quest for larger panes.[72] This was further accompanied by improved recipes for the silvered foil backing that formed the mirror's reflective surface. The development of finely hammered tin-foil sheets softened by quicksilver or liquid mercury amalgams lent a greater milky-whiteness, lightness, and reflective clarity, also laden with a symbolic import of artisanal virtuosity. Murano's expertise would forge the mirror arcades of the Grande Galerie at Versailles, brought to Paris through the import of Venetian mirror-makers under the auspices of Colbert, in order to create national mirrors of state for France.

For Paris, as for Murano, there is extensive archival documentation surrounding the various establishments for glass mirror-making institutionalised by the crown and their ongoing governance, as well as royal patents for new 'inventions' within this larger artisanal history. Among the plethora of illustrated printed books of artisanal instruction and documentation that appeared in Paris over the course of the seventeenth and eighteenth centuries, there was an array of publications on glass- and mirror-making, so documenting an otherwise oral history of transmission of workshop technical skills. This also comprised series of illustrated prints on the manufacture and trade in mirrors, within larger sets of luxury artisanal goods. It is

represented in a range of French seventeenth-century engravings such as Etienne Delaune's elaborate dressing-table mirror designs, and illustrated furniture design pattern books like Jean Le Pautre's *Livre des miroirs, tables, et guéridons*, with decorative wall mirrors for the salon or gallery (Figs. 17 and 18).[73] In lightly comic vein, Nicolas Larmessin's *Costumes des arts et métiers* depicted a range of artisans in fancy dress according to the tools and wares of their trade, including a mirror-maker fully costumed in mirrors, wittily looking through his dainty toy telescope in a playful guessing game of 'who views who' (Fig. 19).[74] In their emphasis on artisanal skill and industry such prints drew on longer textual traditions of trade representation such as Hans Sachs and Jost Amman's 1568 *Das Ständbüch* (Book of Trades), an illustrated book that comprised a full complement of craft industries, including the interior of a mirror-maker's workshop-cum-shopfront with every type and size of mirror for sale (Fig. 20). Like Larmessin, the print is humorous in its presentation, for the text below, spoken in rhyme as if in the voice of the craftsman, declares his trade as a light 'Who am I?' riddle.[75] An illustrated 1715 German edition of della Porta's 1589 *Magia naturalis*, an encyclopaedia of natural marvels including those of optical mirror illusions, included a woodcut of an optic-maker's shop with a full complement of mirrors of all shapes and sizes set among every kind of eye glass, from spectacles to telescopes. The glass-maker, in fashionable dress, stands among his mirror manufactures such that his image is reflected in a cascade of specular reflections, like a workshop optical hall of mirrors of his own making (Fig. 21).

As sixteenth-century Venice was a prominent European centre for Renaissance book publishing as well as glass-making, it too heralded good numbers of publications of a largely scientific nature that treated the production of both decorative and optical glass artefacts within them, including mirrors. Leonardo Fioravanti's *Specchio di scientia* of 1564, like the work of della Porta, described the production of glass and mirrors from the point of view of the alchemist-chemist in detailing its recipes and methods, as did Antonio Neri's *L'arte vetraria* of 1612 as the first published collection of recipes for glass. These were texts born of what would subsequently become the subject of chemistry. Within Renaissance intellectual paradigms, their interests were above all in metamorphic materials forged in fire, and therefore glass. This was also the case in Vannoccio Biringuccio's consideration of glass-making and mirrors in his study of igneous manufacturing, chiefly metalwork, *De la pirotechnia*, of 1540.[76] To commemorate the new-found French prowess in mirror manufacture, Colbert had also sought to publish an encyclopaedic series of texts with engraved plates to demonstrate national supremacy in a full range of early modern artisanal technologies. As inaugurated by Pliny, the endeavour was to showcase French encyclopaedic ambition in the production of material goods. This was in fact only achieved some 100 years after, under the broad ambit of Denis Diderot and Jean le Rond d'Alembert's mid-eighteenth-century *Encyclopédie ou Dictionnaire des sciences, arts et métiers*. Its dedicated volume on the art of glass-making and specifically of mirrors, *La fabrication des glaces* (Fig. 22), was based on the French development of these crafts since Colbert's institutionalisation of royal mirror-making in 1665.[77] Notwithstanding their respective singularities and genres, early modern textual and illustrative descriptions of glass-making for mirrors in both word and image centred largely on the representation of its tools, and the marvellous metamorphosis of its 'glassy' materiality from ash and sand into a liquid forged in fire to an ice-like set. Its seemingly immaterial ethereality produced everything from the vanity and decorative mirror to an early modern technology of light, the industrial uses of vitrification and combustion, and the instrumentation of the new sciences based on augmented lenticular vision, of the stars as of molecules.

https://doi.org/10.1017/9781009448833.002

Fig. 17 Etienne Delaune, design for a gem-set gold handle mirror depicting Julia Caesar, drawing, pen and ink and wash on vellum, 13.2 × 11.5 cm, for a signed and dated engraving by Delaune of 1561, Victoria & Albert Museum.
Photo: V&A

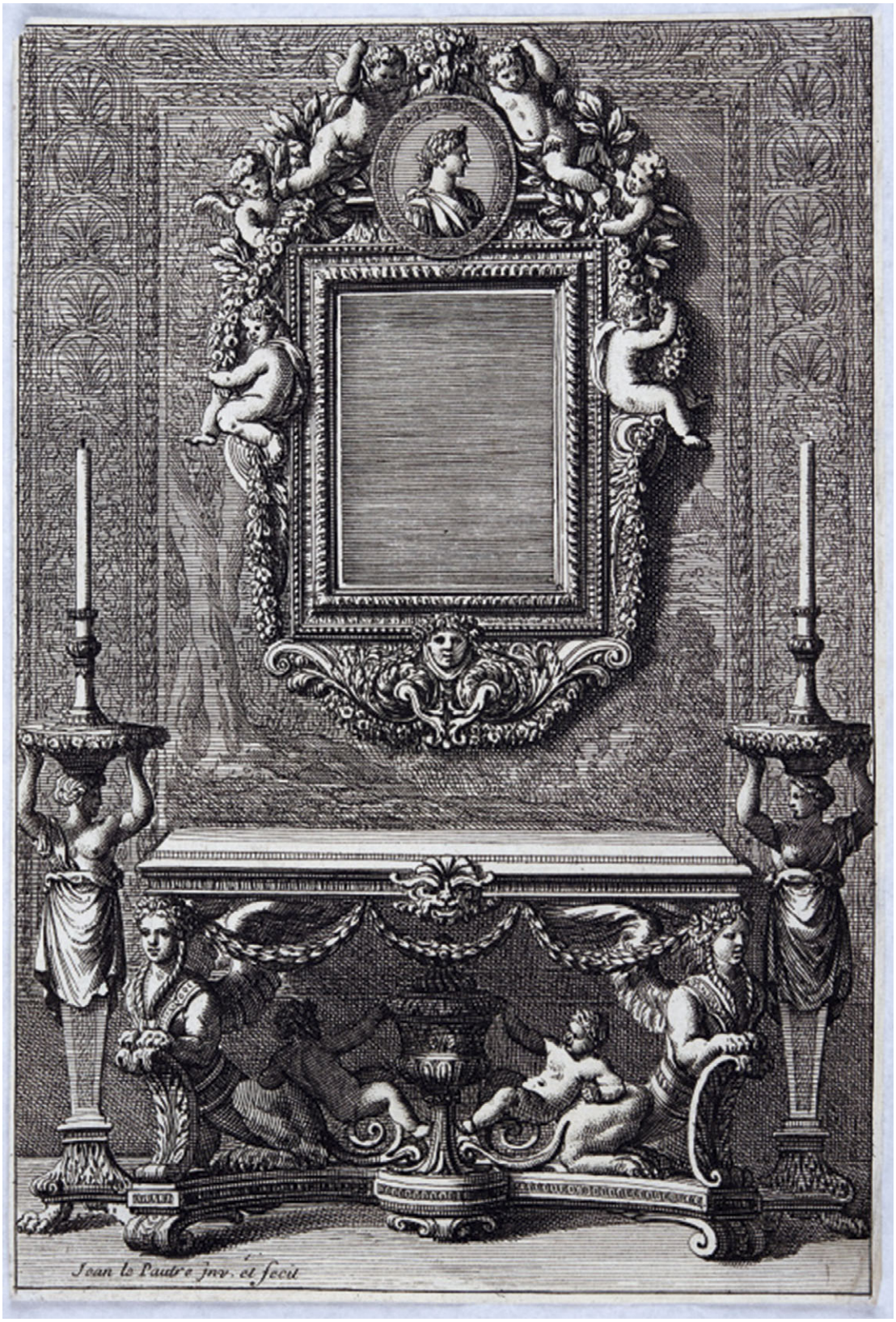

Fig. 18 Jean Le Pautre, *Livre des miroirs tables et guéridons*, Paris, c. 1670, printed illustration for a wall mirror with flanking torchères and console table.
Photo: Réunion des Musées Nationaux

Fig. 19 Nicolas de Larmessin II, *Habit de marchand miroitier lunettier*, in *Arts et métiers*, c. 1695.
Photo: Wikimedia

THE MIRROR ARTEFACT

Turning now from a history of glass mirror-making founded on archives and incunables to the material evidence of mirrors themselves, their early modern artefactual history comprises a complex grid of chronology, geography, materials, sizes, and cultural functions. The objects for study lie perforce within the holdings of divers museums: of decorative arts, early modern

Fig. 20 Hans Sachs and Jost Amman, *Der Spiegler*, in *Das Ständbüch* (Book of Trades), 1568, woodcut illustration of a mirror-maker's shop.
Photo: Wikimedia

furnishings, and industrial and scientific instruments.[78] The history of mirror frames has also received attention within the broader ambit of picture frame scholarship, as has the industrial use of mirrors within an early modern historiography of science and optics. It is surely the case that what was kept, and subsequently found its way into museum and antiquary collections, is a tiny percentage, and by and large representative of the luxury end of early modern mirror production. This must also be qualified by the recognition that swathes of inset decorative mirrors affixed into larger interior architectural surrounds have been lost through successive histories of remodelling and refashioning. Their loss can to some extent be mitigated by surviving inventories and other types of textual description. The artefacts that do remain can only ever offer a partial history.

Within such critical caveats, antiquarian scholars and curators nonetheless discern broad parameters in the range and scope of early modern mirror production. While the categorical boundaries are of necessity porous, these may generally be said to comprise the following: mirrors closely related to the female toilet and adornment, displayed on the person or the dressing table; mirrors for interior decoration, usually but not exclusively wall-mounted in various ways and which were also an important means of enhancing light; and mirrors or reflectors for scientific and industrial purposes, both for light and for ignition. In general, the survival rate for the frames that once housed them is far greater than the mirror glass itself, which may often have been replaced multiple times. Thus much of the artefactual history of the mirror is written on the basis of its erstwhile frames within which we must read their absent presence in a now-fugitive history of their loss. For this reason, the high perdurance rate of the Versailles Galerie mirror plates and their recent conservation, with its accompanying full technical research and documentation, makes them a vital milestone in the mapping of this otherwise elusive material history, as does the chance survival of a small number of early fifteenth-century mirror glasses. These latter evidence the appearance of the mirror before the development of Venetian silver-foiled *cristallo* glass – made of a darker glass with the pewter-silver shadow-toned reflections of lead or antimony foils. These mirrors are moreover small in size, generally little more than the reach of a hand, convex in form, and self-evidently the products of a blown-glass facture (Figs. 9 and 23). While blown-glass methods would continue across the period, ever-changing expertise enabled larger bubbles that could be made into domed or flat panes of greater dimensions and increasing clarity and brightness of reflection. The advent of larger panes of cast glass c. 1700 inaugurated in Paris would replace

https://doi.org/10.1017/9781009448833.002

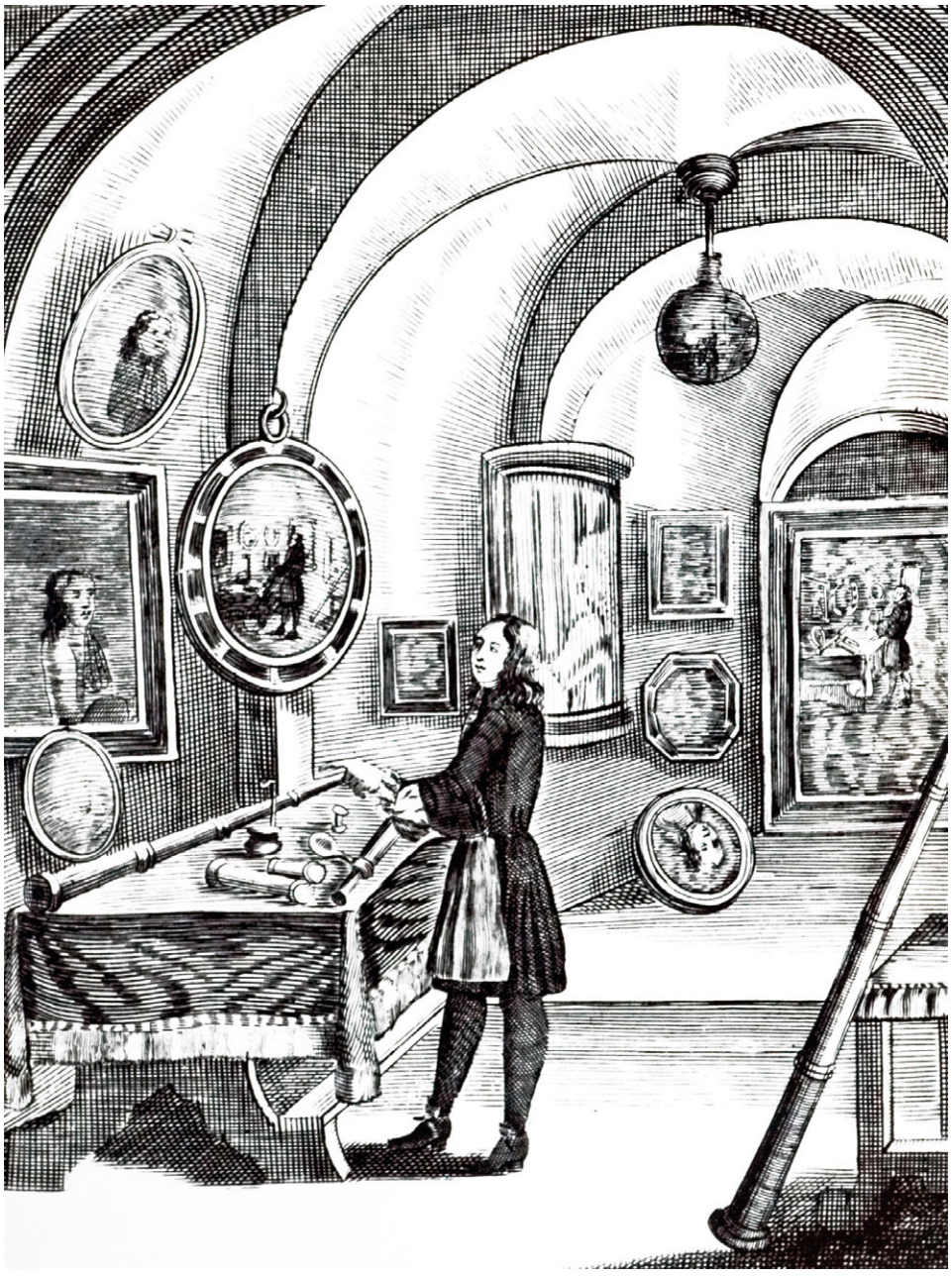

Fig. 21 German woodcut depicting an optical instrument maker in his workshop as a 'hall of mirrors', for *Magia naturalis* by Giambattista della Porta, Nuremberg, 1715 ed., 33.5 × 44.8 cm. Photo: Alamy

artisanal blown-glass mirrors almost entirely with their nascent industrialised production.

The frames for scientific or industrial mirrors were generally either rudimentary ones for safe-keeping, or dictated by the instruments and machines into which they were placed. This is also the case for the mirrors kept by artists in their workshops as ready mimetic instruments in aid of painting. As nothing certain remains in object form, our knowledge depends entirely on documentary and textual references, in inventories and other descriptions, notwithstanding the fact that they were clearly ubiquitous. We can surmise their appearance on the basis of what workaday blown-glass mirrors have survived (Fig. 24) coupled with their textual description, and circumspectly from

Fig. 22 Robert Bénard, after Jacques-Raymond Laclotte, *Miroitier, metteur au teint*, engraving, Denis Diderot and Jean le Rond d'Alembert, *Encyclopédie . . . arts et métiers, art du verre: Fabrication des glaces,* Paris, c. 1770, polishing and silvering panes of glass.
Photo: Wellcome Collection

Fig. 23 Italian (Siena), tondo mirror frame with the coat of arms of the Cinuzzi family of Siena, c. 1490–1500, poplar; carved, gilt; deep red-brown bole, Metropolitan Museum of Art.
Photo: Metropolitan Museum of Art

the painted appearance of mirrors within paintings, though we cannot expect that these are necessarily direct representations of studio tools.

It is therefore the case that an object-based history of mirrors depends largely on surviving frames for the toiletry looking glass and the interior decorative reflector. In general, the compact looking glass with a protective cover has fared best, particularly those of precious materials therefore grouped with dynastic jewellery. The rate of survival of the glass itself, as against its frame alone, is also higher than for wall-mounted mirrors, presumably due to their protective covers. However it is also the case that mirrors with particularly valuable frames might have their glass replaced periodically as a matter of maintenance in case of cracking or mottling of the surface; those remaining early modern mirrors are often foxed and darkened to an extent that makes it impossible to judge their original light and reflective lustre.

We may also supplement an object-based history of the mirror with their incidence in

Fig. 24 German convex glass mirror, sixteenth century, wooden frame, Germanisches National Museum Nuremberg.
Photo: Germanisches National Museum

inventories. Royal inventories of the period give, in the first instance, strong quantitative indication of precious mirrors within collections of jewelled objects, luxury toiletries, and princely gifts. In the extensive inventories of crown jewels of Louis XIV, as of his royal '*présents*' to princesses, duchesses, and queens, silver-gilt toiletry mirrors were conceived as noble gifts of the first rank.[79] This was true across European courts and aristocratic households. Thus Charles II in 1672 gifted his royal favourite, Frances Teresa Stuart, Duchess of Richmond and Lennox, a French silver dressing-table toiletry service ornamented with gilt (National Museum of Scotland).[80] Within the records of Louis XIV's possessions kept by his Intendant du garde-meuble, Gédéon Berbier du Metz from 1663 to 1715 under the jurisdiction of Colbert, there were some 500 mirrors listed with every kind of frame in all manner of precious materials: engraved glass, rock crystal, silver, gilt, filigree, burnished steel, lapis, tortoise shell, agate, pearwood, walnut, and ebony, in plain fillets, figured mythologies, heraldic devices and crests, or decorative borders of cupids, birds, flowers, and foliage.[81]

The toiletry mirror is closely allied to the history of jewellery, dress, and female adornment. Bijoux examples were worn as jewels attached by silk ribbons to the feminine girdle, ever the material sign of betrothal and marriage. Thus the small and often exquisitely fashioned compact mirror was a continuing manifestation of cultures of love and marriage within the decorative arts. The painted enamels of the sixteenth-century Limoges crown workshop included jewelled pendant mirrors of mythological scenes in brilliant saturated glazes of crushed gemstones then gilded and silvered, as ornament to the colours of court dress (Fig. 25).[82] Often of precious metals and further decorated by jewels, such mirrors might also host covers with ornamental or narrative designs of poetic conceit rendered in filigree or enamel

Fig. 25 Suzanne de Court, enamelled mirror with Minerva visiting the Muses on Mount Helicon, c. 1600, enamel with gilt and silvering on copper, mirror glass, 12.5 × 8.5 cm, Metropolitan Museum of Art.
Photo: Metropolitan Museum of Art

work, its jewelled colours made from fired ground glass or crystalline powdered pigments (Fig. 26a, b). Venetian mirrors framed in crystal or decorative glass were also highly prized, often in floral motifs with jewel-like colours and gilding (Fig. 27). Hand-held or pedestal mirrors for toiletry sets and dressing tables were also made in a vast range of materials of every expense, from simple wood frames to elaborate princely examples in gold encrusted with jewels, some of which were further ornamented with enamel or sculptural figures of female beauty and virtue, of both mythological and biblical scenes (Figs. 17 and 28).[83]

In the domain of the wall-mounted mirror, there was again every type of frame, from plain fillets to richly carved gilt or marquetry woods, inset precious stone work and intarsia, mosaic,

https://doi.org/10.1017/9781009448833.002

Fig. 26a, b French locket or compact mirror with gold frame, sixteenth century, inset with jewels, leather cover with enamel and filigree work, 1.2 × 0.76 cm, Ecouen, Musée Nationale de la Renaissance.
Photo: Réunion des Musées Nationaux

Fig. 27 Venetian compact mirror, c. 1500, glass with enamel and gilding, 2 cm diameter, Paris, Musée du Louvre.
Photo: Réunion des Musées Nationaux

enamelwork, tortoiseshell, amber, textiles such as velvet and needlework samplers, gilt leather, painted or decorated glass panels, and those adorned with silver and crystal or mirror panelling to enhance their reflective splendour. Their forms comprised everything from flat or lightly bevelled wooden struts, to architecturally styled tabernacle frames, to ornately carved wood or chiselled silver with crests, emblems, and other figurative devices. Early Renaissance examples in blown glass are circular, encased within corresponding tondo frames that ranged from simple wooden surrounds to gilt-painted stucco, papier mâché, or *cartapesta*, to maiolica ceramics, carved wood, and gilt-painted marbles (Figs. 23 and 29). Many came to include candle holders within their frames, as their primary decorative function was the enhancement of interior light. By the seventeenth century, wall mirrors placed above console

Fig. 28 German jewelled pedestal mirror, sixteenth century, with rock crystal, ebony, pearls, gold, and enamel work depicting the Adoration of the Magi, height 3.9 cm, Paris, Musée du Louvre. Photo: Réunion des Musées Nationaux

tables were often designed in a complement with adjoining sconces, torchères, or guéridons by which to augment their light through its specular reflection. As in Jean Le Pautre's 1670 manual of furniture designs, this arrangement became the decorative syntax of Baroque wall ornament in princely apartments and galleries, as a rhythmic cascade of mirrors and candelabra (Fig. 18). These

Fig. 29 Marble mandorla mirror frame in the form of a female head, c. 1470, Florence, workshop of Mino da Fiesole, marble bas-relief with gilding and blue pigment, 50 × 28 cm (mirror roundel no longer extant), Bibliothèque Nationale de France, Médailles et Antiques. Photo: BNF

were often made of precious metal, as a surety in their adjacence to candle flame, and in the case of royal apartments, of silver or silver-gilt, which lent a further resplendence of light and reflection. If the silver furnishings for Versailles, which comprised such mirrors with adjoining guéridons, have not survived, yet there are other princely examples that illustrate the place of the ornamental mirror within such Baroque courtly décor (Fig. 30). Richly ornamented with floral and mythological motifs, as well as coats of arms, they were exquisite works of silversmithing made by crown jewellers to the design of court artists such as Le Brun or Bernini. Intended for the splendour and

Fig. 30 English Charles II crown silver mirror, c. 1670, with torchères and console table, chased and embossed silver ornament of swags, foliage, and putti, silver, wood, mirror glass, 210 × 126 × 10 cm, Royal Collection Trust.
Photo: © Royal Collection Trust/His Majesty King Charles III 2023

illumination of the palace gallery or cabinet wall, their orchestrated display formed the matrix of the early modern interior decorative order. Designed to hang in a concerted relationship with the apartment's windows, to enhance their light, these sumptuous mirrors often formed part of a decorative ensemble with flanking torchères or sconce lights, above silver or marble console tables.[84] As in the Salón de los Espejos at the Royal Alcazar in Madrid made to Velazquez' design, now lost but known through paintings (as discussed in Chapter 3), the walls were decorated with mirrors in gilt-bronze frames of eagle wings. Set above porphyry console tables standing on lions also of gilt bronze, their orchestrated disposition along the length of the gallery in rhythmic

succession became the decorative lietmotif of a Baroque princely architectural ornament (Fig. 90, Chapter 3).[85]

Throughout the long history of the mirror as a decorative object, it was closely tied to that of the decoration of its frame, and so to the adjacent history of frame-makers, from luxury silver work to stone intarsia and ornamental wood carving or inlay. Of course this object, within larger histories of the decorative arts, may be categorised according to those variations of materials and manufacture derived from sources of availability of supply that we are inclined to subsume under differences of geography. Chronologically, the history of the mirror is marked by distinctions of 'style' – in itself contingent on a broad host of contextualising matters such as changing material supply, skilled workmanship, domestic 'living' structures and habitats, forms of courtly reception and entertainment, to name only a few – that we understand as the history of art. Howsoever driven by myriad factors, ranging from the technological and material to contextualising histories of 'taste', the development of the mirror from small globe-shaped objects to flat rectangular panes that could be integrated into a grandiose wall display arose alongside the early modern advent of the gallery picture or easel painting. In practice as well as conception, their contiguous early modern histories of placement within frames as independent objects on gallery walls drew painting and mirroring into a perceived ever-closer equivalence. The parallel manners of their 'framing', in both its material and cultural aspects, in modes of facture and display, again brought painting and mirroring into a richly comparative juxtaposition within an early modern paradigm of art as mimesis.[86]

THE MYRROUR OF THE WORLD

Proceeding from the realm of objects to that of texts, the literary metaphor of the mirror was a leading bibliographic trope, and indeed title, of early modern books on every subject, as Renaissance literary scholars have long observed. Paradigmatically, William Caxton's encyclopaedic compilation of knowledge entitled *The Myrrour of the World* (c. 1480), brought out by the founder of England's first printing press, is broadly acknowledged as the earliest English illustrated printed book, appearing under the titular sign of the mirror. Along with its title, Caxton's text opens with an illustration of a scholar in his study, holding up a mirror as the source of light for his literary labours both practically and conceptually, as also the pictorial emblem of the book's contents (Fig. 31). Springing from medieval literary traditions of manuscript 'encyclopaedias' of knowledge from earlier collections generally known in Latin as *speculum mundi*, Caxton's *Myrrour* was exemplary of the genre. It was among Caxton's most successful ventures, running into multiple editions into the sixteenth century, though he is best known today as the first publisher of Chaucer. Launching his press with an edition of the *Canterbury Tales* in 1476, this text also comprised the magically prophetic mirror of the Squire's Tale, who spoke 'of quaint mirrors and of perspectives' that could read men's minds.[87] On the matter of the literary mirror motif, as the twentieth-century German scholar of early modern European literature Herbert Grabes noted, not the least of the most salient historical characteristics of Caxton's Mirror book was the title itself.

Grabes' 1973 study of the mirror trope in early modern European publishing centred on the growing ubiquity of the mirror as the emblematic title for books, which he found to be the case on all manner of subjects. From devotional tracts and courtly love poetry to political treatises and pedagogic texts to encyclopaedic compendia of all kinds, history to geography and cartography, science and cosmography, classical literature and

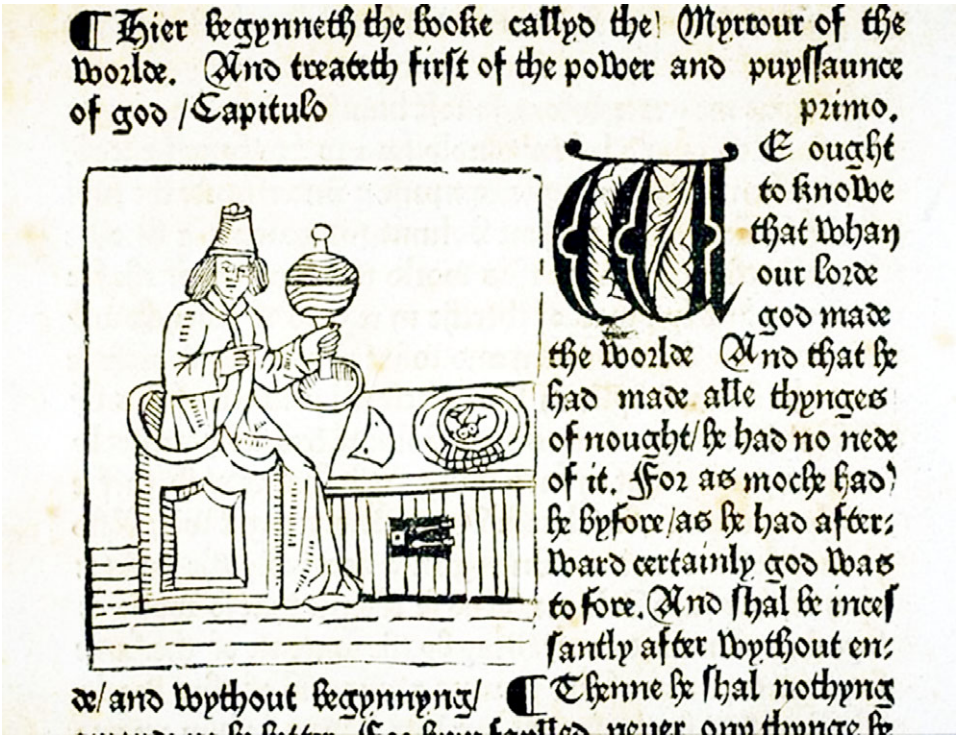

Fig. 31 William Caxton, ed. *Myrrour of the World* (trans. Gossuin de Metz), London, c. 1480, woodcut of a scholar in his study, fol. 4v, leaf size: 23.2 × 17.5 cm, Hunterian Special Collections. Photo: University of Glasgow Special Collections

medicine, titles with the word 'mirror' – *miroir*, *spieghel*, *specchio*, *espejo* – configured their contents of printed knowledge. In effect, and across languages, the mirror was the ready metaphor of the light of the mind's study, emblematised in Caxton's illustrative print. The rebus of the candle and the mirror as light was profound: witness Francesco Francia's bronze medal of the Bolognese jurist, Ulisse Musotti of 1515, depicting the accoutrements of his library, for example. Comprising books, set squares, rulers, and astrolabes, at its centre the concentrated beam of a candle flame reflects onto a small convex mirror. This instrument of optically directed light was for the purposes of close study of both objects and texts and so the emblem of his *curiosité*.[88]

Within Renaissance intellectual histories of thought, Marsilio Ficino's searching philosophical enquiry into the workings of the human intellect compared thought to rays of light reflected on a mirror, so making objects appear like 'the forms of illuminated things'. In his understanding, following Plato and Theophrastus, the human eye was both the conduit and the metaphor of all intellectual perception. Mirror-like, the eye captured the forms of all illuminated objects, whose figurations thus penetrated to the mind to constitute both knowledge and speculative thought. Ficino termed the figures of ocular perception *idola*, or little images, which he understood through the conceit of the mirror-image as 'veiled' or impalpable reflections, and so the very matter of thought – as fleeting as the imagery of a mirror, or of light itself.[89]

What is signal in the case of Caxton's *Myrrour of the World*, as Grabes highlighted, was the publisher's change to the title in the process of its translation. For Caxton's text was particularly indebted to a thirteenth-century manuscript encyclopaedia by the French priest, Gauthier du Metz, titled *L'image du monde*. Whereas the thirteenth-century French manuscript used the title of *Image of the World* as an interpretive

rendition of the Latin term *speculum mundi*, Caxton instead published the text as a literary 'mirror'. In his translation of Metz's *image* as *myrrour*, Caxton thus brought the pictorial field and the specular reflection into a titular equivalence as visual representations of knowledge or thought. What Grabes identified, across an extensive survey of Renaissance literary genres, was the incremental increase in the use of the metaphorical 'mirror' in all manner of book titles in every European language, first coinciding with the historical advent of the printing press. From the late Middle Ages to the end of the seventeenth century, with a particularly marked efflorescence circa 1650, according to Grabes, the circulation of books with mirror titles increased alongside the burgeoning diffusion of new specular instruments of vision. Thus Caxton's early elision of 'image' with 'mirror' stood at the inception of a broad cultural configuration of the mirror as early modernity's paradigmatic sign of knowledge and thought, as the emblem and instrument of light, and so of intellectual vision. In the words of the sixteenth-century Spanish.

Humanist Juan Luis Vives, 'Thought is, as it were, an image of things imprinted on the mind as in a mirror.'[90] In the English astronomer-astrologer John Dee's *Preliminary Aphoristic Teachings* of 1548, like Leonardo before him, Dee deployed the simile of the mirror for the visual faculties of the mind as the place where ideas appear 'as if in a mirror, showing themselves to us'.[91] Similarly, the scholar, poet, and playwright George Chapman termed 'the mind a spirit is, and cal'd the glasse . . . the mirror is, in which we see the minde' in a poetic recollection of myth.[92] Similar to Caxton's *Myrrour* title for an encyclopaedia, the sixteenth-century Spanish royal cartographer Alonso de Chaves described the map of the world as its 'mirror' in his so-named *Espejo de navegantes* (Mirror of Navigators).[93] This is further exemplified in myriad book titles across all domains, as Grabes noted, such as John Swan's encyclopaedic *Speculum mundi, a Glasse Representing the Face of the World* of 1643 (using the common Elizabethan term 'glass' for mirror) in a Baroque corollary to Caxton. Among its fullest literary manifestations is surely Emmanuele Tesauro's discussion of the 'mirrors' of metaphor in his *Cannocchiale aristotelico* (Aristotelian Telescope), of 1654, in which the eloquence of Baroque wit is seen to reside in a cascading play of figurative or mirror-like literary resemblances. It is best emblematized in the scholar John Comenius' early text on pedagogic methods, the *Great Didactic* of 1657.

In Comenius' model of thought as intellectual reflection, the lucid mind is composed of myriad mirror reflections, which form the nodes of memory. The parallel Comenius draws is with the library, as the configuration of the encyclopaedia writ large, in which each book is itself a mirror of knowledge, just as the pervasive use of the book's 'mirror' title made manifest. [94] This was an ancient trope, to be found in the linked metaphorical recollection of the library at Alexandria and the legendary mirror of the lighthouse at Pharos, both of which were held to offer a view of the world in miniature.[95] Returning to Grabes' study, he found that the literary trope of the mirror or 'looking glasse' within book titles was itself emblematic, intended to signify the poetic metaphor of 'likeness' within a broader cultural paradigm of early modern mimesis. Thus the mirror title was, in Grabes' analysis, in order to demonstrate the truth of the text therein, whether worldly or spiritual. Grabes' claim was no less than to construct the matrix of early modern intellectual history as a 'mirror age'.[96] In this he both followed and led the trajectories of other literary and intellectual historians of early modernity, such as Richard Rorty's analysis of the philosophical discipline's early constitution in the metaphor of the mirror, and Georges Gusdorf, who argued that the advent of the mirror as both object and allegory precipitated the cultural rise of a new

subjecthood that has long been identified as 'Renaissance'. [97]

Best known in its classic formulation by Jacob Burckhardt in his *Kultur der Renaissance in Italien* of 1860, this claim to a nascent Renaissance '*personlichkeit*' lies within Burckhardt's magisterial thesis of historical periodisation. Often seen as the founding text of cultural history writ large in its adumbration of interconnections across myriad aspects of a given historical period, Burckhardt's view of Renaissance civilization was an ambiguous one, although he recognised in it the seeds of modernity. In the political sphere its defining text was, to Burckhardt, Niccolò Macchiavelli's *The Prince* (c. 1513) as the embodiment of a nascent configuration of agonistic individualism that brought a new-found interiority to the Renaissance subject while producing the forms of competitive capitalism that would drive the development of social and economic modernity. In Burckhardt's terms, Macchiavelli's *Prince*, while nominally still in the literary tradition of *speculum principis*, entirely rewrote the genre as a justification of political authority without a 'moral mirror' of any kind; instead, the 'ideal mirror' of this Prince was the image of unfettered individual power.[98]

In Grabes' study of the literary mirror-image it is instead the other side that holds sway, of the mirror as the instrument of a morally corrective self-knowledge. Following Grabes in a brilliant essay on Chaucer's deployment of the mirror motif as the improving sign of self-knowledge, Valerie Allen further invoked the Burckhardtian thesis of a Renaissance individualism newly discernible across different cultural forms c. 1400 as the fullest manifestation of Grabes' 'mirror age'. Addressing concepts of Burckhardtian individualism within broader intellectual cultures, in Allen's view such Renaissance literary narratives turned on the process of searching individual reflection in the ethical pursuit of knowledge such as Rorty mapped in his study of the early modern mirror metaphor within the constructs of moral philosophy. Allen's literary mirror faces inward, in which Renaissance enquiry is configured like beams of the inner light of the individual mind. In her analysis, the early modern mirror-image represents a new meta-knowledge, or the paradigm of 'Renaissance' thought as illumination.[99] Similarly, Gusdorf and Debora Shuger have furthered and deepened a Renaissance configuration of the mirror as the literary emblem of self-knowledge, and so of knowledge itself.[100] Equally, Véronique Adam's study of early modern French literature highlights a figurative convergence between the optics of vision and the philosophical 'eye' of the mirror as the sign of analogical thought in a poetics of resemblance.[101] In important respects, these literary scholars also converge on Rorty's and Gasché's definition of early modern epistemology as mirror-like, in which the very processes of thought are those of specular reflection.[102] In the same vein Barbara Stafford has pointed to an early modern etymology of 'mirror' words from ancient Greek, which cluster around concepts of epiphany through light reflection, to be traced in its extensive metaphorical use throughout ancient literature and all subsequent literary forms as the sign of revelation. This quality of revelation signifies the speculative nature of thought as transformative or, to invoke Ovid once more, 'metamorphic'.[103] Hence the structure of metaphor itself is signalled in the 'light' of the mirror reflection, just as Alberti's Narcissus found it in Ovid's metaphorical pool.

Grabes' analysis of the 'mirror' motif within early modern literary cultures also studied the continuing panegyric of *speculum principis* alongside Christian devotional tracts on the reflection of divine love. In both political and devotional contexts, if in different ways, the mirror trope, as Grabes identified it, was that of a perfected double, at once mimesis and exemplum. On the one hand, the mirror shows us the subject as it is, while at the

https://doi.org/10.1017/9781009448833.002

same time revealing it to us as it should be. This was inaugurated in Augustine's writings, Grabes contended, in which the mirror reflection carried a dual significance of both knowledge of the world and the moral aspiration for a 'heaven on earth'. The analogy was thus of a 'telling mirror'; whether construed as the judgment of the conscience or the intellect, the metaphor was one of moral or improving self-reflection.

This exemplarity of the mirror reflection configured not only the *speculum principis* but also the early modern encyclopaedia as *speculum mundi*, in which the acquisition of knowledge of the world is presented within the larger context of edification – often coupled with a cautionary admonition against a Faustian *vanitas*. The idealising mirror as an improving one is also discernible in the medieval literary traditions of the troubadour poets, cast allegorically in the language of devotional tracts, in which the sight of the beloved renders the lover both ardent but also chastened, above all transformed. Thus in the moral reckoning of love in Shakespeare's *Love's Labours Lost*, the princess of France has recourse to her mirror as the means of good judgment: 'Here good my glass, take this for telling true' (Act 4, scene 1).[104] Rorty likewise recalled a Shakespearian 'glassy essence' in *Measure for Measure* (Act 2, scene 2) as the literary figure of imitation and therefore learning, across all domains of knowledge.[105] As Grabes rightly argued through the choice of his own book title in English translation, *The Mutable Glass*, the Renaissance mirror metaphor was infinitely metamorphic.

What Grabes found distinctive in the early modern ubiquity of 'mirror' titles was the identification of the idealising character of the specular *exemplum* with that of art (in his case, literature). That is to say, and as Rorty also argued for the history of philosophy, the mirror's authority for trusted or ideal judgment rested on its proven capacity for true reflection, simply put, as an instrument of demonstrable veracity. As both Renaissance arts and sciences testified to, sight was accorded primacy among the five human senses as the highest form of evidential method. In this regard it is critical to recall broader shifts in Renaissance cultures of knowledge towards those of visual evidence, on which early modernity's incipient 'scientific revolution' would rest. This was foundational to Rorty's discussion. As is also evidenced in the social 'advance' of the artist from anonymous medieval craftworker to Renaissance *literato*, an intellectual equal of their counterpart in letters, the rising status of visual imagery as a form of knowledge accorded equal authority with that of texts was as central to the subsequent history of early modern science as art. The new cultural claim of Renaissance art thus rested on the demonstration of its mimetic or specular reflection. For the idealising conceit of a mirror-image made art the perfect 'double' of the 'view through the window', just as Alberti had claimed.

PSYCHE'S MIRROR

From the realm of encyclopaedias as mirror-like collections of textual knowledge to that of cultural beliefs manifest in religion, mythology, philosophy, legend, and folklore, here the mirror metaphor flourished as a representation of the inner self or psyche. Of archaic derivation, in both faith and folklore the evanescent mirror reflection was perceived as a visual corollary to the soul. Within antiquity, it was bound to the mythological figure of Psyche, and so to literary myths of the psyche's origin. In the pool of myth, this was above all configured as the reflection of the self on the surface of the water, from Dionysus to Narcissus. Further, the mirror and its paired reflection was conceived as an emblem of love, both spiritual and human, in which the reciprocity of the mirror-image was the sign both

of desire and of love returned. As Chapter 5 elaborates further, the early modern inset-mirror motif within painting prospered particularly in the realm of bridal imagery, as an allegory of female beauty and its amorous pursuit. This chapter instead considers the mirror metaphor as desire's emblem within myth and folklore as the subject of a broader cultural analysis. Comprising both texts and objects, it ranges from the richly figurative imagery of secular and spiritual love poetry to enchanted specular agents of 'magical' fortune such as eye amulets, trick mirrors, optical chambers, and crystal balls to apocalyptic ocular and specular imagery as haunted configurations of myth's divided psyche, irrevocably split between the self and a 'looking-glass world'.

In the classical story of Psyche, it is Cupid's mother, Venus, whose envy of her mortal rival leads her to seek the girl's death, in a mirror-image of beauty and *invidia*. The antique story arises within classical literary conventions of metamorphic fables of changelings through love's enchantments, similar to Ovid's Narcissus, in the late Roman *Metamorphoses* of Apuleius.[106] Told by an old woman among a gang of thieves along with a terrified young female captive in a dark cave, it is a tale of *rite-de-passage*, part woven from the fabric of myth, part folklore, of a girl who is captured, and then captivated, in a metamorphosis of love's fortunes. Apuleius' Psyche is transformed into a god through her marriage with Cupid – in Greek, Eros – though she suffers abject reversals of fortune along the way. Apuleius describes the great hall of her bridal palace in an extended visual *ekphrasis*: fronted by crystal fountains, its walls are sparkling mirrors of gold and silver that shine like the sun and the moon. Psyche's fate rests on her willing suspension of disbelief: where this is broken the hall of mirrors vanishes and she finds herself alone in the wilderness. As antiquity's fabled and archaic personification of the psyche, her surety lies in the embrace of love's illusions. Hers is to delight in the mirroring simulacra of the mind without seeking to pierce their shimmering reflections, in Jean Starobinski's words, just as the Apuleian hall of psychic mirrors was the defining cultural sign of the intellect's imaginary figurations in image form.[107]

What transpires most forcibly from the story of Psyche, as Cupid's beloved, is the ancient sense of the mirror-image as the picture of desire that, howsoever fraught with the possibility of abandonment and delusion, is emotionally requited in a mythology of union. If the golden hall of mirrors is the stuff of Psyche's dreams, the mirror-image is paradigmatically the elusive face of love returned, as in the myth of Narcissus. Widely known and imitated throughout the Renaissance, the Apuleian tale of Psyche was the subject of painting at Raphael's Loggia di Psiche at the Villa Farnesina, of court masques as for opera and ballet, as well as in decorative arts such as the antique Marlborough gem and the many early modern imitations it spawned.[108]

In medieval literature of chivalric love such as the thirteenth-century French *Romance of the Rose*, itself a reworking of the myth of Narcissus as Psyche, the *Romance* is that of Psyche's love returned. As an odyssey of desire, in this text the knight/lover seeks his elusive beloved in a walled garden. He gazes on her rose-like reflection in the waters of a crystal fountain, for her union with cupidic love has transformed her into a red rose.[109] In similar *chansons* of the troubadour poets, Ovid's fountain of love, originally in the image of Narcissus, was transformed into the emblem of chivalric *amour* in which the ardent knight of romance might perceive his lady's elusive presence. Late medieval and Renaissance love poetry extended the metaphor endlessly. Thus Jean Froissart's '*Le joli buisson de jonece*' reconceived the fountain of poetic love as that of an amorous union between Narcissus and Echo, *ut pictura poesis*, while François Bérenger

de la Tour's 'O saint miroir' described the face of his mistress in a mirror reflection to find it outshone by the lady herself.[110] Popular prints represented a woman alongside that of her face in a mirror reflection described as 'l'astre du jour est l'oeil de tout le monde' – the radiance of her starry light likened to the eye of all the world, as a mirror-image of the stars themselves.[111]

As the knight/lover of the *Romance of the Rose* gazes into the mirroring fountain of love, he is offered a succession of dream-like allegorical visions of his beloved, including a rose reflection, but also two crystals, like the sun and the moon, and seemingly metaphors of her crystalline eyes. The notion of the eye as a crystal or mirror is also a broad one, reflected in a wide range of literary forms. From love poetry to *Volkskunde*, such allegorisations of sight are loosely derived from the broad diffusion of Euclidean optical science and theory. In the words of the troubadour poets, suffused with the metaphorical elaborations of chivalry: 'she let me gaze into her eye / that mirror which pleases me so greatly. Mirror, since I saw myself reflected in you ... I have destroyed myself just as the beautiful Narcissus destroyed himself in the fountain.'[112]

Within the courtly language of love the mirror-image was both captivating and a sign of acceptance or 'capture'. This was embodied in gifted nuptial mirrors of compact circular form as material metaphors of 'eye-catching'. The sixteenth-century poet of the eye as the mirror of love, Maurice Scève, described Adam's first view of himself in the wondering eyes of Eve: 'in this small place / I am reduced to a point / In the round ... of her two eyes ... / I am doubly reduced, I am doubled in her.'[113] Similarly, the court poet Pierre de Ronsard compared the eyes of his lover to crystals, in which he could see his shining reflection in miniature.[114] In Frederick Goldin's literary analysis of the mirror in late medieval chivalric *chansons*, the story of Narcissus became the trope of love's reflective acknowledgement. Here the recognition of the self in the eyes of another was conceived as the defining moment of youth's self-realisation in a courtly *rite-de-passage* into love.[115] In John Donne's recurrent recourse to the metaphor of the eye as the mirror of the beloved, his 'Witchcraft of a Picture' makes explicit love's ocular magic of mutual reflection: 'I fixe mine eye on thine, and there / Pitty my picture burning in thine eye.'[116] In Edmund Spenser's *Amoretti*, his anthology of love sonnets cast the 'fayre eyes' of his beloved as 'the myrrour of my mazed heart'.[117] In Milton's radical recasting of myth's *poesis* in *Paradise Lost*, it is Eve who wanders in Ovid's woods 'much wondering ... what I was'. Seeing her own image in the liquid pool she is then awakened, her desire for her own image transposed to man, 'hee whose image thou art'. Even as she is made 'Mother of human race', yet Diana-like, Eve acknowledges she pined for that 'smooth watry image in the cleer smooth lake, that to me seemd another skie' in a vast metaphor of cosmic mirror-vision (4:448–55).[118] In Sir John Davies' poetic *Nosce teipsum* (Know thyself) of 1599, the eyes are similarly the instruments of cosmic mirror reflection: 'these mirrors take into their little space / the forms of moone and sunne and ev'ry starre'.[119] As Sarah Key has argued, the late medieval poetic metaphor of love as a mirror of the eye is surely indebted to late medieval Arabic optical theory on the science of vision, notably Hasan Ibn al-Haytham (Alhazen)'s influential demonstrations of Euclidian optics.[120] In Leonardo's searching visual observations, at the nexus of art and science and heir to the Euclidean legacy, he also noted that: 'Concerning the point of the eye ... if you look into the eye of anyone you will see your own image there ... your own image mirrored in the said eye.'[121]

In Euclid's ancient theorisation of vision, visual rays like light are understood to run between the eye and the object viewed. Such a

model of vision was, throughout classical love poetry and myth, readily elided with Cupid's arrows casting their darts of desire, so drawing together the act of sight with that of love. Further, in Socrates' tutoring of Alcibiades, which would become a model for the later conventions of *speculum principis*, Socrates elaborates on the optics of vision in a passage concerned with relations of platonic love, yet also touching on the observation of the convex mirror of the eye. Latent within the Greek term for pupil as the centre of the eye was the recognition of its specular effect in reflecting the figure of the beholder in miniature as a *pupa*, or tiny doll.[122] This lexical elision rested on proverbial superstition concerning the eye's uncanny mirror, said to 'capture' the beloved within its gaze, but also to capture the soul, of which Psyche (Latin *Anima*) was the mythic personification.[123] It would also come to resonate within Christian devotional literature, as a metaphor of divine love but also its unknowable reach.[124] In myth, Psyche can readily gaze on the golden mirror hall but is not permitted to see her suitor, who comes to her only under the cover of night: Eros is as fleeting and elusive as a mirror reflection.[125]

Etymologically, the term *mirror*, like the French *miroir*, springs from the Latin *mirari*, meaning to look, to reflect, to admire; while in Latin *speculum* was the common term for mirror, hence the root of the German, Italian, and Spanish *spieghel, specchio*, and *espejo*, as well as all the cognates of spectacle and speculation, including to see, with the sense of an extended vision and therefore also to foresee. Hence perspective, as in perspicacity, which signified the transparency of optical regard and so the rays of light that came to be configured as the Renaissance painter's perspectival method in the rendering of illusionistic volume and space. The connotations of these terms were of their usage as instruments and metaphors of light, in the sense both of casting light as well as of igniting it by means of parabolic mirrors. As a reflective surface bound up with looking, the mirror made ready analogies with perception, foresight, and regard. In English the cognates of *speculum* would come to imply scientific uses as an instrument of visual knowledge as well as speculative thought or foresight. Similarly, the term *mirror* intimated the domains of beauty and renown, but also conscience or the soul – *Anima* or *Psyche* – hence the *vanitas* of vanity and the faceted reflections of the mind. From archaic usage, both the mirror object and its various histories of linguistic translations were laden with semiotic significance encompassing a full range of meanings, often deeply ambivalent, from light and truth to captivation, hubris, and delusion. In its paradigmatic reversal of left and right, and its great condensations and enlargements of scale, the mirror reflection was perceived as psychically polyvalent, as much the figure of bewitching visual deceit as of mimesis. Within convex and parabolic mirrors, with distorting distensions of scale across a 'fishbowl' reflection, it was the instrument and the emblem of a spectral deception too. It was, in Philippa Kelly's words, 'unfixed', both a 'true glasse' and a deceiving one, and haunted by the psychic bifurcations of a vexed early modern selfhood.[126]

Returning to the Burckhardtian view of the Renaissance as characterized by a new individualistic subject-hood, this comprised within it discussion of a deepening introspective interiority linked to a rising early modernity, which subsequent scholarship has greatly extended. If we have questioned the temporal boundaries and periodisation of Burckhardt's analysis, yet the adumbration of a changing individual subjectivity as the focus of historical enquiry has proved widely influential, both within the Renaissance and far beyond it. Burckhardt wrote against the backdrop of nineteenth-century German Romanticism's cultural introspection, which similarly nurtured Sigmund Freud's emerging

psychoanalytic science of the psyche, whose intellectual matrices were also profoundly rooted in the study of ancient myth. In particular, Freud took up the mirror of Narcissus as the psychological metaphor of a divided subjectivity.[127] This would be greatly furthered in the ensuing work of Jacques Lacan. Lacan's own intellectual formation, like Freud's, was founded in the study of ancient mythology. The figure of the mirror, or *image spéculaire* that would form the cornerstone of Lacan's work, was transposed from archaic myth into his account of the development of the infant psyche as the *stade miroir*. Like Freud, to whom he acknowledged his influential debt, Lacan's conceptualization of the psyche's mirror was founded in the myth of Narcissus, furthered and extended by what are clearly the Dionysian and Orphic rites of the bacchanal, centred on the so-called mirror of the young god's nurture in the watery pool of Mount Nysa. Archaic accounts of the Eleusinian mystery rites in honour of the education of Dionysus in the mirroring pool of Olympian myth was, in Lacan's reading, emblematic of both early childhood's entrance into the symbolic realm and the enduring structure of human subjectivity as doubled and so divided from itself.[128] Captured and captivated by its own 'mirror-image', thus the psyche is bound and split by the manifold reflections of culture. While full scholarly exegesis of the Bacchic mystery rites would await eighteenth-century cultures of neo-classicism, yet the currency of these myths is already manifest not only in the neo-Platonic studies of fifteenth-century Medicean Florence centred around Marsilio Ficino but also, notably, in the paintings of Poussin, whose exacting representations of these rituals depicted the infant Bacchus nurtured in the thrall of myth by the woodland nymphs at the pool of Mount Nysa.

Thus the early modern conceptualization of painting as a mirror double adumbrated by Alberti in the fountain of Ovidian myth was a haunted one. Its shadowy reflection was emblematized in both art and literature, as in Charles Perrault's 1661 'romance' tale of painterly metamorphosis, *Le miroir ou la Métamorphose d'Orante*, in which the 'mirror-image' portraitist Orante is slowly transformed into a mirror himself. As a ghostly tale of metamorphosis, Perrault's story parodies the cultures of courtly imitation through the figure of Orante, who flatters his sitters by mirroring them in his images. '*Fort poli*' yet he is without memory, just like a mirror. He and his brothers, who are also mirror-image portraitists, albeit by means of 'deforming' convex and concave mirrors, are at the same time mathematicians who frequent fashionable Parisian curiosity cabinets, in a play on the illusions of perspective and those ludic mirrors of distortion that are both 'true' and false. The tale begins in the classical and courtly literary form of a conversation. In Perrault's subsequent elaboration of the genre it is revealed to be a conversation between portraits rather than people, in a further play on the spectral nature of portraiture as a 'captivated' mirror of resemblance, and so of the subject, both literal and literary.[129] Invoked by Oscar Wilde in *The Picture of Dorian Gray* (1890), it would further inflect Freud's analysis of the uncanny – both familiar and frightful – in a response to Otto Rank's psychological study of the *Doppelgänger* as a manifestation of the cultural contradictions of subject-hood as perceived in mythology's figurative pools of Bacchus and Narcissus.[130] As historians of the 'classical' formation of a divided Renaissance subject-hood, within antique texts as of their early modern exegesis and subsequently within the ongoing development of early twentieth-century psychoanalysis, the trope of the mirror-image has remained an enduring, if complicated, figure of self-knowledge as a haunted or narcissistic 'double' comprising both reflection and delusion.[131]

Above all, Psyche's mirror was perceived as an early modern metaphor of interior psychological

https://doi.org/10.1017/9781009448833.002

revelation. In Shakespeare's *Richard II*, it is his monologue with his 'glass' at the moment of his unveiling and subsequent deposition in which he confronts his changed state. Dashing the mirror reflection of himself to the ground, it is 'crack'd in a hundred shivers' (Act 4, scene 1) as an allegory of his destruction. If the purpose of Hamlet's 'To be or not to be' soliloquy was to reveal his deeply conflicted private thoughts, that of *Hamlet*'s 'play-within-the-play' was 'to hold as t'were the mirror up' to the king's inner conscience (Act 3, scene 2). In this sense the 'mirror' was understood as an instrument of unmasking, as a means of penetrating to the 'privie thoughts and conceits of the mind'. Similarly in *Troilus and Cressida* (Act 3, scene 3, l. 109) the 'mirror-view' of the self lies in the looking-glass world of opinion, as the seat of reflexive introspection. In Achilles' words: 'My mind is troubled, like a fountain stirred,' so reflecting on the mirror of the mind as the fragmented fount or source of conflicted memory.[132] In the same vein, Grabes saw a bivalence in the mirror-imagery of an early modern mentality. On the one hand, the mirror-image was held up as idealizing or improving; on the other hand, it served as moral warning, admonishment, even punishment.

Theologically, the moral mirror of an omniscient divine was represented in imagery of the eye of God. In a painted representation of venal sin intended as a pair with one of virtue (in the Prado Museum, long though uncertainly attributed to Hieronymous Bosch), the central configuration is of the excoriating eye as an all-seeing mirror inscribed 'beware the eye of God'. The tiny figure of Christ appears as a '*pupa*' within the divine pupil, as a specular emblem of God's love. Set around is a succession of small scenes depicting various vices as if reflected on the iris of the eye. First documented as a *mesa*, or table top, the intended viewer and context remain unknown. Yet the imagery recalls a rich range of texts and prints on fortune, virtue, and vice, construed as exemplary 'mirrors' of improvement and admonishment, as the mirror of conscience. Among them is the representation of Superbia, or Pride, depicted in an idiomatic vernacular. A woman in a well-appointed domestic interior looks into a mirror held aloft by a 'devil'.[133] Beyond the divine eye, in a series of roundels depicting worldly sins is a further allegory of vanity as a female nude looking towards a convex mirror held by a devil while a frog nestles at her sex. The putrid and punitive elements of this imagery, howsoever delicately miniaturised and exquisitely rendered in jewel-like colours, may suggest an apocalyptic iconography of fearsome repentance c. 1500, though cast in the rich colours of courtly learning. In the teeming profusion of dream-like imagery in Bosch's *Garden of Earthly Delights*, also c. 1500, of an enigmatic complexity that continues to elude scholarly definition, a tiny convex mirror appears on the buttocks of a small devil in which a female nude in the arms of a beast must confront her captive mirror-image in a shattering 'vanity' of herself.[134] Such disturbed mirror-imagery of dreams on love between pleasure and cruelty is also present in texts such as the epic *Hypnerotomachia Poliphili*, published in Venice in 1499.[135]

The conceptualization of the early modern collective psyche as fundamentally split or divided from itself was Burckhardt's, as he read it from within such historical materials, to unsettle the historic claims of a Renaissance 'golden age'. Split into a series of faceted and competing specular images of virtues and vices, or the haunted exemplum, the psychic price of Burkhardt's early modernity came to be identified, figuratively speaking, with the infinitely cascading perspectival reflections of the mirror hall. Like Psyche's elusive golden palace of love, the human mind of Burckhardt's *individuum* was understood as irretrievably split.

Within Christian devotional literature of the period, the mirror was a frequent metaphor of

https://doi.org/10.1017/9781009448833.002

the human heart, while the world was often cast as a labyrinthine perspective of mirror reflections. With a vast reach into Christian devotional literature, Paul's letter to the Corinthians (1 Corinthians 13:12) on the ineffable nature of divine love was of a mirror-reflection metaphor: 'For now we see [His love] only as a reflection in a mirror; then shall we see it face to face.' In a cascade of light as the metaphor of God, the mirror reflection of human love was but a faint imitation of divine effulgence. In the extensive Renaissance history of biblical translation, the Pauline mirror analogy as the picture of divine love returned, however dimly understood by the human soul, was a constant one. The many Renaissance elaborations of the spiritual mirror contrasted the constancy of devotional love with the 'looking glass world of opinion', as one of fractured and distorted reflections. In texts such as François de Sales' *Traité sur l'amour de Dieu* (1616) or Comenius' *Labyrinth of the World and Paradise of the Heart* (1631), the pilgrim's journey through the world of mirror illusions is characterized by the disjunctive vision of distorting mirrors, while the only 'true glass' is that of divine love.[136]

Mirrors of distortion were objects of wonder and curiosity, the subject of enquiry within optical and catoptric science, but also understood as manifestations of an ambivalent magic. Arising from archaic superstition surrounding mirror-images, they were perceived as haunted signs of the divided psyche and of a divinity configured by both love and moral judgment. Like the '*pupa*'/pupil elision of folkloric beliefs, superstition commonly understood specular reflection as a magical means of capturing the soul, whether captivated in love or caught in the snares of the 'evil eye'. Intimately linked to folkloric superstition surrounding the evil eye was the figure of the mirror, similarly able to 'capture' the soul of its viewer within its reflection, as both danger and its superstitious remedy. Hence the presence of reflective mirror tokens within archaic burial chambers was one of transport to the beyond, but also of great care in their protection, to the object as to the 'person' held within them.[137] Similarly, apotropaic charms to ward off the envious rays of the evil eye were typically of reflective metals such as gold charms, refractive quartz crystals, and reflective mirrors, including eye amulets in lustrous materials of polished metal and glass in emulation of the mirror of the eye. Within the reciprocal symmetries of mimetic magic and superstition, these were understood to return the damaging rays of envy on themselves. This was also the folklore of the mirroring shield of the Medusa myth.[138] Their fully bivalent place between Renaissance cultures of magic and myth, but also the science of optics and the seat of learning, is evident in Leon Battista Alberti's self-portrait medal, bearing the image of the winged eye as a sign of the humanist's intellectual endeavour (Fig. 32). Alberti understood the eye as 'more powerful than anything, swifter, more worthy . . . It is such as to be the first, chief, king, like a god of human parts.

Fig. 32 Leon Battista Alberti, portrait medal/reverse side QUID TUM, with winged eye, c. 1450–55, bronze, diameter 9.25 cm, British Museum.
Photo: British Museum

Why else did the ancients consider God as something akin to an eye, seeing all things and distinguishing each separate one?'[139]

In this regard it is critical to recall the place of learned 'magic' within Renaissance cultures, as Chapter 4 will further elaborate, which comprised both the folklore of archaic superstition, astrology, and alchemy but also the very nexus of early modern scientific enquiry and humanist learning. Thus the quartz crystal ball, from archaic times regarded as 'magical' in its highly refractive powers to capture the sun's rays to ignite fire, was also a ready material metaphor of the eyeball, because of its ability both to magnify objects and to capture the visual field within itself in miniature mirror reflection. As a medieval reading aid, dome-cut crystals were placed on the page to be studied and thus moved along with the reading eye. For these reasons rock crystal was the prototype of optical lenses, as much an instrument of early science as of magic in its capacities of sight, and by analogy of foresight or prediction. In Christological depictions of crystal orbs in Salvator Mundi subjects, the miniature 'world' depicted within its sphere was understood as a metaphorical reflection of divine dominion. This extension from verifiably scientific prediction through the magnifying capacities of visual analysis to that of divination as well as its broader allegorical figuration was both long-standing and culturally ambivalent, across the realms of optics, theology, and 'magic'.

At the same time, the mirror-image was clearly understood as a metaphor of illusion or visual deception within early modern cultures of catoptric curiosity. Hence the description of mirrors that foreshorten or elongate the face by the Neapolitan polymath and playwright Giovanni Battista della Porta in his *De humana physiognomia* of 1586, surely close to the description of 'trick mirrors' of distortion, kept at Renaissance castles, palaces, and gardens, in the manner of optical jokes, such as Philip the Good's Burgundian castle at Hesdin in Artois.[140] Continuing into the seventeenth century and beyond, John Evelyn would describe the 'strange multiplication of things' by means of cascading perspectival mirrors at the Villa Borghese, in a room comprising a range of mechanical 'jokes' as equivalent curiosities of the trick mirror-image.[141]

Della Porta further described the use of mirrors of illusion in which viewers saw themselves with the head of a donkey or the snout of a pig in a specular 'metamorphosis' like that of Apuleius' Lucian or Ovid's Narcissus, but which was also part of his enquiry into the morphological differences between species to further an understanding of human physiognomy. This is elaborated by the German Jesuit scholar in Rome, Athanasius Kircher, whose interests included catoptrics, or mirror reflections, and whose museum of curiosities included prismatic 'jokes' such as a 'metamorphosis machine'. Kircher similarly instructed his visitors in the study of light reflections with specular illusions of skeletons and death's heads, touching on the theology of *vanitas* through the metaphor of the mirror's fleeting imagery.[142] The French Jesuit and astronomer-mathematician Jean Leurechon also described mirror illusions showing the face of a female beauty on one side, and a death's head on the other, in a close alignment of catoptrics with religious themes of memento mori.[143] The Bolognese scientist Leonardo Fioravanti, in his *Dello specchio di scientia universale* of 1564, described a number of trick or distorting mirrors including the celebrated '*miroir sorcière*', a specular tondo inset with smaller convex mirrors like the eyes of a sorcerer, whose cascade of reflections comprised effects of 'fishbowl' distortion, fragmentation, and perspectival multiplication.[144] An allegory of love as for thought, the early modern mirror-image and its myriad reflections turned on its swiftness, like light, but also its fleeting and illusory nature. Its capacity for infinite perspectival

https://doi.org/10.1017/9781009448833.002

recession was perceived as both a source of marvelling wonder and a haunted anxiety. In the words of the seventeenth-century Parisian writer Louis d'Epinay d'Etelan, '*Sur un miroir*: [O mirror], painter of brilliance, of inimitable art / You paint, without effort, an art of inconstancy / Always *ressemblant*, never the same.'[145]

HALLS OF MIRRORS

Scattered among the extensive notes that Leonardo da Vinci made on every subject across the arts, literatures, and sciences, compiled into notebooks numbering thousands of pages together with sketches of his evolving thoughts, are the seeds of what he appears to have intended as a dedicated study on catoptrics, or the science of mirror reflection. Seemingly part of a larger prospective (never executed) treatise on optics or vision, the many uses of scientific mirrors and lenses were among Leonardo's various interests in the technological instrumentation of sight.[146] His interest in the mirror extended from the industrial to the artistic and scientific. This comprised his own production of workshop mirrors of curved metal for the purposes of heat induction for metalwork, as well as cast illumination for scientific study. He was also a student of all nature's mirroring luministic effects, including light and shadow, sun- and moonlight, stars, clouds, mists, raindrops, and rainbows. If Leonardo was exceptional in the degree of his study, yet his interest in mirrors was one that Renaissance artists broadly shared, as manifest in both artistic practice and theory, from painting to perspectival optics and catoptrics.

Across his notebooks, Leonardo documents his extensive use of mirrors as a means of observing the perspectival effects of reflection, part of his larger study of the science of vision related to his painterly practice. By means of experiment, he demonstrated the specular cross-reflection produced by a cascade of ever-smaller reflected mirrors within mirrors, in effect, a mirror chamber in the scientific domain:

> It so happens that if two mirrors be placed so as to be exactly facing each other, the first will be reflected in the second and the second in the first. Now the first [mirror] being reflected in the second carries to it its own image together with all the images reflected in it, among these being the image of the second mirror, and so it continues from image to image on to infinity, in such a way that each mirror has an infinite number of mirrors within it, each smaller than the last, and one inside another.
>
> An instance of how the images of all things are spread through the air may be seen in a number of mirrors placed in a circle, and they will then reflect each other for an infinite number of times, for as the image of one reaches another it rebounds back to its source, and then becoming less rebounds yet again to the object, and then returns, and so continues for an infinite number of times.
>
> If at night you place a light between two flat [metal] mirrors which are a cubit's space apart, you will see in each of these mirrors an infinite number of lights, one smaller than the other, in succession.[147]

Elsewhere in his notes he specified the number and dimensions for such an ocular 'hall of mirrors', followed by an illustrative sketch in the form of a polygon (Fig. 33):

> If you have eight flat [metal] mirrors, each 2 *braccia* wide and 3 high, and have them placed in a circle so as to form eight sides of 16 *braccia* of circumference and 5 of diameter, that man who stands inside will be able to see each side of himself an infinite number of times. The same happens with four mirrors, which make four sides.[148]

Leonardo's interest lay in the observation of mirroring cascades of reflections, receding to the

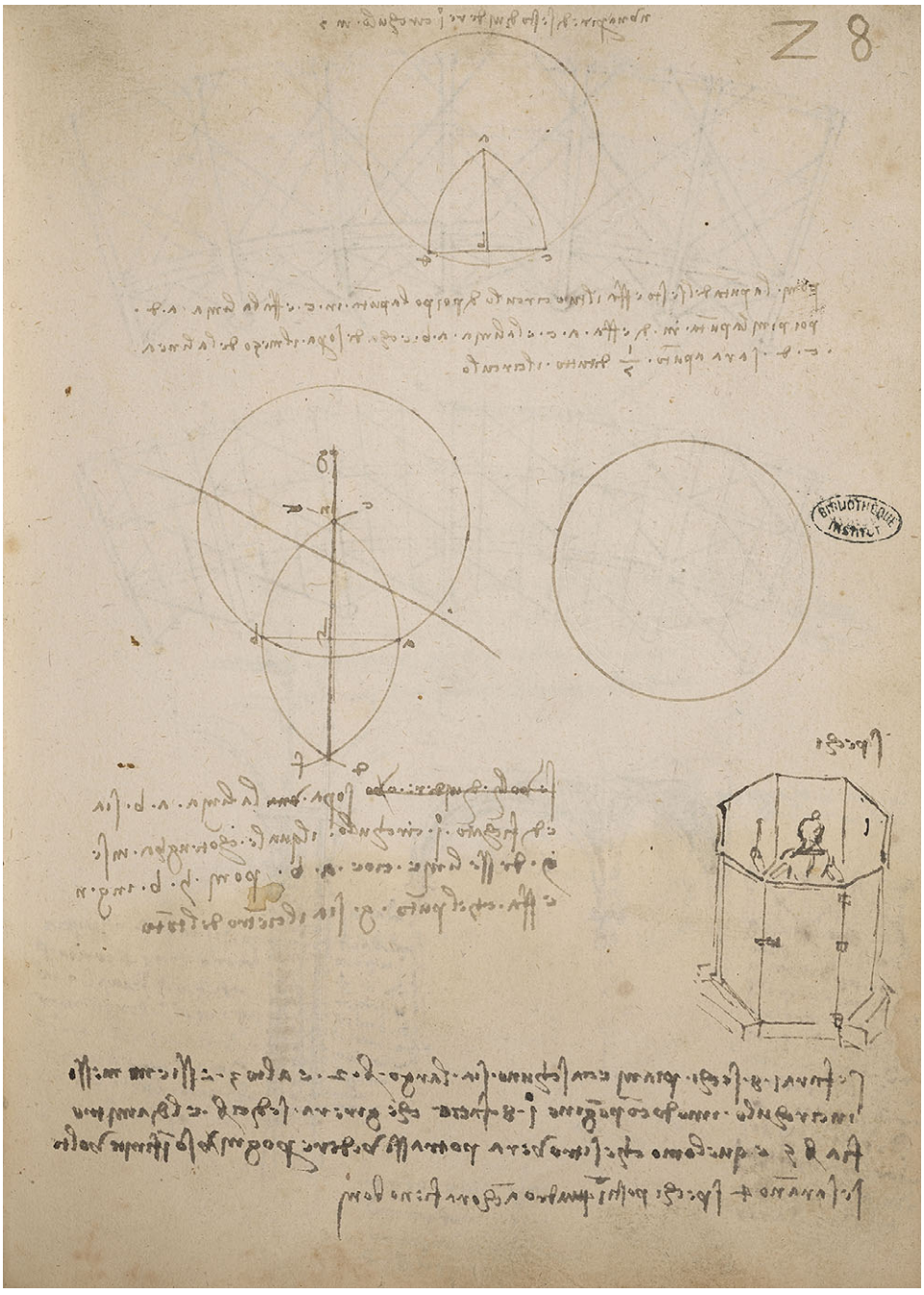

Fig. 33 Leonardo, polygonal mirror chamber (lower right), pen and ink drawing, ms. B folio 28a, Institut de France Library. Photo: Réunion des Musées Nationaux

perspectival point of infinity, for which the mirror was the proof. His study of the 'infinity' of mirror cross-reflection is, in itself, an analysis of images within an image, here in the scientific domain of optics and catoptrics. The concept of infinite specular reflection was already present in ancient catoptric manuals such as Euclid's, as Leonardo and later Louis XIV surely knew, in which angled arrangements of mirrors were assembled for their ocular effects of infinite multiplication and regress.[149] It was one that della Porta, in his book of natural science, *Magia naturalis*, which comprised much study of the mirror-image, would also pictorialise in a similar diagram of a mirror-lined

https://doi.org/10.1017/9781009448833.002

Fig. 34 Giambattista della Porta, polygonal catoptric theatre, *Magia naturalis*, Naples, 1589, book 17, chapter 3.
Photo: Hathi Trust

polygonal chamber that he termed a 'theatrical glass'. Further elaborating on its assembly, he also distinguished a more complex configuration that he called 'amphitheatrical': 'Let looking glasses be raised perpendicularly ... if you set a candle against it, you shall see innumerable candles ... you shall not see so many stars in the skies."[150] Apparently on display in the private museum of his house and a putative design for a theatre set, its intention was to produce a cascade of infinite light reflection in the same way as Leonardo did (Fig. 34). Recalling his visit to della Porta's optical chamber when in the service of the Spanish Viceroy to Naples, the playwright Francisco de Quevedo perceived the visual effects of the catoptric theatre as a metaphor of the fleeting images of the mind or imagination – '*simulacros y formas sin materia*' – images and forms without substance.[151] Della Porta further described the infinite reflections of such a specular 'theatre', in demonstrating the effects of multiplication by setting a candle in the middle of concentrically arranged facing mirrors 'so that it will seem to multiply'.[152]

This multiplication of the mirror-image, recognisable in the early modern cultural trope of the 'hall of mirrors' that Versailles came to represent, was one of reflection but also ambiguity as to the relationship between specular mimesis and illusion. Thus of painting, whose mirroring conceit was recognised as the fiction of presence, both demonstrably visible and impalpably absent. In the words of the Roman painter and art theorist Federico Zuccaro, in his 1607 *Idea de' pittori* as a disquisition on the academic status of art, painting is commended as the 'true mirror of nature, its very portrait in all its manifestations', able to represent the 'universe of nature like a great gallery or compendium of the visible world', with seeming volume and space where there is, in fact, none.[153] In his address to Rome's Academy of St Luke, of which he was principal, Zuccaro elaborated further:

> If you place a large mirror of very fine *cristallo* in a room full of exquisite paintings and magnificent sculptures, it is clear that, when I look at it, this mirror will not only be the end of my gaze but it will also be an object which in its turn will clearly and distinctly present me with all the paintings and sculptures. And yet these paintings and sculptures are not physically present in it. They only appear in the mirror in their immaterial form. It is in this way that those who wish to have an understanding of what art [*disegno*] is should philosophise.[154]

In so saying Zuccaro defined a theory of painting as both deceit and verity, like a mirror reflection, whose verisimilitude lay in the skill of its specular fiction. Thus the true measure of art was to be judged by comparison with its exemplary double, the mirror-image. What is above all striking in this passage is Zuccaro's specular imaginary of a great gallery of pictures seen through the medium of a mirror reflection. The imagery was a pervasive one, to be found also in pedagogical texts on the structures of visual memory such as Comenius' *Great Didactic* (1657), in which the 'eye' of the mind is likened to 'a spherical mirror suspended in a room which reflects images of all

https://doi.org/10.1017/9781009448833.002

things that are around it'.[155] Likewise Martin Luther, in a passage treating the ambiguity of pictures as both spiritual truth and illusion, like a reflection, described them as a *Spiegelbild* of multiple images: 'where we see stories and objects as though in a mirror'.[156] Similar to Zuccaro, the Munich *Wunderkammer* of Duke Albrecht V of Bavaria kept a great mirror 'in which you can see everything in the cabinet', as a recollective image-making instrument for collections of visual knowledge objects that Comenius also espoused in his didactic methods.[157] In the same vein, Jean-François Niceron described the Parisian cabinet of Louis Hesselin: 'there one sees such beautiful glasses for such excellent mirrors . . . that one may say it is the *abregé* to all the cabinets of Paris'.[158] Here the early modern picture gallery with its collection of independent images, as also with collection cabinets of objects of all kinds, had become a metaphor for encyclopaedic enquiry, like Caxton's *Myrrour of the World*. Moreover, in its reflected form as perceived in a mirror-image such as Zuccaro described, picture collections were seen as the intellectual equal of books, and of the early modern library too. In this regard, Zuccaro's mirror-image was an anthological one, able to collect within its reflection the gamut of paintings that a picture gallery could house. In effect, the art gallery configured in a mirror reflection was painting's exemplum, in which the academic artist that Zuccaro promulgated was instructed in the history of his art. At the same time, Zuccaro's mirror-image was the model of painting because it was both present and absent, visual truth and illusion, exactly as Alberti had prescribed. As his successor as principal of the Accademia di San Luca, Gian Lorenzo Bernini, is reported to have said in a further reflection on the paradox of painting as impalpable as a mirror-image: 'Art lies in that which is all illusion, yet appears true.'[159]

In the manner of Zuccaro's *concettismo* of art's reflections, when the Swedish Queen Christina sought to display her brilliant collection of art at her Roman palazzo Riario, it was to Bernini that she turned for assistance in their presentation, through the medium of mirrors. In her extraordinary *stanza dei quadri*, where she displayed her collections of Venetian and north Italian painting acquired from Prague and before that Mantua, and which would subsequently devolve to the Duke Philippe d'Orléans and Philip V, Bernini orchestrated the decorative arts of their presentation, including socles for antique sculptural heads and a large ornamented mirror designed to hang among the paintings. While the mirror itself is now lost, a preparatory drawing remains, doubtless made for the queen's consultation (Fig. 35). There is also an annotated sketch and a description of it by her visitor from Stockholm in 1687–88, Nicodemus Tessin the Younger, who detailed its hang above a table on which was displayed a Greek bronze head then believed to be of Alexander the Great. In Tessin's account, the mirror was designed to be of large dimensions, to the extent that it required more than one piece of glass according to the manufacturing methods of the time.[160]

Bernini's sculptural frame, carved and then gilded in full relief, was orchestrated so as to veil the joins of the glass. Depicting the figure of Time bending over the mirror, he bears a drapery in his outstretched arms as if to 'unveil' the glass behind. Surely a sculpted recollection of Parrhasios' painted curtain of ancient renown, which deceived even the great painter Zeuxis in Pliny's account (*Nat. Hist*. 35:65), the veiling drapery is both a light *paragone* of the arts and a witty Erasmian *vanitas* of Bernini's artistry, as concealed and revealed in a mirror reflection.

As with the Narcissus mirror by Filippo Parodi (Fig. 4, Introduction), also an artist of Bernini's influence, elaborately framed gallery mirrors such as Queen Christina's were designed as a specular corollary to painting. In early modern art galleries where they could also reflect the works of art within them, just as Zuccaro described.

Fig. 35 Giovanni Lorenzo Bernini, *A Design for a Looking-Glass for the Queen of Sweden*, c. 1656, pen and brown wash over black chalk, 23.0 × 18.8 cm, Royal Collection Trust. Photo: © Royal Collection Trust / His Majesty King Charles III 2023

The display of such mirrors was orchestrated in respect of the pictorial composition of their reflection. That is to say, the gallery mirror was placed in order to render its surface reflection as a picture of a picture gallery, like a composite image of the collection's surrounding works of art. In both the Bernini and the Parodi mirrors, the allegory of their frames was a further commentary on this, in a doubled play on the specular motif of mimetic painting. In the Parodi mirror, the gilded youth Narcissus bends his head towards his own reflection, just as Alberti imagined in his account of Ovid's poetry as the fount of art. In the Bernini, it is winged Time who flies above the mirror, to suggest the history of art that its reflection of Christina's art collection surely represented. To borrow from Victor Stoichita's eloquent phrase, there arose within the early modern trope of painting as specular the 'self-aware' image, in which inset images signified the status of art. Concomitantly, within artistically orchestrated frames such as Parodi's

and Bernini's appeared what we may also term the 'self-aware' mirror. Here the mirror surface, like a painting, reflected on itself just as Zuccaro described. Suffused with inset specular reflections of works of art, Zuccaro's *cristallo* mirror was both an anthological collection and a mimetic theorisation of painting as a mirror reflection of the visible world. It is the historical contextualisation and conceptualisation of early modern painting's specular or mimetic paradigm that constitute the subject of the book that follows.

NOTES

1 (Le Brun) M. Lorne, peintre [pseud.], 1684.
2 Following the recent restoration of the Galerie des Glaces, see Milovanovic & Volle, 2013; Milovanovic & Maral, 2007; Thuillier, 2007; and Thuillier et al., 2007, with further bibliography. On the cultural example of Versailles more broadly, see Gaehtgens et al., 2017. On Charles Le Brun, see the recent exhibition catalogue, Gady & Milovanovic, 2016; and Gady & Montagu, 2010. On the historical evolution of the early modern mirror gallery, Bazin-Henry, 2021b.
3 Piganiol de La Force, 1701, 100.
4 La Font de Saint-Yenne, 1747. On the larger histories of Versailles' eighteenth-century reception, Kisluk-Grosheide & Rondot, 2018; Ledbury & Wellington, 2020.
5 On Alberti, see the discussion in the Introduction.
6 For general literature on the history of the mirror: Anderson, 2007; Pendergrast, 2003; Melchior-Bonnet, 2002; Gregory, 1997; Melchior-Bonnet, 1994; Goldberg, 1985; Baltrušaitis, 1978.
7 On Christine de Pizan's *Cité des dames* of 1405, written in her capacity as court poet to the Valois monarchy and of which copies were dedicated to Queen Isabeau as well as other members of the royal family, from an extensive literature, see Adams, 2014; and Langdon Forhan, 2002. On the collection of illuminated manuscripts at the Burgundian court, drawing on the 1420 inventory of the library of Philip the Good, Doutrepont, 1906, cat. nos. 97, 109; and Dogaer & Debae, 1967. On the 1401 French translation of Boccaccio's *Des clères et nobles femmes*, a compilation of biographies of exemplary women in the literary tradition of *viris illustribus* and for which Boccaccio planned to write a parallel compendium of lives of illustrious men, see further Buettner, 1996, fig. 65, a depiction of the antique painter Marcia, or Iaia as cited by Pliny in his *Natural History* (35 147), who paints her portrait by means of a mirror reflection. The 1420 inventory of the library of Philip the Good also lists Christine de Pizan's *Cité des Dames*, of which there are three copies at the Bibliothèque Nationale de France (BNF) with a frontispiece illustration containing a mirror as the emblem of Reason (607, 1178, 1179). On the royal collection of manuscripts more broadly, Hamilka & Laffitte, 2009; Avril, 1991, no. 7.
8 Roskam & Schorn, 2018; Morel, 2012.
9 Gady, 2019; Balcar & Martin, 2013. On the larger architectural history of the Renaissance gallery with further bibliography, Galletti, 2016; Constans & da Vinha, 2010; Prinz, 2006; Kieven & Strunck, 2010.
10 Scudéry, 1684, 19.
11 *Mercure Galant*, Donneau ed., December 1682, 9, 61, as part of a longer text on the new decorations and entertainments at the palace.
12 Pierre Bourdelot, cited by Saule 2007, 62, and see her further discussion of contemporary reception of the Galerie; on which see also Bazin-Henry, 2021a.
13 Félibien Des Avaux, 1703, in Thuillier, 2007, 116–18, especially 117.
14 *Mercure Galant*, Donneau ed., September, 9, 1686, 306–8; Arminjon, 2007; see also the further bibliography on the Galerie furnishings below, note 17. The extant silver court furnishings with gilding, which comprise wall mirrors as well as torchères, wall sconces, and tables, in Arminjon's catalogue, on which see further below, may offer a sense of what the silver furnishings for the Galerie were once like. See also Clarke, 2022, on the making of the silver furnishings.
15 According to Boulenger, 1913, 58.
16 Milovanovic, 2009; and the broader catalogue, Milovanovic & Maral, 2009.
17 Amelot & Didier, 2013; Saule, 2013; Mabille, 2009a; Mabille, 2009c; Maral, 2009; Baulez, 2007; Didier, 2007. On the King's dress, Martin, 2015; Salmon, 2011.
18 Thuillier et al., 2007, especially the technical reports on the pigments and the discovery of the *oculi*, 311, 332, 356
19 On the development of the early modern window: Jütte, 2023; Ng, 2017; Louw, 1991.
20 Hedin, 2022, on the gardens.
21 Bouchenot-Déchin, 2013.
22 Contini 2010; Milovanovic, 2005.
23 On the cabinets for collections, and the difficulties of precise documentation concerning them because they were refashioned several times, Hans, 2010; Castelluccio, 2009. For an overview, Pérouse de Montclos, 1991.
24 As suggested by Milovanovic, 2007, 14.
25 This is underlined in the construction of a gallery of facing mirrors across the Pont-Neuf in 1686 in honour of the King's crossing, which was intended to multiply his image, cited in Melchior-Bonnet, 2002, 78; and Pendergrast, 2003, 119–20.
26 Scoville, 2008; Belhoste, 2013; Hamon, 2017. See also Philippe, 1998, for the antecedent period of French glass-making.
27 Doni, 1566, 38. See further Thornton, 1991, 238; citing Medici Invt, Florence, 1589, as well as the Florentine

https://doi.org/10.1017/9781009448833.002

Rinuccini inventory of 1499. On mirrors as decorative arts: Roche, 1956; Child, 1990; Bazin-Henry, 2021b.

28 Bazin-Henry, 2017; Bazin-Henry, 2016.

29 See Havard, 1887, III, column 795.

30 Bazin-Henry, 2021b, for discussion of French mirror cabinets.

31 *Gazette de France*, ed. Renaudot, Paris, 1633, 72.

32 Félibien, 1676, 14.

33 According to Jean Loret's report in the weekly gazette of court news, the *Muse Historique*, May 1651, as cited in Melchior-Bonnet, 2002, 26.

34 See the further discussion in Chapter 3.

35 Warwick, 2022.

36 Saule, 2010, 26, based on the archives of St-Gobain; Chaimovich, 2008. On the broader history of French early modern glass-making, based on substantial archival research, Scoville, 2008.

37 On the history of windows, Jütte, 2023. Bazin-Henry, 2021b, 122–28, gives a summary of the 1688 patent and its consequences; on which see also Maitte, 2009.

38 See the further discussion of scientific lenses in Chapter 4.

39 See Arminjon, 2007, and the further discussion below.

40 As documented in Arminjon, 2007, 46, 77, and 235 no. 13.

41 Thuillier, 2007, 31, as reported by the Venetian ambassador and future Doge Marcantonio Giustinian at the French court in the *dispacci dagli ambasciatori* in Francia, on which see further Bondue, 2010.

42 Saule, 2010.

43 Milovanovic, 2010.

44 Lehman, 2010. These were interests pursued by many princely rulers, as a demonstration of their prescience. Louis XIV's *miroir ardent* for the purposes of advancing science and industry is still extant at the Paris Observatory, by François Villette, 92 cm, of gilded bronze; at the Kunstsammlungen in Dresden made for Augustus the Strong in 1686, of copper and iron on an ebonised wood stand, measuring 230 cm in height.

45 Widemann, 2010. On the construction of the Observatory windows, Louw, 2003.

46 Mabille, 2009b; Morera, 2010.

47 Milovanovic & Maral 2007, 24–29.

48 Ottonelli, 1652; see further Frommel, 1998; Casale, 2002.

49 Milovanovic & Maral, 2007, 24, 29; Dufresnoy & De Piles, 1668, 286.

50 www.metmuseum.org/art/collection/search/626692; Wolohojian et al. 2017; Gady & Milovanovic, 2016. *Las Meninas* is further discussed in Chapter 3.

51 Pliny, *Natural History*, book 36.

52 The main ingredient of glass is sand or crushed rock, which is liquified through heat, and to which is generally added a flux composed of different types of saline ash made from saltmarsh plants or forest brushwood, referred to by a wide range of terms including saltpetre and potash. The quality of glass depends on its ingredients. This concerns the type of sand used, but also the flux of which saltmarsh plant gave the finest results, as compared with forest glass made of bracken ashes. See further the general histories of glass by Garland, 1952; Liefkes, 1997; and Cummings, 2002, with particular attention to its materials and manufacture; the useful glossary by Hess & Wight, 2005; Tait, 1991; Klein & Lloyd, 1989; Ciappi, 2006; Page, 2006; and the *Journal of Glass Studies* hosted by the Corning Museum of Glass; as well as the online catalogues of major glass collections including the Corning Museum, Toledo Museum of Glass, Glasmuseum Hentrich Kunst Palast Düsseldorf, British Museum, and other collections of decorative arts comprising glass. For a contextualising account of early modern cultures of glass-making, Warwick, 2022. On Pliny's *Natural History*, Anguissola, 2020; Murphy, 2004.

53 On the history and archaeology of ancient glass, Henderson, 2013.

54 See especially Gerolemou, 2020a; Frontisi-Ducroux & Vernant, 1997; and Schneider, 1985.

55 Cited in Kelly, 2006, 76.

56 Bechtel, 1992, 237–45; Adam, 1985, 53–54. On Gutenberg more broadly, Barbier, 2017.

57 Frontisi-Ducroux & Vernant, 1997.

58 Frontisi-Ducroux & Vernant, 1997; A. Stewart, 1996; Baratte, 1986.

59 Camille, 1988, especially 54–71. See also Williamson & Davies, 2014; Crépin-Leblond & Taburet-Delahaye 2009. The theme of the Castle of Love was also represented on medieval ivory caskets. See further the Courtauld Institute's Gothic Ivories project, www.gothicivories.courtauld.ac.uk.

60 Thornton, 1997.

61 Della Porta, 1589, book 17, chapter 4; in its 1658 English translation, 362. See the further discussion of della Porta in Chapter 4.

62 Euclid, *Optics* & *Catoptrics;* on which see Sinisgalli, 2012. This is further discussed in Chapter 4.

63 Dillon 2018.

64 Sabellicus, 1560, book III, ch. 1, 'De venetae urbis situ'. See the further discussion in Hills, 1999, 109–29; McCray, 1999, 96; and Tait, 1979, 94.

65 See further Hahn & Shalem, 2020.

66 See Bycroft & Dupré, 2020; Pointon, 2010; Scarisbrick, 2007; Evans, 1933.

67 Illardi, 2007; Bedini & Bennett, 1995; and on their princely patronage, Bedini, 1961; and Heikamp, 1986, on Medicean patronage. See the further discussion in Chapter 4.

68 Leurechon, 1642, 156.

69 Zecchin, 1987–90. See further Mariacher, 1967; Tait, 1979; Barovier Mentasti, 1982 & 1988; Judde delaRivière, 2018; Trivellato, 2000.

70 Zecchin, 1987–90, especially 1989, II, I *Barovier* 197–232, and 1990, III:131–188, 'Materie prime e prodotti della vetraria Muranese'. See further Jütte, 2023.

71 As noted by Zecchin, 1987–90, 1989, II:273–78.

72 Zecchin, 1987–90, 1990, III, especially 368–71.

73 https://collections.vam.ac.uk/item/O827182/design-for-the-back-of-drawing-etienne-delaune/; LePautre, 1670.

https://doi.org/10.1017/9781009448833.002

74 On Larmessin, see further Buck, 2019; Pullins, 2014. This type of figuration of trades was also manifest in miniature collectible figures of luxury materials for princely patrons, such as ivory 'street pedlars' studded with diamonds and gold for the collections of Augustus the Strong in Dresden, on which see Kappel, 2017, 246–47; and the broad discussion in Koeppe, 2019, 102, on the Dresden '*galanterien*' figures.
75 Amman, Sachs, & Feyerabend, 1568; trans. 2009; Stanley Smith, 1965.
76 Neri, 1612; Fioravanti, 1564; Biringuccio, 1540.
77 Diderot & D'Alembert, 1761–88, and within the larger compass of the *Encyclopédie Arts & Métiers*, the volume on glass-making, c. 1770, of which the volumes of articles and plates were published separately in facsimile ed., 2002; Knothe, 2009; Sewell, 1986. On artisanal histories of glass-making, Maitte, 2009; on windows, Jütte, 2023.
78 Of the scarce publications in this area, Roche, 1956; and Child, 1990. Crépin-Leblond & Taburet-Delahaye, 2009, offer guidance, as does and Hartlaub, 1951. On the relationship with picture frames, see Newbery et al., 1990; articles by Gilbert, 1977; the 1987 journal special issue on frames edited by Chastel; and the extensive online catalogues of museums with strong holdings in decorative arts such as Réunion des Musées Nationaux, the Metropolitan Museum of Art, the Germanische NationalMuseum in Nuremberg, and Victoria & Albert Museum.
79 Thépaut-Cabasset, 2007–8.
80 Bimbenet-Privat, 1997. www.nms.ac.uk/explore-our-collections/stories/global-arts-cultures-and-design/lennox love-toilet-service/.
81 Published by Giuffrey, 1895, I.
82 www.metmuseum.org/art/collection/search/461205?searchField=All&sortBy=Relevance&ft=suzanne+de+court&offset=0&rpp=20&pos=3.
83 Such mirrors are discussed further in Chapter 5.
84 See further Arminjon, 2007, for discussion of the silver furnishings including mirrors now at the Royal Castle of Rosenborg in Copenhagen, the National Museum of Bavaria in Augsburg, Windsor Castle, Knole, and the Esterházy collections at Castle Forchtenstein, among others, on which see also Koeppe, 2019, 16–19, 27–28.
85 See the further discussion of the Hall of Mirrors at the Royal Alcazar in Chapter 3. The cultural impact of the enclosed gallery for art collecting and its related consequences for the gallery painting is considered by Belting, 1994; and Stoichita, 1997.
86 Newbery et al., 1990, in which frames for mirrors and paintings are treated alongside each other.
87 Chaucer, 1476, *The Squire's Tale*, 234. See further Gillespie, 2006; Blake, 1976.
88 https://collections.vam.ac.uk/item/O248671/ulysses-musotti-medal-francia-francesco/. Cited by Thornton, 1997, 167, as part of a larger discussion of the role of mirrors in the Renaissance *studiolo*, citing the calligraphic treatises of Torniello (1517) and Palatino (1540). See also Lehman, 2010.
89 Ficino, 1576, *In theoprastum de somniis*, ch. 33, 1816–17.
90 Vives, 1538, 1782, III:362.
91 Dee, 1558, 41.
92 Chapman, 1614, Perseus and Andromeda, cited in Tufte, 1970, 203.
93 Chaves, (ms. c. 1536), 1983.
94 Comenius, 1657; see further Jechova, 1994.
95 Discussed in Reeves, 2008.
96 Grabes, 1973; also translated into English, Grabes, 1982. On the literary figure of the mirror, Frelick, 2016; Anderson, 2007; Shuger, 1998; Fintz, 1985; Goldberg, 1985.
97 Rorty, 1979; Gusdorf, 1956.
98 Burckhardt, 1860; on whom see the recent anthology by Bauer & Ditchfield, 2022, particularly the essays by Virginia Cox and Wietse De Boer on Burckhardt's thesis of Renaissance 'individualism'. See further Baron, 1960; and Allen, 2015.
99 Allen, 2015.
100 Gusdorf, 1956; Shuger, 1998.
101 Adam, 1985, in Fintz's larger anthological study of the literary mirror motif.
102 Rorty, 1979; Gasché, 1986.
103 Stafford & Terpak, 2001, 24.
104 Shakespeare, 1623, *Love's Labours Lost*.
105 Rorty, 1979, 42 (though Shakespeare's point was that of fickle fortune's simian imitations).
106 Apuleius, *Metamorphoses*. See further Carver, 2007.
107 Starobinski's 1965 discussion of imitation as both representation and illusion; Haig Gaisser, 2008; Kenney, 1990.
108 The Marlborough gem was an antique cameo once in the possession of Rubens, then gifted to Thomas Howard Earl of Arundel (Museum of Fine Arts, Boston). Louis XIV was said to have sought, unsuccessfully, to acquire the 'fairy tale' gem just at the time in which Charles Perrault and Jean de la Fontaine were bringing together their great literary collections of fables and *contes de fees* in imitation of Apuleius. See Penny & Haskell, 1981, 49, note 51. On Psyche in Renaissance arts and letters, Bélime-Droguet, 2013.
109 A thirteenth-century ms. with many copies, first published in 1481; see Fleming, 1969; Bel & Braet, 2006.
110 Froissart & Fourrier, 1975; Bérenger de la Tours d'Albenas & Weber, 1963, *O saint miroir*, 539.
111 Goodman Soellner, 1983.
112 Bernart de Ventadorn, 1965, vv. 17–24, 166–68.
113 Scève, 1562, I:164. See Frelick, 2018, for discussion of Scève and Narcissus emblematics.
114 De Ronsard, 1553, *Je parangonne a vos yeux ce crystalle*, 91, no. 75.
115 Goldin, 1967.
116 In Wilson, 1969, 115.
117 Spenser, 1595, Sonnet VII.
118 Milton, 1667, book 4, verses 448–55.
119 Davies, 1599b, 'Seeing' II, XIV:973–74; Tudor, 2010.
120 Key, 1983. On the influence of Alhazen on Western European art and culture, Belting, 2011.

121 Ms. A, Library of the Institut de France, sheet 37 r & v; Leonardo, 1938, II:371. Due to the great historical complexities of anthological arrangements of Leonardo's notes, initiated by the artist himself, his subsequent heirs, and thereafter by scholars and editors, the many editions and translations, as well as repetition within the notes themselves made over his lifetime, I have sought to cite directly from the manuscripts with attendant references to published translations as appropriate.

122 Plato, *Alcibiades*, 'Socrates: And have you observed that the face of the person who looks into another's eye is shown in the optic confronting him, as in a mirror, and we call this the pupil, which is a kind of image of the person looking.' The Greek κόρη and the Latin *pupilla* both mean 'little girl' or 'doll,' and were used to indicate the dark center of the eye in which a tiny image can be seen reflected, as noted in Plato, 1955, 8, 133, note 1.

123 See the classic Róheim, 1984, on mirror superstition

124 Late medieval devotional texts such as Guillaume de Deguileville's mid-fourteenth-century *Pélerinage* trilogy were broadly copied, translated, and published across the fourteenth, fifteenth, and sixteenth centuries, in which the capacity of the tiny pupil to mirror the entire figure was seen as a metaphor for the all-encompassing vision of divine love and understanding.

125 Warwick, 2017; Frontisi-Ducroux & Vernant, 1997.

126 Kelly, 2006.

127 On the relationship of early psychoanalysis with a classical mythos from within art history, Damisch, 1992, Gamwell & Wells, 1989; Kuspitt, 1989; Freud, 1957.

128 Jacques Lacan's celebrated argument on the *stade miroir* was first presented to the 1936 International Psychoanalytical Congress, and first published in 1949. See Lacan 1977; on the complex history of which see Gallop, 1982/3. On the Dionysian mysteries, see Bowden, 2010; and the classic 1790 study by Taylor, 1891.

129 Perrault, 1981.

130 Rank, 1971; Freud, 1955.

131 From a vast literature, see Porter & Buchan, 2004; Gamwell & Wells, 1989; Gallop, 1982/3.

132 Shakespeare, 1623.

133 Gibson, 1973.

134 Erwin Panofsky famously declined to comment on this work, 1958, I:358; see further Koerner, 2016, especially ch. 7, 'The Unspeakable Subject', 179–222; Belting, 2005.

135 Colonna, 1499.

136 Comenius, 1997; François de Sales, 1616.

137 Thomson de Grummond, 1981, for discussion of the archaic mirror as a metaphor of the soul as reflected in language and usage, in which such gifted betrothal objects were subsequently burial tokens as the receptacles of the spirit or soul; and the collected essays in Schneider, 1985, and especially Gottlieb, 1985, on the mirror's bewitchments.

138 Belting, 2011, 230–31: Frontisi-Ducroux & Vernant, 1997; and Roger Caillois' various writings on games of mimicry and the gorgon's gaze, concerning the *mal'occhio* and amuletic charms against it, particularly Caillois, 1960, 129.

139 Alberti, 1890, 228. The translated quotation here is from Rubin, 2007a, 93.

140 Della Porta, 1586; Hagopian van Buren, 1986; Kodera, 2014, and his further essays on della Porta.

141 Evelyn, 1827, I:183.

142 Kircher, 1646, 901. See further Chapter 4.

143 Leurechon, 1642, 160.

144 Fioravanti, 1564, book I, ch. 21, 53–56.

145 Bachelin-Deflorenne, 1869, II:52–53.

146 According to Irma Richter's reading in Leonardo, 1966, 111–12, on the basis of passages in the Codex Atlanticus that suggest a hypothetical table of contents for such a treatise, such as folio 360 r. On the layered, interwoven 'labyrinthine' nature of Leonardo's notebooks, see Zwijnenberg, 1999, especially 181–82. See the further discussion of Leonardo's interests in optics in Chapters 3 and 4, and on the editions of his notebooks with further bibliography, in Chapter 3, note 1.

147 Leonardo, Codex Atlanticus, Biblioteca Ambrosiana Milan, 138r. b, in Leonardo & MacCurdy, 1938, II:364–65.

148 Ms. B f 28, Library of the Institut de France, trans. in Leonardo, 1977, I:132, no. 65, with a reproduction of Leonardo's small diagram of the octagon chamber. It is also discussed by Zwijnenberg as the manifestation of Leonardo's 'labyrinthine gaze', 1999, 183; on which see further Desbiens, 1995.

149 Euclid, *Catoptrics*, Proposition 14; Gerolemou, 2020b.

150 Della Porta, 1589, book 17, ch. 3, from its 1658 English translation, pp. 359–60.

151 Quevedo, 1958, 1411, cited in Eamon, 2017, 11–38.

152 Della Porta, 1589, book XVII, ch. 3, from its 1658 English translation, p. 360. See further Chapter 4.

153 Zuccaro, 1607, 4, 33.

154 Zuccaro, 1607, 6–7; Heikamp, 1961, 154–56.

155 Comenius, 1907, 53. The early modern recourse to the figure of the inner eye of the mind is also noted by Rorty, 1979.

156 Luther, 1883–1929, XVIII, *Schriften*, 79, translated in Stoichita, 1997, 92.

157 Haeutle, 1881, cited in Seelig, 2017, 79.

158 Niceron 1638, 77. Thornton, 1997, 167, as part of a larger discussion of the role of mirrors in the Renaissance *studiolo*, citing the calligraphic treatises of Torniello (1517) and Palatino (1540). See also Lehman, 2010.

159 Baldinucci, 1681–1728, 5, 669.

160 The bronze head is now among the Prado Museum collections of antiquities, as with the majority of Christina's sculpture. On the annotated drawing by Tessin (Nationalmuseum, Stockholm) and his description in his travel notebook, Sirén, 1914, 182–84. On Bernini's drawing, Ebert-Schifferer et al., 2017. On Christina's collection, including the mirror: Biermann, 2017; Zirpolo, 2013; Zirpolo, 2005; Biermann, 2001. The drawing has generally been considered a workshop study, viz., Brauer & Wittkower, 1931, I:145–47; Blunt & Cooke, 1960, 24, no. 37.