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OPTICAL MACHINES, PRINTS AND GENTILITY IN EARLY AMERICA

by

Dennis Andrew Carr

A thesis submitted to the Faculty of the University of Delaware in partial fulfillment of
the requirements for the degree of Master of Arts in Early American Culture

Summer 1999

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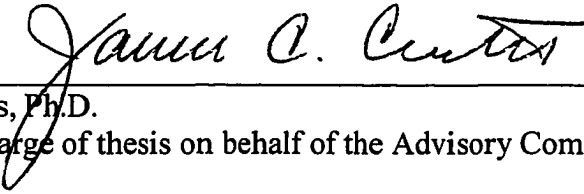
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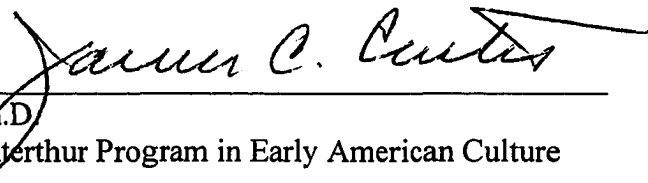
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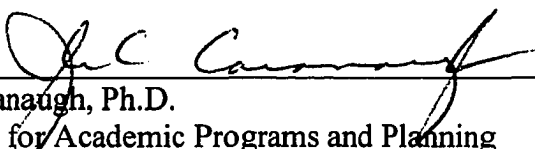
OPTICAL MACHINES, PRINTS AND GENTILITY IN EARLY AMERICA

by

Dennis Andrew Carr

Approved: 
James C. Curtis, Ph.D.
Professor in charge of thesis on behalf of the Advisory Committee

Approved: 
James C. Curtis, Ph.D.
Director of the Winterthur Program in Early American Culture

Approved: 
John C. Cavanaugh, Ph.D.
Vice Provost for Academic Programs and Planning

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TABLE OF CONTENTS

LIST OF FIGURES.....	vi
ABSTRACT.....	viii
THESIS	
Introduction.....	1
The Plurality of Worlds.....	3
Reverend John Prince and the Visual Life of Salem, Massachusetts.....	12
FIGURES.....	50
BIBLIOGRAPHY.....	80

LIST OF FIGURES

Figure 1. Tambour Desk Fitted with Zograscope for Viewing Prints, 1793-1811.....	51
Figure 2. Tambour Desk Fitted with Zograscope for Viewing Prints, 1793-1811.....	52
Figure 3. Untitled. 1777.....	53
Figure 4. Peepshow Box, 18 th century.....	54
Figure 5. The Inside of St. Peters Church at Rome, 1794.....	55
Figure 6. Sergeant Bell and His Raree-Show, 1839.....	56
Figure 7. Southwark Fair, 1733.....	57
Figure 8. Vuë de Salem, c1776.....	58
Figure 9. Reverend John Prince, 1837.....	59
Figure 10. Zograscope owned by Thomas Jefferson.....	60
Figure 11. Engraving of Air Pump, 1785.....	61
Figure 12. John Prince Air Pump.....	62
Figure 13. John Prince Air Pump.....	63
Figure 14. Gentleman with Scientific Devices, 1832.....	64
Figure 15. Gentleman with Scientific Devices (detail), 1832.....	65
Figure 16. Optique in the Form of a Book.....	66

Figure 17. Perspective Machine, 1795-1810.....	67
Figure 18. Perspective Machine, 1795-1810.....	68
Figure 19. Perspective Machine, c1800.....	69
Figure 20. Perspective Machine, c1800.....	70
Figure 21. The Gardens at Chiswick, c1738.....	71
Figure 22. Tambour Desk Fitted with Zograscope for Viewing Prints, 1793-1811.....	72
Figure 23. Tambour Desk Fitted with Zograscope for Viewing Prints, 1793-1811.....	73
Figure 24. Portrait of Benjamin Pickman.....	74
Figure 25. L'Optique, c1790.....	75
Figure 26. Antoine Laurent Lavoisier and His Wife, 1788.....	76
Figure 27. Children Looking at Perspective Prints, c1870.....	77
Figure 28. A Lady's Cabinet and Writing Table, 1793.....	78
Figure 29. A Gentleman's Secretary, 1793.....	79

ABSTRACT

Zograscoptes, optical devices used for viewing perspective prints during the late seventeenth century through the end of the nineteenth century in Europe, were popular instruments of visual entertainment and education in early America as well. All of the known American-made zograscoptes and many of the important print collections from the late eighteenth and early nineteenth centuries originated in the Boston area. Notable among these is a pair of unusual tambour writing desks fitted with a zograscope made by Edmund Johnson, a cabinetmaker working in Salem, Massachusetts from 1793-1811.

This thesis locates the genesis of these devices among a small circle of gentlemen and their families in Salem and focuses on the efforts of a distinguished clergyman and one of America's foremost scientific instrument makers, Dr. John Prince. In his residence at the First Church of Salem, Prince restlessly tinkered with his scientific devices, instructed students in the methods of experimental science and entertained his guests with performances employing his various optical instruments. It was through these private displays of optics that he stimulated the genteel interest in amateur scientific experimentation in Salem, and thus possibly the creation of the Johnson tambour desks. Using Prince's innovative scientific devices and others with provenance relating to the Boston area, along with paintings, prints, diary entries and letters, this study attempts to recover the story of the zograscope in America and begins to explore the social contexts of these fascinating devices, which have disappeared from American culture.

Introduction

In 1955, Charles Montgomery, then in his first year as director of the Winterthur Museum, authorized the purchase of a mahogany tambour writing desk for the opening of the museum's South Wing. (figure 1) With a detailed family history indicating the desk's original owner as Benjamin Pickman V (1743-1834), a wealthy merchant and politician in Salem, Massachusetts, the desk was appropriate for installation in the Somerset Room, a period room with late eighteenth-century architectural elements from the Bowers House in Massachusetts. A year before the purchase of the desk, an article written by Joe Kindig, III, in *The Magazine Antiques* identified a virtually identical tambour desk bearing the label of Salem cabinetmaker Edmund Johnson. Johnson's working dates in Salem (1793-1811) made it possible to locate the construction of the desks within a relatively narrow time period. The fact that there are only two known Johnson tambour desks of this type, that one bore a label and the other a strong family history, made this pair special. Even more remarkable, these writing desks are examples of a singular form in American furniture.

The outward appearance of the desks belies their primary purpose as optical machines used for viewing hand-colored prints. Opening the center compartment and the sliding tambour doors of the desks reveals a double-convex lens mounted into a wooden aperture. (figure 2) Behind this, a mirror tilted at the proper angle reflects, through the desks' hollow center, the image of a print placed on the bottom shelf or "stage." The

apparatus hidden within the desks would have been known at the time as an optical diagonal machine or a zograscope. Used specifically to view a type of etching called a “perspective print,” or in French a *vue d’optique*, zograscopes were popular in America beginning at least by the early 1740s. The prints were commonly large hand-colored scenes of a foreign city or historical event composed in linear perspective. By magnifying the image of the print and enhancing the viewer’s sense of its spatial depth, the lens of the zograscope brought the otherwise flat scene to life.

In genteel parlors they were considered in the same category among other important scientific devices, such as microscopes and telescopes. As peddled by itinerant showman at fairgrounds and along the sides of dusty roads during the eighteenth century, the devices became known as peepshows or raree-shows and by the end of the nineteenth century these one-penny theatricals carried a low-class or even a risqué reputation. It is curious that the Pickmans, who were among the wealthiest families in America, would choose to decorate the lavish interior of their Salem mansion with what was ostensibly a fairground amusement. What then was the appeal of their unusual tambour desk and how did it display the family’s social standing in Salem?

In order to answer these questions and to build historical contexts around the desks we must understand them as products of the changing role of vision in America and grapple with the intertwined aspects of zograscopes and the prints they displayed. My goals in this thesis are to describe how zograscopes became incorporated into parlor amusements of refinement and social grace, how scientific instruments connoted

economic and intellectual status, and how material evidence can be used to decode the complex cultural meanings of objects.

The opening section, “The Plurality of Worlds,” deals with the social contexts in which these zograscope devices existed. A comparison of the zograscope with other contemporary optical instruments reveals the ways they afforded for the viewer the same possibility of visual travel. Then the focus of that section will turn to how both traveling showmen and polite society in America appropriated the same optical apparatuses for use in their performances. Combining material evidence and visual sources in the following section, I will discuss the role of scientific and optical devices specifically in Salem, Massachusetts and how the culture of scientific experimentation revolved around one man, Dr. John Prince, relating ultimately back to the story of the Pickman family desk.

The Plurality of Worlds

During the seventeenth century the inventions of two optical devices—the microscope and the telescope—brought about a great change in the nature of visual life in Europe. These simple optical devices, by allowing the viewer to peer into strange new worlds, caused a startling redefinition of scale for the seventeenth-century mind. The powerful lenses of a microscope revealed, for example, even in the smallest drop of water, the astonishing variety and infinite detail of the microscopic world. The gaze of the telescope reached deep into the seemingly limitless reaches of the heavens, extending humankind’s vision both in distance and time. Thus, the mere act of peeking through a lens could transport the viewer into one of these other, innumerable worlds. The

enlightening journeys that one could take between these worlds encouraged a culture of enthusiastic amateur experimentation in the parlor during which vision, through the optical instruments that made it possible, became an identifiable and valued commodity. Collections of optical instruments and philosophical cabinets, coupled with an effort to display the trappings of wealth, became for certain circles of genteel society an important measure of a gentleman's social and intellectual status.

The seventeenth century was also a time of heightened interest in the exploration and settlement of new worlds on the surface of the earth. As the interstices between known regions on maps began to fill up with the knowledge of a new generation of explorers, Europeans hungrily sought information and new images of the exotic locations about which they had heard or read in traveler's accounts and fictional tales. The burgeoning trade in engraved prints and hand-colored etchings, both of maps and images of foreign destinations, promulgated a common language in images of these new worlds at a time when trans-Atlantic travel was neither safe nor routine.

The development of the zograscope and the perspective print during the second half of the seventeenth century, marks a confluence of these two ways of experiencing visual travel, combining both the power of optical devices to manipulate scale and the ability of printed mediums to disseminate visual information and intellectual concepts to a broad audience. The lens of the zograscope acted in some ways like the lenses of a microscope or telescope, giving rise to the concept of the zograscope as an optical "machine" that could literally perform manipulations on the otherwise undetectable rays of light. In the philosophical cabinets of Europe these devices sat alongside a host of

other optical instruments and appeared together in treatises on optics and in scientific catalogues. As a result, during the following two centuries zograscope became linked, in very general terms, in the common study of optics and the use of scientific devices in the setting of a genteel parlor.

During the eighteenth century there was no successful attempt to establish consistent and meaningful terminology for these optical devices. The study of this topic has long suffered from the confusion caused by a proliferation of terms and the similarity of these terms with other related but significantly different objects. For example, a “perspective glass” in the eighteenth century might refer to an optical device for viewing prints like the ones discussed earlier or instead it might refer to any number of telescopes or spyglasses. Erin Blake has suggested the use of the word “zograscope” as a common way of referring to these viewing devices and I will try to follow her lead when appropriate in this paper.¹ The term “zograscope,” she writes, first appeared in the 1753 catalogue of George Adams, Sr., an eminent optical instrument maker in London. While it is not known whether he coined the phrase himself, he did continue to use it in both his catalogues of 1766 and 1771. An inventive adaptation of “zographia,” the Greek word for painting, it referred specifically the concept behind a painting, or “alive-writing.” “A zograscope would then be a ‘scope’ through which you look to make the picture you see appear life-like,” the exact purpose advertised by the purveyors of optical instruments

¹ Erin Blake, "Re-Mapping the City: Perspective Views, Polite Society, and Virtual Reality in Eighteenth-Century Britain." Paper presented at the One-Day Seminar in the History of Cartography, The Newberry Library, Chicago, 29 April 1999, 2-3.

and itinerant showmen.² While the term never caught on with Adams' colleagues during the eighteenth century, it is useful for us today in that it implies the wonderful purpose of these devices in a way that the endless variety of more common descriptive terms, like optical diagonal machine or perspective glass, do not.

The power of a zograscope to make a printed image seem real was crucial to the viewer's sense that visual travel could be achieved within the narrow confines of the device. As John Bonnin, an itinerant showman passing through Philadelphia in 1749, boasted of his exhibitions:

The representations are so perfectly like the realities they imitate, that those who view them, imagine themselves present in the respective places, and find it the safest, cheapest, and most delightful way of travelling that was ever invented, since it affords all the pleasures of journeying and voyaging to see the world, without any of the fatigues and hazards.³

In his "Philosophical Optical Machine, lately invented in, and imported from London," Bonnin offered visual tours of the world for four shillings per session and on one occasion he "shewed (out of near 100 Prospects) only two Setts, 8 in each of English Palaces, grand Building [*sic*], and Gardens, &c."⁴ On June 1, 1749, he advertised "also the siege of Barcelona, and the cities of Rome, Naples, and Venice, to shew, which have not yet been seen in this place."

² *Ibid.*

³ *The Pennsylvania Gazette*, May 11, 1749.

⁴ *The New-York Gazette* (as revived in the *Weekly Post-Boy*), December 19, 1748. Bonnin also advertised in the same newspaper on December 26, 1748. Reprinted in Rita

The double-convex lens that covers the aperture of the zograscope or peepshow box both magnifies the images of the prints and heightens the viewer's sense of perspective. The lens acts to create the illusion of depth in the scene. If the print would have been viewed normally, that is to say without the assistance of the lens, light rays coming from any two points on the print would form an angle with the eye, the size of this angle being dependent on the distance between the print and the viewer (the smaller the angle the longer the distance). The double-convex lens in the zograscope redirects these rays so when they enter the eye they are nearly parallel, thus the brain interprets the signal as an image originating at a greater distance. (figure 3) The curvature of the lens also causes the image to appear "bowl shaped," thus in a realistic way visually wrapping the image around the viewer, enclosing the viewer within the scene.⁵ As the viewer's eye searches for the best focal point it struggles for this kind of insertion.

The illusion of life size is also critical to the success of the visual effects created by the zograscope. A mirror suspended at a short distance behind the lens and set at the proper angle to reflect the image of the print created the feeling of spatial depth and helped to remove extraneous details, which otherwise would distract from the believability of the scene. By excluding all visual information beyond the borders of the print the scene achieved a scale independent of the "outside world." The addition in

Susswein Gottesman, *The Arts and Crafts of New York 1726-1776* (New York: New York Historical Society, 1938), 337-9.

⁵ C. J. Kaldenbach, "Perspective Views," *Print Quarterly* (vol. 2, no. 2, June, 1985), 87; Blake, 2.

many of the show boxes of such theatrical devices as movable prosceniums, stage curtains, dolls, and other props reinforced the scene's internal scale. (figure 4)

These visual effects, collectively referred to in this paper as the zograsopic effect, are meant to enhance the viewer's ability to enter the imaginary world created or at least suggested by the perspective prints as seen through the zograscope. The composition of these prints incorporates centrally focused one-point perspective and dramatic colors to heighten the effects of the lens. Elements such as rows of buildings or long streets receding to the vanishing point, straight diagonal lines and contrasting colors distinguish the overlapping planes of the composition and create the illusion of spatial depth. Large open spaces surrounded by tall arches or background structures, strongly resembling the perspectival scenes of eighteenth-century theater sets, provided a location for foreground action to take place and room into which the viewer might visually enter. (figure 5)

Bonnin's extensive advertisements in newspapers during 1748-1750—the peak years, as identified by Blake, in the marketing and sale of zograsopic prints in London⁶—allow the tracking of his movements from New York to Long Island, Philadelphia, Borden Town and then back to New York. (figure 6) Bonnin's audience in these places was composed primarily women and children. In New York, he advertised his show first to “Ladies,” then to “Gentlemen and every Body else,” and on another

⁶ Blake, 6-7.

occasion suggested that it could “inform the Curious of either Sex.”⁷ Perhaps he was attempting to reassure men that his show was appropriate entertainment for them as well as their wives and children. With fascinating stories and a quick wit Bonnin used his machine to entertain and instruct his audience and allow them to take visual journeys to the various places he exhibited in his box.

Although Bonnin claims that his shows satisfied “the gentry and others,” one wonders what classes of people actually visited them.⁸ Hogarth’s well-known engraving of *Southwark Fair* (1733) provides an early depiction of an operating peepshow or rareeshow in England and indicates the low status of these traveling theatricals. (figure 7) The print is a satirical representation of the commingling of high and low culture or “theater” at the popular English fairs held annually outside of London. These fairs were notorious for riotous and loose behavior. The Borough Fair, which this print satirizes, was suppressed in 1762 because of the types of crowds it attracted.⁹ In Hogarth’s chaotic human circus legitimate forms of theater “are being performed literally above the heads of the crowd,” but they come crashing down as the stage on the extreme left collapses from underneath a company of famous actors.¹⁰ The crowd below, a low-class mixture of

⁷ *The New-York Gazette* (as revived in the *Weekly Post-Boy*), December 19, 1748, in Gottesman, 378; *The New-York Gazette* (as revived in the *Weekly Post-Boy*), December 11, 1749, in Gottesman, 380.

⁸ *The Pennsylvania Gazette*, May 11, 1749. See also Bonnin’s advertisement of June 1, 1749 and the posting of Samuel Jackson, Bonnin’s competitor, for July 13, 1749.

⁹ *The Complete Works of William Hogarth* (London: Griffin, Bohn, and Co.), 156.

¹⁰ Sean Shesgreen, *Engravings by Hogarth* (New York: Dover, 1973), no. 27.

gamblers, jugglers, contortionists, dancers and strolling players, seems unaware of the events happening above. In the foreground a small child looks through a portable peepshow operated by a woman with a barrel organ on her back. Peepshows of this type were a common sight at fairs throughout the eighteenth and nineteenth centuries, but even in the low theatricals of these fairs, the peepshow was a humble contribution.

Despite the florid language and hyperbole in his advertisements, Bonnin never found his trade very prosperous. In 1750, burdened with debt, he packed up his show and settled in New York in partnership with a group of merchants.¹¹ Bonnin's seems to be a fairly typical story. There is evidence that a number of itinerant showmen operated in America during the eighteenth and nineteenth centuries.¹² Showmen on both sides of the Atlantic rarely made their profession profitable and most found themselves, like Bonnin, unsuccessful and poor. In print sources, the showmen are depicted as hard on their luck, wearing tattered clothing or worse with peglegs or other major physical deformities. Some look like old war heroes, but others are simply unfortunate souls who had few other

¹¹ *The New-York Gazette* (as revived in the *Weekly Post-Boy*), May 14, 1750, in Gottesman, 380.

¹² On the topic of peepshows in America there are only two short articles, both published decades ago in *The Magazine Antiques*. The first, "Early American Movies: Peep Shows and Peep-Show Prints," by Florence Thompson Howe, appeared in 1933. In it, she discusses a few of the known peepshow men who operated in New York and New England during the summer months of the nineteenth century and includes a number of interesting speculations about peepshows and the theater. It was not until 1954 that *Antiques* published a second article, "The Perspective Glass," by Joseph Kindig III. Kindig's article covers some of the objects used to view perspective prints, including a few representative zograscopic forms and most important the labeled Edmund Johnson tambour desk specially fitted with a zograscope within its case. See also Richardson Wright, *Hawkers and Walkers in Early America* (Philadelphia: J. B. Lippincott Co.,

options in life but to travel around the countryside with a peepshow box on their backs. Accounts published in social reform tracts regarding the lives of the itinerant entertainers exacerbated this negative image in the public's mind of the downtrodden showman.¹³

How can one reconcile the fact that traveling shows were a sign of low-class amusement and fair ground theatricals at virtually the same time Edmund Johnson was constructing the fancy tambour desk in Salem? When the scenes being viewed and the mechanics of these devices were essentially the same, the differences were the perceptions of the audiences, the location of the shows and the individual showman himself. The desk was an upper-class phenomenon, one linked to both education and social status, while the itinerant peepshows and other traveling theatricals represented a form of entertainment that catered to the lower classes. The elite questioned the rectitude of peepshows and other traveling theatricals along with the vulgar distractions that they embodied, yet as evidenced by the desk and other objects like it, the zograscope could be a powerful and revered cultural device when placed in the setting of a genteel parlor or drawing room.

In "polite society," optical amusements and scientific experimentation were part of a broader scientific revolution that had its roots in the flowering of culture during the Renaissance. As Barbara Stafford comments: "The challenge of the enlighteners, . . . was to fill leisure hours pleasantly and productively while paradoxically relying on

1927). Also see the Frank Weitenkampf file in the Department of Prints and Photographs at the New York Public Library.

¹³ See for example Henry Mayhew, *London Labor & The London Poor* (London: Griffin, Bohn and Co., 1861), 88.

sophisticated fairground apparatus.”¹⁴ Far from the noise and dirtiness of the crowded fairs, the leisured class savored innocent amusements at home, dreaming of faraway places and distant adventures, and ways of experimenting with optical devices that both delighted and educated the mind. The bright colors and “improved” reality presented by the prints provided an escape from the rigors of everyday life and the pastime of viewing prints of foreign scenes offered a centerpiece for an afternoon’s diversion in the parlor. One’s eye roamed the long alleys and streets of cities, gazed across the countryside, or marveled at historical scenes drawn out in the perspective prints. Blake writes, “zographic views told a story of space as available, accessible, dynamic and vibrant, but controllable, clean and polite.”¹⁵ The allure of the devices was the possibility of visual travel, of being in two places at the same time, letting one’s mind straddle the divide between reality and imagination. For children, the devices served as a means of instruction in geography, history and the benefits of refined culture. These exhibitions of science were meant to be participatory, allowing the observers to internalize new information through experiential rather than passive learning.

Reverend John Prince and the Visual Life of Salem, Massachusetts

By the end of the eighteenth century, the town of Salem, Massachusetts was a thriving point of exchange of European ideas and culture. Well known in Europe, the

¹⁴ Barbara Maria Stafford, *Artful Science: Enlightenment, Entertainment and the Eclipse of Visual Education* (Cambridge: The MIT Press, 1994), 73.

¹⁵ Blake, 8.

port of Salem was the subject of a German perspective print (figure 8) no doubt made popular by the itinerant showman's box.¹⁶ Shipping fortunes provided money to support the extravagant lifestyles of members of the powerful merchant class, including the Pickman and Derby families, who were among the wealthiest in the new republic and who satisfied their taste for foreign culture by acquiring fine art and curiosities from abroad. It was in Salem that the practice of using scientific instruments, optical devices and prints for entertainment and enlightenment developed among the ranks of the social and scientifically minded elite. All of the known American-made zograscopes, including the Edmund Johnson desks, and many of the important early print collections in America trace original ownership back to prominent Salem and greater Boston-area families. Collecting and exhibiting prints among local gentlemen was more than a pastime, it was a way of expressing familiarity with the masterworks of Europe and associating themselves with both the famed European philosophical cabinets and with the small but growing collections of American universities, notably the library at Harvard. For the residents of

¹⁶ As Sherry Fowble comments in her catalogue of prints in the Winterthur Museum Collection, any resemblance between Habermann and Leizelt's *Vuë de Salem* (c. 1776) and the actual city of Salem, Massachusetts is purely coincidental. Instead of an accurate depiction of the city, this perspective view offers a scene rather more familiar of a European coastal city. The German engravers working under Balthazar Frederic Leizelt probably based the image on other prints of Europe circulating in Augsburg at the time. The specific details of this perspective print therefore may be better examined as a composite of European ideals and expectations superimposed on what was known of American life. See E. McSherry Fowble, *Two Centuries of Prints in America, 1680-1880, A Selective Catalogue of the Winterthur Museum Collection* (Charlottesville, VA: The University Press of Virginia for The Henry Francis du Pont Winterthur Museum, 1987), 247. See also Donald L. Cresswell, "Late Eighteenth-Century American Harbor Views Derived from Joseph Vernet and Richard Paton," in Elton W. Hall, ed., *American Maritime Prints* (New Bedford, MA: Old Dartmouth Historical Society for The Whaling Museum, 1985), 41-62.

the small coastal town of Salem, writes Marjorie Cohn, “the tales of returning seamen only whetted appetites to see what was so remarkable about every wonder of the world, ancient and modern, natural and artificial, from Vesuvius to Blenheim,” and this fascination translated into a desire to see these marvelous places described in the universal visual language of prints.¹⁷

This story begins with the multi-faceted career of Dr. John Prince (1751-1836), a respected clergyman and teacher from Salem. Prior to his clerical studies at Harvard Prince apprenticed as a young man in the trade of metalworking under David Flagg of Boston.¹⁸ (figure 9) Prince possessed both a strong mind and a penchant for scientific tinkering, and through the constant sharing of his vast knowledge with his friends and students he played an active role in the social, religious and intellectual life of the city. In addition, he was one of America’s foremost scientific instrument makers who supplied many excellent devices, those either he constructed himself or imported from Europe, to universities in New England and in other areas in the United States. One such sale of instruments he made to Brown University during August of 1802 included “a diagonal perspective glass,” along with two microscopes and several other optical instruments.¹⁹ The diagonal perspective glass cost £16.00 and was probably of the type Thomas

¹⁷ Marjorie B. Cohn, *Francis Calley Gray and Art Collecting for America* (Cambridge, MA: Harvard University Art Museums, 1986), 184.

¹⁸ Martha G. Fales, “Dr. Prince’s air pump,” *The Magazine Antiques* (March, 1973), 500.

¹⁹ Sara J. Schechner, “John Prince and Early American Scientific Instrument Making,” in *Sibley’s Heir*, v. 59 (Boston: The Colonial Society of Massachusetts, 1982), 497.

Jefferson owned and used in his study at Monticello.²⁰ (figure 10) Such diagonal perspective glasses, sometimes called in England a zograscope or optical diagonal machine, were typically of European origin and their presence in America at this time demonstrates the link between Continental and English scientific instrument makers and American customers.

Reverend William Bentley, Prince's longtime friend and a man who turned down Jefferson's offer of the inaugural presidency of the University of Virginia, recorded in his diary a visit he made on January 8, 1818, to Prince's home and laboratory at the First Church of Salem. There in the parsonage, Bentley found his friend "employed upon his portable air pump." Prince had a sophisticated interest in science and physics, then called natural philosophy, and at his home he had amassed a veritable cabinet of curiosities, full of tools and scientific instruments to endow his gentlemanly pursuits of philosophical and optical experimentation. After conducting the tour of his impressive metalworking shop, one of the best in the country at the time, Prince led Bentley to his collection of optical machines. Prince "exhibited his microscope for transparent & then for opaque [*sic*] bodies," and demonstrated "his method of ascertaining the magnifying power by lines admirably marked & placed near the object...." Equally impressive was Prince's "camera" that "exhibited as near life as such a thing can particularly some fine paintings & colorings of refuse. His views of Rome were next, the other plates were of less perfect

²⁰ Susan R. Stein, *The Worlds of Thomas Jefferson at Monticello* (New York: Abrams, 1993), 426-7.

character & of diminished effect.”²¹

Bentley’s discussion of Prince’s “camera” is important because he describes the specific types of views he saw that day. Prince had on hand, “fine paintings & colourings,” both the proper size and composed in the appropriate perspective to take advantage of the effects of the magnifying lens. Pictures of Rome were also popular subject matter for the Continental and English printers who sold views specifically for the perspective glass. The London printmakers Robert Sayer and William Bennett advertised in 1775: “Eleven Views of the City of Rome, &c.,” “admirably adapted for the Diagonal Mirror or Optical Pillar Machine.”²²

These prints communicated in a common visual language that transcended political as well as linguistic barriers. The *Sculpura Historico-Technica: or, the History and Art of Engraving*, a print collector’s guide of 1770, suggested the necessity of prints “to be communicable to the whole World. ‘Tis by the Assistance of this Art, those who have never crossed the Seas, are acquainted with the magnificent Structures, beautiful Statues, inimitable Paintings, &c. with which ... other Countries, and particularly *Italy* are adorned”²³ For Prince and Bentley, the activity of seeing views provided genteel entertainment not unlike a visual Grand Tour of all of the foreign destinations with which they would have been familiar from published traveler’s accounts and sailors passing

²¹ Entry under the date January 8, 1818, in *Diary of William Bentley*, IV, 494.

²² *Sayer and Bennett’s Enlarged Catalogue of New and Valuable Prints ...* (1775, reprint, London: Holland Press, 1970), 63.

²³ *Sculpura Historico-Technica: or, the History and Art of Engraving*, 4th ed. (London: J. Marks, 1770), 1, in Cohn, 184.

through Salem's active port. Charles Upham, Prince's biographer, vividly described a scene at the clergyman's house during one of his "performances":

Dr. Prince brought his scientific skill and learning to contribute to the diffusion of useful instruction and refined entertainment in a great variety of ingenious methods. ... His collection of engravings and specimens was very extensive and curious. By means of optical instruments he was enabled to make a most satisfactory display of all these treasures of knowledge. In the course of a winter's evening, his delighted visiter [*sic*], sitting all the while quietly in his chair, was enabled to inspect the temples and the structures of ancient and of modern Rome, to explore the ruins of the old world, to transverse the streets of London, Paris, St. Petersburg, to visit the villas of Italy and nobleman's seats in England, to watch the successive aspects of an eruption of Ætna or Vesuvius, and literally to survey the whole earth and the glories thereof.²⁴

In addition to a guided tour of these foreign places and events, Prince's visitors might likely have heard a discourse on the latest theories of optics and philosophy. Upham wrote: "As an experimental lecturer and operator, in his own parlor and surrounded by his private friends, he was never surpassed by any public professor of science."²⁵ From the Salem Philosophical Library, which Prince maintained in his home from 1782-1810, he could have pulled any number of sources on the subject of optical theory, including an octavo of Newton's *Optics*, and folios of treatises on optics by Smith and Priestly.²⁶ The core of this rare and important collection had at one time belonged to the eminent Irish chemist and naturalist Richard Kirwan, but while being transported at

²⁴ Charles W. Upham, "Memoir of Rev. John Prince, L.L. D.," *Collections of the Massachusetts Historical Society*, 3rd Series, V (Boston: 1836), 278.

²⁵ *Ibid.*

²⁶ From "A Catalogue of the Salem Philosophical Library," in Schechner, 486-8.

sea these volumes were seized by a privateer and sold at auction to a group of Salem gentlemen.²⁷ This elite circle included some of the most influential science-minded men of the city, among others, Prince, Bentley, Reverend Thomas Barnard and Dr. Edward Holyoke, a prominent physician in Salem and son of a former Harvard president, whose diagonal perspective glass is now at the Peabody Essex Museum in Salem.²⁸ Prince added many new European works to the rapidly expanding reference library and from intensive study he gained an encyclopedic knowledge, “in almost every department of Natural Philosophy.” “And what he knew,” his biographer continues, “it was his great delight to communicate. His visitors [*sic*] were introduced, through his admirable apparatus and specimens, to all the wonders of Astronomy, Optics, Pneumatics, Botany, Mineralogy, Chemistry, and Entomology.”²⁹ By the end of his life, Prince’s impressive personal library totaled some 3,500 volumes, equaling or surpassing the individual library holdings at Yale, Brown, Dartmouth, Columbia, and William and Mary.³⁰ Prince was a man of insatiable curiosity and great learning in matters of the natural world, and it was in this world, replete with its wonders and mysteries as understood through his knowledge of the Christian faith, in which he found, studied and celebrated the works of God.

²⁷ Cohn, 183, note 29.

²⁸ Peabody Essex Museum, 133,525a-i. A tag once attached to the device reads: “made by Edward A. Holyoke.”

²⁹ Upham, 278.

³⁰ Schechner, 443.

Prince lived at a time when systems of thought could be mutually supportive, when the “truth” that bound social, spiritual and biological experience was observed and studied to form a complete view of the known universe. Whatever science learned or theorized about the natural world could be understood in terms of the manifest evidence of God’s plan. There was, as Schenker puts it, no “great battle raging between the Protestant faith and Newtonian natural philosophy.”³¹ Indeed, candidates for the ministry were encouraged to study the works of important European natural philosophers and to pursue their own course of scientific experimentation and exploration. Cotton Mather, in his *Manuductio ad Ministerium* of 1726, recommended to his readers:

What we call NATURAL PHILOSOPHY, is what I encourage you to spend much more Time in the study of.

Do it, with continual *Contemplations* and agreeable *Acknowledgements* of the Infinite GOD, whose Perfections are so display’d in His *Works* before you. ...

Be sure, the *Experimental Philosophy* is that, in which alone your Mind can be at all established. ...

But you must also *soar Upwards*, to the Attainments of ASTRONOMY. ...³²

Through his frequent foreign and domestic correspondence, Prince kept abreast of the latest inquiries into the natural and physical sciences. The clergyman, however, did not satisfy himself with reading the exploits of European scientists and studying their newest theories, but in the spirit of Mather’s advice, he invigorated his knowledge with

³¹ *Ibid*, 439.

³² Cotton, Mather, *Manuductio ad Ministerium* (Boston, 1726), 47-50, reprinted in Schechner, 439-40.

first-hand research and experimentation. Prince achieved a reputation on both sides of the Atlantic as an innovative designer of scientific instruments and as a skilled mechanic who could make real those designs with his adroitness in the turning and shaping of metal. Writing to the Reverend Joseph Willard, president of Harvard, in 1783, Prince expounded on his designs for an “improved” air pump in a treatise that later appeared in the first volume of the *Memoirs of the American Academy of Arts and Sciences* (1785) published in Boston.³³ In this paper, Prince included four figures, engraved by Joseph Callender, to illustrate his device. (figure 11) Prince constructed the apparatus of the air pump in his own workshop and commissioned the elaborate case from an unknown Boston-area cabinetmaker. The air pump, a machine used for creating and testing a vacuum within a sealed glass receiver, incorporated several improvements on the earlier models of John Smeaton, a London scientific instrument maker and engineer. Prince’s design instantly became the most significant of his era, catching the attention of Thomas Jefferson and instrument makers George Adams and William Jones in London. Adams proclaimed, after surveying all of the other known air pumps, “the last and most perfect is that of Rev. Dr. *Prince*, ... of America, to which I have given the name of the American air-pump.”³⁴ Adams eventually incorporated Prince’s ingenious designs into his own products, selling them with little due acknowledgement of their creator, as he would do

³³ John Prince, “An Account of an Air-Pump on a New Construction,” *Memoirs of the American Academy of Arts and Sciences*, I (Boston: 1785).

³⁴ Schechner, 455.

also with Prince's new design for the support of a lucernal microscope.³⁵

In relation to the construction of other eighteenth-century optical devices, like the microscopes and diagonal mirrors discussed later, the case of the air pump is significant in that it represents contradictory efforts to display and conceal the advanced scientific equipment it contains. At sixty-six inches tall, the mahogany cabinet of Prince's air pump is a substantial example of some of the finest cabinetmaking in the Boston area during the early 1780s.³⁶ (figure 12) The carver of the rosettes on the pediment and the fluted Corinthian pilasters is unknown, but his work equals or surpasses other admired examples of Boston craftsmanship from the period.³⁷ Yet in the cabinet's skillful execution the case is architectural and conservative, looking back to an earlier era of Palladian influence in Boston-area furniture.³⁸ For Prince, as the patron, the obvious

³⁵ *Ibid*, 431.

³⁶ On August 10, 1802, Bowdoin College advertised in the *Salem Gazette*: "One of the greatest advantages [*sic*] we at present have to encounter is the want of a library and philosophical apparatus," and the trustees appointed in Salem three educated men, Reverend Drs John Prince and Thomas Barnard and Reverend William Bentley, to receive the donations. Martha Gandy Fales speculates that it was this committee of "several gentlemen from Salem" who donated the air pump to Bowdoin the following year, when it appears in the College's records valued at \$300. There the air pump stayed, languishing in Mr. Philip Wilder's basement for some twenty years until 1952, before being transferred to the Smithsonian Institution in 1958. The pump is in the Physical Sciences collection of the National Museum of American History. Fales, 499-500; NMAH object records (acc. no. 2219,929).

³⁷ Compare the quality of workmanship to the secretary attributed to cabinetmaker George Bright in the Museum of Fine Arts, Boston, published in Richard R. Randall, Jr., *American Furniture in the Museum of Fine Arts, Boston* (Boston: Museum of Fine Arts, 1965), catalogue no. 64.

³⁸ Alan Miller, "Roman Gusto in New England: An Eighteenth-Century Boston Furniture Designer and His Shop," in Luke Beckerdite, ed., *American Furniture 1993*

intention was to create an object suitable for his cabinet of curiosities in Salem and, because he intended to have engravings of its design prepared and published, stylish enough to impress his European counterparts. “As a piece of furniture,” Schechner writes, “Prince’s pump was aesthetically pleasing; as a piece of scientific instrumentation, it was remarkably elegant. . . . Prince paid attention not only to the pump’s efficiency and simplicity, but also to operating ease and versatility, with both the user and repairer in mind.”³⁹ The front door and upper case gently lift off to expose the instruments inside (figure 13) and when not in use the top closes to conceal the device’s scientific purpose. For as much as historically significant devices such as Prince’s represented great advances in the science of pneumatics, their high level of finish, the use of valuable materials in their construction and the great expense necessary to own them indicates their important social function as well.

Scientific instruments, including air pumps and diagonal mirrors, displayed in the home were not only useful, but also highly fashionable as a conspicuous visual sign of learning, sociability and wealth.⁴⁰ Manchester artist Horner’s highly detailed 1832 oil portrait of an English gentleman-philosopher provides vital evidence to evaluate these

(Hanover, NH: University Press of New England for the Chipstone Foundation, 1993), 161-200.

³⁹ Schechner, 454.

⁴⁰ For the use of objects as expressions of refinement see Richard L. Bushman, *The Refinement of America: Persons, Houses, Cities* (New York: Knopf, 1992).

statements.⁴¹ (figure 14) The sitter's interest in optics and physical science is evident from the optical cabinet and the array of scientific devices positioned on the tables around him. In the background near his right arm is a portable air pump, perhaps similar in construction to Prince's improved air pump without its elaborate case or to the portable air pump Prince displayed for Bentley in 1818.⁴² By the 1830s, air pumps, while still being used as teaching tools in classrooms, were certainly not considered cutting-edge equipment. The type of air pump seen in the portrait was primarily an 18th-century tool and any scientific usefulness of these devices had long since given way to more advanced methods and tools as scientists continued their struggle to achieve the theoretical expectations of higher levels of vacuum within a sealed glass container. The air pump's prominent inclusion into this composition raises an interesting question about the social implications of this device and the other instruments around the sitter.⁴³ On the table in front of the gentleman is an open book, the pages of which are loose engravings of

⁴¹ I discovered this oil painting at Jason Samuel Antiques in Milford, New Hampshire. The painting is signed "Horner pinxt / Manchstr / 1832." The subject of the painting was suggested at that time to be Sir John Herschel (1792-1871), English astronomer, mathematician and chemist who played a critical role in the early history of photography. At his death in 1871, Herschel's friends arranged that he would be buried next to Sir Isaac Newton as a testament of his important achievements in science and his high status in society. Two other known portraits of Herschel, a miniature by K. H. Bart and a mezzotint by W. Ward after H. W. Pickersgill, I saw at the Science Museum in London, appear to be of a different person. For the purposes of my discussion, however, the particular identity of the man is not as significant as the ideas this carefully arranged portrait conveys. The painting is now in a private collection.

⁴² Entry under the date January 8, 1818, in *Diary of William Bentley*, IV, 494.

⁴³ Margaretta M. Lovell, "Mrs. Sargent, Mr. Copley, and the Empirical Eye," *Winterthur Portfolio* 33:1 (Spring, 1998), 1-39.

optical instruments that have been bound together with its pages turned outward for the benefit of the viewer. (figure 15) On the page of the book that is falling closed, perhaps indicating a waning presence in the sitter's world, is an engraving of a "Diagonal Mirror" with a print laying at its base. By the third decade of the nineteenth century, the diagonal mirror, like the air pump, was becoming obsolete. Even though its inclusion within the group of other telescopes and optical instruments gives the diagonal mirror the gloss of a quasi-scientific device, it had little to do with the *advancement* of science. It was instead a tool for entertainment and education, a device whose day in the parlors of the scientific elite, especially in England, was being eclipsed by a new generation of optical toys and the work on the photographic camera.

So for what purpose did Horner choose to include such outmoded scientific devices as air pumps and diagonal mirrors? As a scientist why would Horner's sitter want to be remembered with these devices around him? Ross Watson comments that throughout the eighteenth and early nineteenth centuries, "scientific instruments were often found in houses as part of the equipment of an educated gentlemen and could be of considerable elegance."⁴⁴ Employing as props in the portrait venerable instruments of an earlier generation implied the subject's longtime interest in the intellectual pursuit of science and his familiarity with the history of optics and optical devices as well. The devices could also represent a painterly convention, an established vocabulary of

⁴⁴ William Howard Adams, ed., *The Eye of Thomas Jefferson* (Washington: National Gallery of Art, 1976), 62. For a visual source depicting the role of the air pump in fashionable British society see also Joseph Wright of Derby's emotional painting, *An Experiment on a Bird in the Air Pump* (1768), in the collection of the National Gallery, London.

scientific instruments that denoted a certain level of social status. For example, the trappings of wealth purposefully displayed in the portrait do not relate specifically to his exploits in the scientific arena, but his ability to exhibit such expensive items appropriately in a genteel setting.

The books behind the sitter's left shoulder imply that the gentleman was a follower of Emanuel Swedenborg, an eighteenth-century theologian and philosopher. His books, including "Angelic Wisdom Concerning the Divine Providence" (1764), "Angelic Wisdom Concerning the Divine Love and the Divine Wisdom" (1763), "Arcana Coelestia" (1749-56) and "A Brief Exposition of the Doctrine of the New Church," (1769), all of which appear in the bookcase, were banned in many European countries during his lifetime for the espousal of a radical version of Christianity and a reinterpretation of Scripture. The first half of the nineteenth century, however, saw a rejuvenation of interest in Swedenborg among a select group of European and American science-minded intellectuals, those few who had the education and leisure time to grapple with Swedenborg's voluminous writings and complex theology. Swedenborgian theology offered Scripture as an extension of scientific reasoning and therefore the appeal to scientists was obvious. In the portrait, the sitter's dramatic allusion to Swedenborg, like the display of scientific instruments, acts as an important cultural and religious marker, placing the man in specific circles of elite society.

As educated clergymen and leaders in the Salem community, Prince and Bentley likewise enhanced their status with experiments and material displays in Prince's parlor. Prince's "camera," as well as his microscopes and air pumps were intended for social

entertainment and education rather than experimental science. Prince, like the English gentleman in the portrait, had a keen interest in the genteel display of his scientific and intellectual prowess. His achievements in science, specifically related to his improvements of the lucernal microscope and air pump, resulted from his redesigning and fashioning of these scientific devices, not with the use of them for new discoveries. Prince's motivations for creating such devices were to entertain his guests with enlightening diversions, to instruct his students in the latest scientific methods, and to identify himself with the European scientific and social elite through material possessions that, like the air pump, represented the best of local craftsmanship. The monumental air pump signifies an important expression of these desires. It was for its day an important scientific advance, yet its conspicuous concealment, with an elaborately carved case, of its experimental function manifests the device's social significance.

Concealment was an important issue in the manufacture of scientific and optical instruments toward the end of the eighteenth century, as the designs for such devices and the executions of their designs gradually became more refined. One late eighteenth-century optical device, for example, is disguised as a large leather-bound book.⁴⁵ (figure 16) A gold-tooled inscription on its spine reads: "OPTIQUE PERSP / CHAMBRE NOIR / PAR LUCINY," identifying the device as an optique, or perspective glass. The phrase "chambre noir" (black room) refers to the painted black interior of the box, which housed the prints, and alludes to the closely related camera obscura. Optical viewers like this example functioned like zograscope and when not in use would have been displayed

⁴⁵ Object file G1971-1157, Colonial Williamsburg Foundation.

prominently on a parlor table or stored on a bookshelf with its elegant label exposed. In this way, the scientific device becomes transformed into an ornament so the object functions as a status symbol of education and wealth and as an example of fashionable awareness.

The decorative and artistic qualities of the cases for philosophical and optical instruments were important to the major European instrument makers whose principle clients during the second half of the eighteenth century were wealthy amateur scientists amassing philosophical cabinets in their homes.⁴⁶ Their buyers were concerned with the creative abilities of instrument makers and cabinetmakers to construct elaborately decorated, perhaps even fanciful, cases to house their collections of instruments. As Prince wrote in a letter to London instrument makers William and Samuel Jones, he was conscious of aesthetic considerations as well as practicality in his own designs for new optical devices:

I have lately constructed a very large microscope for myself upon a simple plan, the effects of which are surprisingly magnificent and beautiful. It is also a noble megaloscope as well as a microscope. ... The body of the instrument is four feet and a half in length. ... It is made in the form of an obelisk, and when not in use as a microscope it stands upright on its base; the tube in its top is unscrewed and a small urn is put in its place, so that it makes a handsome ornament in a room, and is more out of the way than if laid in a horizontal case.⁴⁷

⁴⁶ Maurice Daumas, *Scientific Instruments of the 17th and 18th Centuries*, Mary Holbrook, trans. and ed., (Paris: 1953; New York: Praeger Publishers, 1972), 142.

⁴⁷ Correspondence from Prince to W. and S. Jones, October 20, 1797, in Schechner, 461. A megaloscope was used “for magnifying large objects in a beautiful manner, adapted to the ... solar microscope,” from Benjamin Martin’s *An Essay on Visual Glasses (vulgarly called Spectacles)* (1756), in John R. Millburn, *Benjamin Martin: Author, Instrument-Maker, and ‘Country Showman’* (Leyden: Noordhoff International Publishing, 1976), 95-6.

The device Prince describes served a dual purpose: first as an optical instrument used to magnify and project images and then, when not in use, as ornamental furniture that might serve as a point of conversation between Prince and his guests. Prince skillfully adapted the natural shape of this microscope—similar in composition to a lucernal microscope, which by necessity of its function is a large pyramidal box with an aperture at the smallest side—so it may become tasteful, decorative furniture when placed upright in the corner of a room. As Schechner comments, Prince’s microscope, like his air pump, “were not to be closeted in the cabinets of his workshop, but openly and bravely displayed in his parlor. If an inquisitive guest should glance curiously over his teacup at the scientific tool standing in the corner, Prince was always eager and ready to demonstrate the marvels of the natural world.”⁴⁸ This is furniture as status symbol, as a statement of Prince’s identity and roles of those guests invited to be present at one of his scientific performances.

There are two examples of pillar-style zograscopes, or in French, *boîtes d’optique*, used in the Boston-area during the early nineteenth century that are remarkably similar in overall composition and size to the unusual microscope Prince describes. The first is a neoclassical “perspective machine” in the collections of the Museum of Fine Arts, Boston. (figures 17) Resembling Prince’s microscope, the viewer is constructed in the form of an obelisk almost five feet tall and capped with a large carved wooden urn. According to its provenance, this device originally stood in the home of Dr. Samuel

⁴⁸ Schechner, 462.

Holten in Danvers during the early nineteenth century. Holten was a major political figure—famous for signing the Articles of Confederation and for his appointment as President of the Continental Congress during 1785—and the device would have served as both as a symbol of his status in society and his enlightened attitude toward the founding of the new republic. The carving of the profile of the man covering the lens has been attributed to Samuel McIntire and may in fact be a self-portrait of this famous Salem woodcarver and architect.⁴⁹ Because of the use of white pine in the case and the various carved decorative elements, Richard Randall and others have long suggested that this object is the work of an American craftsman.⁵⁰ If so, the device is one of only a few known large zograscope to have been made in America. Removing the oval profile reveals a magnifying lens mounted into the aperture at the front of the case, almost four feet off the ground, and behind it a mirror adjusted to reflect the image of a print located on the “stage” at the bottom of the interior of the base. (figure 18)

This device indicates a taste for classically inspired objects in America that had their roots in English architectural and ornamental designs, but for its direct prototype we must look to an imported zograscope of the same form. According to family history, this second zograscope belonged to Joseph Warren Revere, son of famous patriot and silversmith Paul Revere. Revere purchased the device in London during a trip there in

⁴⁹ Randall, catalogue no. 215.

⁵⁰ *Ibid*; Object file, 60532, Museum of Fine Arts, Boston. The viewer descended from Samuel Holten (1738-1816) of Danvers through the family to Maria Chase Grey. An inventory taken of Holten’s house during 1816 does not list this device or the prints that would have accompanied it.

1800 and brought it back with him to his home in the Boston area.⁵¹ (figures 19 and 20) The tall painted viewer, now at the Cape Ann Historical Association, is virtually identical in its overall proportions to the zograscope owned by Holten.⁵² It is also in the form of an obelisk memorial, but instead of having a large profile medallion it is decorated with carved ribbon and swag motifs. The base of a square wooden mount located in the top of the Revere optique is broken, indicating that something, probably a carved wooden urn or figure, was once there. If the family histories for both objects are sufficiently reliable, it is likely that a local Boston-area craftsman, perhaps even McIntire himself, copied Revere's London optique, working either on an order from Holten or on speculation. The details and the proportions are so similar, exact in most cases, as to rule out the possibility of coincidence or of craftsmen copying from common designs or patterns.

In this device Revere presumably displayed English *vues d'optique* from the firm of Robert Sayer, whose shop was at the sign of the Golden Buck on Fleet Street in London.⁵³ Sayer joined with William Bennett in 1774 and their *Catalogue* published the following year lists: "Perspective Views, of the Most eminent Buildings, Streets, Squares, &c. in the City of *London* and *Westminster*, ... Noblemen and Gentlemen's Seats and

⁵¹ Registration file, acc. no. 1177, Cape Ann Historical Association, Gloucester, Massachusetts.

⁵² The only significant difference in the construction and composition between these two obelisk viewers is that the Revere peep box is an inch wider at its base than the one owned by the Museum of Fine Arts, Boston. The specific type of pine used for the case of the Revere example has not been determined.

⁵³ Mary Rogers, the great-granddaughter of Paul Revere, presented this optique accompanied by eleven *vues d'optique* published by Robert Sayer to the Cape Anne Historical Association in 1947.

Gardens on the Borders of the River *Thames*, with others of Castles and Romantic Views, &c. in *England, Scotland, and Ireland*. ... They make Genteel Furniture when Framed and Glazed; likewise are admirably adapted for the Diagonal Mirror or Optical Pillar Machine.”⁵⁴ In addition to the hundred prints of Great Britain, the catalogue includes another hundred views of Europe, America and the East Indies.

One can imagine a group of gentlemen or ladies gathered around the device for an afternoon party in the parlor or even seeing them carry it outside to the garden in order to take advantage of the natural light. Fancy painted furniture, such as the two neoclassical painted obelisks, was intended to be used outdoors as well as indoors. In fact, the obelisk form and the carved decorations of these neoclassical zograscopes are reminiscent of Batty Langley’s designs for garden and tomb monuments and they would have blended well with the designs of American gardens of the era. The layout and classical ornaments that might have graced a formal garden in America at this time manipulated the scene using certain optical effects, such as the perspective view, and evoked the same pleasurable sense of traveling in space and time by evoking images of classical antiquity.

Jacques Rigaud’s c. 1738 drawing of the elaborate gardens at Chiswick in England presents a view of such a scene with visitors exploring the garden. (figure 21) The composition of the drawing pulls the eye to the tall obelisk in the center of the scene, then to the classical busts and visitors standing in the center, and finally down the long radial *alleys* trailing off into the distance. The grand English pleasure gardens of the

⁵⁴ *Sayer and Bennett’s Enlarged Catalogue of New and Valuable Prints ...* (1775, reprint, London: Holland Press, 1970), 58.

eighteenth century drew huge crowds of tourists who wandered the paths encountering marble busts of historical figures and classical allusions scrolled on benches and temples. These trips were a powerful challenge to an individual's imagination and ones that encouraged learning through pleasurable visual experiences rather than passive consumption.

In the same way, by looking into the obelisk zograsopes owned by Holten and Revere and letting one's eye roam the long alleys and streets of cities, gaze across the countryside, or marvel at historical scenes drawn out in the zograsopic prints encouraged wondrous visual journeys possible only in the imagination. This notion of visually traveling to a variety of worlds challenged the imagination by encouraging the mind to move about freely between these worlds without the restrictions of distance and time.

The comparison between the zograsopes and the pleasure gardens of the age is useful in that it highlights the social significance of these devices. The gardens of the aristocracy were open only to those lucky visitors who carried letters of introduction or had been invited personally by the owner. Similarly in America the journeys using the zograsopes were intended only for those few who possessed the social standing to call upon a wealthy household for an afternoon party. Whether or not a visitor understood the scientific implications of the devices, he or she would have witnessed the sociability of the genteel activity of viewing the English prints through them. Thus vision, and the ability to use vision in this way, became an important marker of social status.

Edmund Johnson, a cabinetmaker working in Salem between 1793-1811, provided finely crafted furniture for wealthy clients in the city and elsewhere along the eastern seaboard of the United States as venture cargo. In his shop on Federal Street, he constructed at least two tambour writing desks fitted with a mechanism to view perspective prints.⁵⁵ (figure 22) The outer cases of the desks differ little from the typical tambour desk form, a fashionable type of desk popular among the merchant class in the Boston area beginning during the 1790s. The typical composition of a tambour desk includes a lower case with a flip-top writing surface, long drawers and compartments for storing papers and writing tools, and an upper case fitted behind tambour doors. The upper case, or cabinet (in French, a *cartonnier*), contains a nest of drawers and letter holes. Thomas Sheraton's *Cabinet Dictionary* of 1803 defines the "cabinet" as a place for the display and storage of curiosities. "In an architectural sense," Sheraton writes, the cabinet "signifies a retired place in fine buildings, set apart for writing, studying, or preserving any thing that is precious. Hence it is applied to those curious and neat pieces of furniture, used by ladies, in which to preserve their trinkets, and other curious matters. The cabinets of gentlemen, consist in ancient medals, manuscripts, and drawings,

⁵⁵ Kindig Antiques in York, Pennsylvania currently own one of the desks, which bears a label: "All Kinds of / Cabinet Furniture / Made & Warranted / By Edmund Johnson / Federal-Street, Salem." Joseph Kindig, III, published this desk in his June 1954 *Antiques* article, "The Perspective Glass." The second virtually identical example is at the Winterthur Museum, accession number, 55.96.4.1. The best discussion of Johnson and his labeled furniture appears in Margaret Burke Clunie's 1976 master's thesis, "Salem Federal Furniture," for the Winterthur Program in Early American Culture.

&c....”⁵⁶ Inside the “cabinet” of the Edmund Johnson tambour desks, is a curious optical apparatus with a double-convex lens and a mirror designed specifically for viewing perspective prints, just as one would through the zograscope or *boîtes d’optique* discussed earlier. A space behind the sliding tambour doors in the lower case or in the long upper drawer provided suitable locations for the prints, backed with heavy cardboard to add stiffness, to be stored.

There is a proliferation of locks on these desks; virtually all of the outside doors and drawers, both front and back, have locks that must be opened with a single key. This feature evidences an effort to keep secure the “precious” objects inside and perhaps to regulate who could use this device and who could not. For prints to be viewed, the center panel of the upper case, the sliding tambour doors at the bottom and the lower door at the rear of the desk must be unlocked and opened. (figure 23) The zograscope print, placed on the bottom shelf, is illuminated by a light source, either sunlight or candlelight, and its image reflects off the mirror to the lens. The Kindig example has a fixed viewer and mirror, while a mahogany box that houses the lens in the Pickman family desk at Winterthur slides in and out thus allowing the image to be properly aligned. This more functional design of the lens box, along with an overall refinement of the features of the desk as compared to the labeled example, may indicate that Johnson altered his earlier design and that the desk at Winterthur is the product of these improvements. When in use, the desk would be positioned in a room to allow the daylight entering through a

⁵⁶ Thomas Sheraton, *Cabinet Dictionary* (London: 1803, reprint, New York: Praeger Publishers, 1970), 115.

window to illuminate the print.⁵⁷ Only people of substantial means could afford these extraordinary mahogany desks for such a specialized purpose.

Following the lead of Charles Montgomery, scholars have long assumed that the tambour desk now at Winterthur descended in the family of Benjamin Pickman V (1763-1843) and is therefore a vital reflection of this wealthy gentleman's social prominence.⁵⁸ (figure 24) His marriage in 1789 to Anstiss Derby, the youngest daughter of Elizabeth Crowninshield and Elias Hasket Derby, a distinguished Salem merchant and at the time one of the wealthiest men in America, firmly fixed the Pickman family within the Salem mercantile elite. Pickman went on to become president of the Salem National Bank and a colonel in the Salem Regiment, the fourth in his line to do so, and to serve in a number of political offices, including one term in the United States Congress.

Pickman's political success parlayed into a busy public life that included memberships in "a number of literary, historical and other institutions in Salem and

⁵⁷ There is evidence that the Pickman desk had been fitted with castors, which do not survive with the desk. The desk must have seen much use during its lifetime, because the two proper left legs had broken off and been reattached, while the other two have been strengthened with metal screws. The absence of smoke stains in the lower case and the lack of an obvious way to vent smoke from a candle indicate that if candles were indeed used as a light source they were kept outside of the desk.

⁵⁸ Montgomery details the provenance: from Benjamin Pickman to Francis W. Pickman, who took the desk with his family to Nova Scotia in the early nineteenth century. "When it was found there in 1955," he writes, "there were thirty-four mounted prints of European scenes in the long drawers." Benjamin Pickman V moved to Boston in 1837, after the death of his wife the previous year, and died there in 1843. The fact that the desk has not been found in his degraded inventory (Boston Probate Record, 50218) may indicate that Francis Pickman received the desk before 1843. The desk descended through the family to M. E. L. Lynch until being purchased by Henry Francis du Pont, through a dealer, in 1955. Charles F. Montgomery, *American Furniture: The*

vicinity,” including the American Academy of Arts and Sciences in Boston.⁵⁹ In a letter to Pickman’s pastor John Brazer, the Honorable William Prescott of Boston describes his friend Pickman as a man of impressive learning whose “tenacious memory gave him command of [his] knowledge on all occasions. ... He loved society, and by his superior conversational powers and various knowledge, contributed largely to its enjoyments.”⁶⁰ Pickman was accustomed to entertaining local and national elites in his home and hosting soirees in the latest fashion.⁶¹

Bentley mentions in his diary one such party at the Pickman residence in 1818 and situates his host amongst the wealthiest and most influential of Salem’s families. “This day,” Bentley writes, “I dined with Col. B. Pickman, my former pupil, in a manner worthy of a palace & a Prince. ... Judge Story, N. Silsbee, our Member of Congress, Dr. Prince were with us & our richest Merchant Joseph Peabody.”⁶² Many of the prominent members of the community were there, including Prince, from whom perhaps Pickman gained his interest in optical devices. In his diary, Bentley continued his comments on the party as though to equate the fine points of these elegant occasions with the pulse of

Federal Period (New York: The Viking Press for the Henry Francis du Pont Winterthur Museum, 1966), entry 187.

⁵⁹ Whalen, 78; George F. Dow, *The Diary and Letters of Benjamin Pickman (1740-1819)* (Newport, RI: George Francis Dow, 1928), 27-8.

⁶⁰ John Brazer, *A Discourse Preached to the North Church and Society, Salem Mass., August 20, 1843, The Sunday Succeeding the Death of Hon. Benjamin Pickman* (Salem, MA: Printed at the Gazette Office, 1843), iv.

⁶¹ Whalen, 78-9.

⁶² Entry under the date October 10, 1818, in *Diary of William Bentley*, IV, 552.

Salem's overall economic and cultural life. "We have never seen in Salem richer tables than have been spread by B. Crowninshield, B. Pickman, & N. Silsbee," wrote Bentley, adding: "Nothing can be said too highly of the attendance, display, & elegance at these tables, or of the richness of the courses, variety & bounty. The hilarity was uninterrupted on these occasions."⁶³ During these lavish afternoon parties Pickman might have lead his guests into the parlor where the tambour desk fitted with the optical machine provided guided visual tours of Europe based on his set of perspective prints. Perhaps Pickman jovially recalled stories from his Grand Tour of England and France years earlier, while delighted guests peeked into the viewer for a moment then reentered the conversation.⁶⁴

Was this desk and the zograscope it housed the sole property of Benjamin Pickman, and used by him exclusively? In establishing a provenance for this object, scholars have neglected Pickman's wife, Anstiss Derby. Pickman's badly degraded probate records list no such object and, because his wife's death preceded his own, her belongings reverted to his possession without an inventory of them being recorded. The size and construction of the desk suggest that the form may have been designed for use by women. Was this tambour form and the optical machine therefore intended as a lady's amusement, and if so, did this desk have gender associations that may guide our discussion about its use in genteel society?

⁶³ *Ibid.*

⁶⁴ Catherine Whalen has made intriguing speculations about how the subjects of some of the 34 English prints that accompany the desk coincide with places in Europe Pickman and his father visited during 1784-5. Whalen, 79-80.

Indeed, period sources indicate that one of the primary uses of these viewing devices was in the home by young women to educate children. The evidence is inconclusive in this case, but a discussion of the possibilities will flesh out some important aspects of these optical devices and the tambour desk form that will together aid in our understanding of the two Edmund Johnson desks. First we will consider the gender of viewing and then move on to the form of the desk itself.

The hand-colored print *L'Optique* by J. F. Cazenave, after a painting by Louis-Léopold Boilly, is one of the few images known to depict an optique being used in a wealthy household. It shows sixteen-year-old Sébastienne-Louis Gély shortly after her marriage to French revolutionary Georges-Jacques Danton.⁶⁵ (figure 25) With her is the son of Danton's first marriage whom she is instructing in the ways of genteel society. He is looking at prints through an optique, a portable optical device also described as a diagonal mirror or zograscope. The carefully posed objects surrounding the pair in this palatial interior display for the observer references to the luxurious surroundings in which the family lived and the interest Gély took in the proper, enlightened upbringing of her young step-son.⁶⁶ Boilly was perhaps even playing on the theme of perspective

⁶⁵ Carlson, V. I., J. W. Ittmann, and et al. *Regency to Empire: French Printmaking 1715-1814* (Baltimore: Baltimore Museum of Art, 1984), 306.

⁶⁶ These objects were studio props and appear often in Boilly's other paintings. See Siegfried, p. and compare the interior with Boilly's *The Geography Lesson* (1812). Siegfried argues that Boilly's images, such as *L'Optique*, are much more complicated than Siegfried endows these objects with sexual meanings, including the mandolin, which represents love-making, and the mirror, which implies vanity. In her section, "Eroticized Viewing: Women and Boys" (p. 164-181), Siegfried identifies a group of paintings in which Boilly produced "erotically charged scenarios" depicting women and boys in similar poses to *L'Optique* and presents the woman as subject to the male gaze. This

representation as the reflection of the interior architecture of the studio recedes to the vanishing point in the tall mirror above the mantle. Compare the composition of this print to a painting of Dr. Antoine-Laurent Lavoisier and his wife completed by Jacques-Louis David in 1788, just two years before Boilly's *L'Optique*. (figure 26) Prominently displayed around Lavoisier are various chemist's instruments, alluding to the scientist's current projects, including the testing device for gunpowder on the table, a balloon flask at his foot, and in front of him pages on which he records his experiments.⁶⁷ The identical portrayals of the figures in these two portraits link the couples in both time and social class.⁶⁸ This visual comparison represents the obvious painterly conventions that encoded these images with social, economic and political meaning. The scientific instruments on the table, the posture of the figures and the lavishness of the interior were part of this formula.

voyeristic treatment of women sometimes involved, fittingly, mirrors or optical instruments, such as in Boilly's *A Girl at a Window*, where the viewed becomes the viewer in a situation that symbolized the ambiguity of the role of women in post-Revolution France. Thus, the optical instruments become an expression of power and education for woman, when their role in the household and their responsibilities for the upbringing of young children was being redefined, and at the same time a symbol of a situation which found women essentially powerless to define their own position in society.

⁶⁷ Arnauld Bréjon de Lavergnée, "Lavoisier and his Wife," entry 105, in Adams, 59; Aileen Ribeiro, *Fashion in the French Revolution* (London: B. T. Batsford Ltd, 1988), 43.

⁶⁸ Not only were these two men in the same social class, their involvement in politics got them in trouble when the Revolutionary government in France became subject to factionalism. Danton fell from favor and was guillotined in April of 1794, while it was the famous chemist Lavoisier who met the same fate during the Reign of Terror nearly one month later.

Mme Lavoisier, a skilled painter and engraver, prepared many of the plates for Lavoisier's *Traité élémentaire de chimie* (1789), a draft of which her husband may be working on at the table; the portfolio on the armchair behind her alludes to this talent. She is an interesting figure in that she not only took an interest in her husband's scientific work, but she used her artistic talents to lend grace and important illustrations to his final major text on chemistry. As such a prominent and talented woman, Lavoisier represented an enlightened heroine, serving as a role model for America's young upper-class women. After the Revolution, the education of women took on increasing urgency, as the necessity of an educated and literate constituency became obvious for the success of the new republic. Linda Kerber argues that the expanding educational opportunities for women created in America the image of the "model republican woman," such as Lavoisier, who portrayed confidence, learning and upward mobility.

Because a woman was responsible for the instruction and moral upbringing of her children, it was critical that she had a fuller understanding of the world beyond the basic cares of the household. Period literature deemed certain areas of knowledge, such as geography, history, drawing and literature, and a basic understanding of astronomy and natural science as particularly important to a young woman's education.⁶⁹ For this, objects such as telescopes and camera obscuras, maps, and images of foreign countries and historical events would enter into the home and "classroom" as never before, slowly taking the place of patterns for needlework and the implements of domestic life. As early

⁶⁹ Linda K. Kerber, *Women of the Republic: Intellect and Ideology in Revolutionary America* (Chapel Hill: University of North Carolina Press for the Institute of Early American History and Culture, 1980), 206, 210-11.

as 1755 instrument maker Benjamin Martin, in his *The Young Gentleman and Lady's Philosophy*, wondered why women did not take a stronger interest in the “experimental Spectacle of the Sciences” and appropriate the knowledge and practice of using scientific devices for this purpose in the home.⁷⁰ Some surely did, such as Lady Luxborough who, in a letter dated April 28, 1748, writes about looking at prints with “an optical glass which I have lately purchased.”⁷¹ While men, however, continued to control the fashionable apparatus of scientific experimentation in the parlor and owned their wife’s property through an entrenched system of coverture, it was practically impossible for women to claim for themselves independent intellectual activity and collections of scientific devices. By the end of the century, though, wealthy women began to incorporate optical devices into their roles as the educators of children in the home, as seen in objects like the print of Sébastienne-Louis Gély using an optique in a parlor and perhaps the tambour desk.

The tambour writing desk fitted with the optical machine perhaps played an important role in the instruction of Anstiss’s seven surviving children. At a time when female literacy was increasing, yet lagging dramatically behind that of males, the medium of prints served a valuable role in the communication of ideas and information.⁷² The desk served as a genteel place to write correspondence and for the children to focus their

⁷⁰ Stafford, 67.

⁷¹ Reprinted in Henrietta Knight, *Letters Written by The Late Right Honourable Lady Luxborough, to William Shenstone, Esq.* (London: J. Dodsley, 1775), from Erin C. Blake, personal communication, 14 April 1999.

⁷² Kerber, 192-3.

lessons in optics, geography and political history in a fun and engaging way. In the 1830s there was a series of children's travel and history books narrated by the character of "Sergeant Bell," a raree showman and old war hero.⁷³ These books appeared first in London, and later in Philadelphia, offering the idea of a peepshow box as a tool for instruction about English history and an opportunity for all children to take advantage of the same imaginary "travels" available to the elite families who owned zograscope in the home.

In another French painting, *Children Looking at Perspective Prints*, (figure 27) a young girl and boy peer through a portable optique at hand-colored *vues d'optique* piled on the table in front of them. The artist, Pierre Edouard Frère, typified simple, middle-class family life in a series of small oil paintings, including this view.⁷⁴ While the boy adjusts the print under the mirror, his eyes searching for focus, the girl at his right who is fixated on the viewer carelessly lowers to the floor a large perspective print, its edges heavily tattered and curled from what looks like years of use. As in the print *L'Optique*, it is a small boy and a young girl who are the primary users of these optical devices for parlor amusement and education. Many of the images in Richard Balzer's book, *Peepshows: A Visual History*, depict young children, often females, looking at peepshows

⁷³ *Sergeant Bell and His Raree Show* (Philadelphia, 1848).

⁷⁴ Gabriel P. Weisberg, *The Realist Tradition: French Painting and Drawing, 1830-1900* (Cleveland: Cleveland Museum of Art, 1981), 99; These optical devices became especially popular in middle-class households in Europe in the 1850s after they were displayed in the Crystal Palace exhibition in 1851, J. A. Chaldecott, "The Zograscope or Optical Diagonal Machine," *Annals of Science* 9 (December 1953), 320.

operated by adult male showmen.⁷⁵ The artists of these visual sources certainly were trying to elicit an emotional response; by using women and children they were, perhaps, as Balzer suggests, attempting to evoke a sense of innocence and childlike wonder. The evidence of the visual sources is strengthened by the few known references to shows in the American context. John Bonnin advertised his traveling “Philosophical Optical Machine” for “Ladies” in the late 1740s and Harriet Manigault, the daughter of a wealthy Philadelphian, recorded in her diary in 1816: “Mr. Craig brought us some beautiful views of St. Petersburg to look at last night, and as it was necessary for him to explain them to us, he did not leave us until half past eleven o’clock.”⁷⁶

Does the form of the desk yield any clues that might help to answer this question? Did Johnson choose to incorporate the unusual optical viewer into a typical tambour desk form out of necessity or because the intended user was female, or both?

There has been much scholarly discussion recently about whether the tambour writing desk form was gendered, that is to say whether or not its design was intended for and used primarily by women. The basic composition and structure of the Boston-area tambour desk originated in the French *bonheur du jour* that developed after mid-century and became popular in England by the end of the century. This form made its way stylistically to America by the importation both of examples of the French *bonheur du jour*, including a desk owned by Martha Washington, and the published designs of

⁷⁵ See Richard Balzer, *Peepshows: A Visual History* (New York: Abrams, 1998).

⁷⁶ *The New-York Gazette* (as revived in the *Weekly Post-Boy*), December 19, 1748, in Gottesman, 378; Entry for January 23, 1816 in *The Diary of Harriet Manigault*,

Thomas Sheraton and other English cabinetmakers.⁷⁷ Evidence shows that men and women owned the American variety of these tambour desks, yet the specific label of “lady’s desk” persists among some collectors and scholars.

The first mention of the link between Sheraton and the Boston-area tambour desk appeared in Montgomery’s discussion of the form in *American Furniture: The Federal Period*.⁷⁸ Montgomery noted similarities between the so-called tambour desks and the “Lady’s Cabinet and Writing Table,” plate 50 of Thomas Sheraton’s *The Cabinet-Maker and Upholsterer’s Drawing-Book* (1793). (figure 28) He even went so far in the catalogue as to label the John Seymour & Son desks at Winterthur, “TAMBOUR DESK, Lady’s Writing Table with tambour shutters,” taking his cue from Sheraton’s illustrations, which he considered to be their closest prototype.⁷⁹ Although the influence was not as pronounced as in other cities with a greater number of English-trained immigrant cabinetmakers, such as Baltimore, Sheraton’s traditions of cabinetmaking can

1813-16, Virginia and James S. Armentrout, Jr., eds. (Philadelphia: The Colonial Dames of America, chapter II, 1976), 126.

⁷⁷ The precise origins of the tambour desk form have remained somewhat of a mystery to furniture scholars. The form was produced in large numbers beginning in the 1790s and continued through the first decade of the nineteenth century, but usually only in the Boston-area. As Laura Simo suggests: “That the form and decoration of tambour desks appear complete in the earliest examples, remain stable their entire production period, and are unlike anything produced prior in America, all suggest a foreign original, copied in its entirety.” Celia Jackson Otto, “The secretary with the tambour cartonnier,” *The Magazine Antiques* (April, 1960), 378-381; Laura Simo, *Beneath the Veneer: A Closer Look at Tambour Desks, Their Sources, and Their Owners* (unpublished manuscript, 1998).

⁷⁸ Simo, “Meaning of the Form,” in *Beneath the Veneer*.

⁷⁹ *Ibid.*

be noted in furniture from the Boston area and there is evidence of the *Drawing-Book* being in the possession of leading Boston craftsmen.⁸⁰ The basic form of the “Salem gentleman’s secretaries,” including a labeled example by Johnson, bears a resemblance to Sheraton’s illustration of the “Gentleman’s Secretary,” plate 52, (figure 29) indicating again some degree of reliance on published design sources. But was the influence direct in regards specifically to the tambour desk?

Because there is no illustration of a tambour desk in Sheraton’s *Drawing-Book*, the answer is not obvious, but Sheraton certainly was familiar with the tambour writing desk form as he discussed it in his *Cabinet Dictionary* of 1803. The form he said is, “almost out of use at present, being both insecure, and very liable to injury.”⁸¹ Sheraton’s concerns about security and fragility were also on the minds of Edmund Johnson and his customers in Salem; the number of locks on both of the desks indicate that keeping the optical viewers and the prints safe was an important consideration and the delicacy of the legs and the tambour doors is evident by breakage and wear. Sheraton suggested that the tambour form, such as the “tambour tables used by the ladies,” is appropriate for writing and other lady’s amusements. He wrote: “Tambour tables, amongst cabinet-makers, are of two sorts: one for a gentlemen or a lady to write at; and another for the latter to execute neddlework by.” The distinction of “lady’s” desk or table therefore is an appropriate period term and could have been understood as a type of diminutive writing

⁸⁰ See Margaret Burke Clunie, *Salem Federal Furniture* (master’s thesis, University of Delaware, Winterthur Program in Early American Culture, 1976).

⁸¹ Thomas Sheraton, *Cabinet Dictionary* (London: 1803, reprint, New York: Praeger Publishers, 1970), 316.

table or desk, as opposite to the much larger gentlemen's secretary. But while Sheraton did sometimes distinguish a lady's table or desk, this distinction is only a general label and loses its relevance in the discussion regarding the tambour desk form in America when compared with specific examples of ownership. The appeal of the tambour desk form was not its associations with gender but instead with its usefulness for particular activities. For gentlemen it could be the storage of a cabinet of natural curiosities and maps and for women it could be small prints, sewing and other trinkets.

Sheraton's idea of keeping a cabinet of curiosities within the drawers and pigeonholes of a tambour writing desk must have appealed to the pervasive Salemite Dr. Prince because he was the owner of one of the first desks of this type in America. A student of Prince's in Salem, Harriet Clark, wrote home to her family in Providence about the tambour desk she saw in his house. It is to my knowledge the earliest known reference to a tambour desk in the colonies.

Dr. Prince has a new kind of desk made and I wish Papa would permit me to have one like it – the lower part of it is like a bureau then there is a desk that doubles together like a card table and back of that is a parcel of drawers hid with doors made in reeds to slip back and in the middle a plain door – 'tis the handsomest thing of the kind I ever saw and the most beautifully varnished ... – tis admired by all – if I have it my old desk might be sold as that would be of no use⁸²

Apparently, Harriet's father answered her wish because a tambour desk appears in the Clark's estate inventory. This interchange is significant because it shows the appeal

⁸² Joseph K. Ott, "John Innes Clark and His Family—Beautiful People in Providence," *Rhode Island History*, 32 (1973), 131. The date of Harriet Clark's letter is

these desks had to both men and women and the class of society to which they were associated. Here is an example of two desks: one owned by Prince, a distinguished clergyman and natural philosopher, and the other coveted by the young schoolgirl Harriet Clark, the daughter of one of Rhode Island's wealthiest merchants. It is evident that tambour desks in America were intended for both sexes. What does this statement imply about the unusual Johnson tambour desks? As a writing desk, they could have been intended for and used by either men or women. As a device for viewing prints used to entertain and educate children, they were probably meant for a woman.

From his home in Salem, Prince ran a school for young ladies in which he used his vast library and extensive collection of scientific instruments to instruct students in the ways of genteel society. Prince taught the fifteen- or sixteen-year-old Harriet Clark, the daughter of wealthy Providence merchant John Innes Clark, in the sciences of air, optics, astronomy, electricity, etc., and employed his own instruments, including "an Electrical machine, an excellent telescope, microscope, air pump, barometer, and thermometer..."⁸³ Prince undoubtedly also incorporated his various cameras in his lessons about optics, perhaps displaying them in a similar manner to when Bentley visited.

In this way, Prince forms an important link between the culture of using the tools of optical science in the parlor and the fashionable tambour writing desk. While it is not

probably 1797 or 1798 as it includes the remark, "he says he shall see you before ninety eight is out," to Mrs. Clark.

⁸³ Ott, 126. (Harriet Clark, Salem, November 26, 1797, in a letter to her mother).

known whether Prince interacted with cabinetmaker Edmund Johnson, they had a mutual interest in optics, resulting in the creation of the two extant tambour desks fitted with zograscopes at the same time Prince was constructing advanced optical instruments of his own. Johnson had presumably no other experience designing or building the cases for instruments, yet the tambour desks are well-planned and display similar traits with other scientific devices of the day. While Johnson did, according to the scant paper records, work occasionally with panes of glass and construct at least one other labeled tambour desk, there are no other objects similar to the desks with zograscopes that would help to indicate a chronological development of this unusual form. Perhaps it was the talented instrument maker Prince who first conceived of the idea of fitting a zograscope into a stylish tambour desk, combining his knowledge of the zograscopes he imported from Europe with his own early tambour desk. Because of his experience in the construction of other optical devices, such as microscopes, Prince would certainly have had access to convex lenses and the other parts necessary to build the mechanisms of the mounted zograscopes. More important, Prince was familiar with the idea of zograscopic viewing that might have inspired the project, while he encouraged wealthy buyers, including his friend Pickman, Bentley's former student, who he would have known through his presence at occasions like the fashionable dinner parties in Salem. Such a direct relationship is difficult to prove given the lack of physical evidence, but I have tried to convey in this paper the complex network of people and ideas that went into the planning and construction of these desks and the significant role Prince had in the visual life of Salem.

Perhaps Johnson's influence came from the zograscope of the Boston area, the one imported by Joseph Warren Revere and the other copied by a local cabinetmaker and purchased by Samuel Holten. This small group of zograscope raises questions about the trans-Atlantic transfer of culture through the trade of optical devices and prints.

Moreover, the group provides links to Prince because of his design for a remarkably similar lucernal microscope that evidences how elegant and ornamental furniture, like the case of Prince's air pump, could be used to conceal or disguise scientific instruments.

This paper has focused on the idea that vision, as manifested through the use of zograscope and other like optical devices, served as an indication of social and economic status. The complex social mechanisms through which this notion played out in early nineteenth-century Salem are revealed in the material evidence, such as the zograscope and perspective prints owned by Pickman, Holten and Revere. These objects expressed a fascination with a novel parlor amusement and a desire on the part of the owners to associate themselves within the class of the leisured elite. Prince as a leader in the Salem community and an important optical instrument maker was at the core of this small, enlightened group. The zograscope and prints themselves are interesting examples of an important change in society when visual travel became forever linked with entertainment through the inventions and products of a new scientific age. These objects of popular visual culture that resulted from the maturation of optical science during the seventeenth and eighteenth centuries are artifacts of a particular vision of everyday life and they tell of an earlier way of viewing the world that has long since vanished.

FIGURES

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Pages 51-79

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